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Dynamic Capabilities of Global and Local Humanitarian Organizations with Emergency Response and Long-Term Development Missions

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Dynamic Capabilities of Global and Local Humanitarian Organizations with Emergency Response and Long-Term Development Missions

Abstract:

Purpose – This study aims to answer the question: What dynamic capabilities do diverse humanitarian organizations have?

Design/methodology/approach – We examine this question through the lens of dynamic capabilities with sensing, seizing, and reconfiguring capacities. The research team interviewed 15 individuals from 12 humanitarian organizations that had (a) different geographic scopes (global versus local) and (b) different missions (emergency response versus long-term development aid). We also gathered data from secondary sources, including standard operating procedures, company websites, and news databases (Factiva, Reuters, and Bloomberg).

Findings – The findings identify the operational and dynamic capabilities of global and local humanitarian organizations while distinguishing between their mission to provide long-term development aid or emergency relief. (1) The global organizations, with their beneficiary responsiveness, reconfigured their sensing and seizing capacities throughout the COVID-19 pandemic by pivoting quickly to local procurement or regional supply chains. The long-term development organizations pivoted to multi-year supplier agreements with fixed pricing to counter price uncertainty and accessed social capital with government bodies. In contrast, emergency response organizations developed end-to-end supply chain visibility to sense changes in supply and demand. (2) Local humanitarian organizations developed the capacity to sense demand and supply changes to reconfigure based on their experiential learning working with the local community. The long-term-development local organizations used un-owned and scalable relief infrastructure to seize opportunities to rebuild affected areas. In contrast, emergency response organizations developed their capacity to seize opportunities to provide aid stemming from their decentralized decision-making, a lack of structured procedures, and the authority for increased expenditure.

Originality/value – We propose a theoretical framework to identify humanitarian organizations' operational and dynamic capabilities, distinguishing between global and local organizations and their emergency response and long-term aid missions.

Keywords: Humanitarian operations, COVID-19, dynamic capabilities, long-term aid, emergency response, global and local humanitarian organizations

1. Introduction

Humanitarian organizations operate in highly uncertain environments and face operational challenges different from typical 'for-profit' entities (Pedraza-Martinez and Van Wassenhove 2016; Sodhi and Knuckles 2021). While sudden-onset disasters such as earthquakes dominate the literature on humanitarian supply chain management (HSCM), extended disasters like prolonged displacement caused by war or slow-onset disasters like droughts necessitate different humanitarian responses. Providing humanitarian aid becomes even more complicated when multiple disasters co-occur, such as a tsunami and armed conflict over scarce resources or the spread of COVID-19 in a cramped refugee camp (Shaheen *et al.* 2022; Wamba *et al.* 2021).

Delivering humanitarian relief in such uncertain contexts lies squarely in the purview of dynamic capabilities (Altay *et al.*, 2018; Gralla *et al.*, 2016; Mishra *et al.*, 2022) despite the non-commercial nature of humanitarian organizations. Dynamic capabilities refer to an organization's ability to integrate, build, and reconfigure internal and external competencies to respond to a highly dynamic external environment (Teece, 2007). They are underpinned by an organization's operational capabilities and resource endowments (Eisenhardt and Martin, 2000). Deploying resources and operational capabilities effectively allows organizations to *sense* external opportunities and threats, *seize* opportunities, and *reconfigure* internal resources to overcome external disruptions and achieve competitive advantage (Teece, 2007).

Dynamic capability development in humanitarian settings has received some attention in the operations and supply chain management (SCM) literature (Polater, 2021). However, there is a wide variety of humanitarian organizations, and the literature needs to include more on how their capabilities differ based on geographical scope (local or global) and mission orientation (long-term development or emergency response). Identifying these capabilities is necessary as an initial step toward theory-building. Moreover, from a practical perspective, managers in humanitarian organizations need to identify and build the dynamic capabilities that would enable them to provide aid relief in highly uncertain environments, contingent on their organization's scope and mission. As such, our research question is: *What dynamic capabilities do diverse humanitarian organizations have?*

The COVID-19 pandemic provides an ideal context to study the dynamic capabilities of humanitarian organizations because all the various types of humanitarian organizations responded to the same shock. We gathered data from fifteen semi-structured interviews with staff working for twelve diverse humanitarian organizations with global or local scope and delivering emergency response services or long-term development aid. The interviews were conducted online between December 2020 and March 2021. Our sample included eight global humanitarian organizations and four local ones. Of the global organizations, two primarily provided emergency response services, two provided long-term aid, and four provided both. Two of the four local humanitarian organizations offer emergency response, and the other two focus on long-term development.

Our analysis revealed the dynamic capabilities of humanitarian organizations, further revealing different capability sets for organizations in a 2×2 frame by geographical scope (global and local humanitarian organizations) and mission (emergency response or long-term aid). With their beneficiary responsiveness, the global organizations reconfigured their sensing and seizing capacities throughout the COVID-19 pandemic by pivoting quickly to local procurement or regional supply chains. The long-term development organizations pivoted to multi-year supplier agreements with fixed pricing to counter price uncertainty and accessed social capital with government bodies. In contrast, emergency response organizations developed end-to-end supply chain visibility to sense changes in supply and demand.

Moreover, local humanitarian organizations developed the capacity to sense demand and supply changes to reconfigure based on their experiential learning working with the local community. The long-term-development local organizations used un-owned and scalable relief infrastructure to seize opportunities to rebuild affected areas. In contrast, emergency response organizations developed their capacity to seize opportunities to provide aid stemming from their decentralized decision-making, a lack of structured procedures, and the authority for increased expenditure.

The remainder of the paper is structured as follows. Section 2 provides an overview of the dynamic capabilities view and a literature review on dynamic capability development in humanitarian settings. Section 3 explains the methodology, and Section 4 reports the key findings, including the dynamic and operational capabilities of the humanitarian organizations in a 2×2 frame by geographical scope and mission. Section 5 presents our proposed theoretical framing for the dynamic capabilities of global and local organizations, appreciating the differences between the missions of these organizations, whether they are long-term aid or emergency response, and concludes with some theoretical and managerial implications of the study.

2. Underlying Theory

2.1 Dynamic Capabilities

The resource-based view (RBV) is used extensively as a theoretical lens to understand heterogeneity in firm performance (Vanpoucke *et al.*, 2014). The RBV explains how organizations can bundle and deploy valuable, rare, inimitable, and non-imitable (VRIN) resources to achieve competitive advantage (Barney, 2001). However, maintaining a competitive advantage is challenging in highly dynamic environments (Helfat and Winter, 2011; Vanpoucke *et al.*, 2014; Zott, 2003). The dynamic capabilities view complements the RBV by explaining how firms integrate, build, and reconfigure internal and external competencies to respond effectively to rapidly changing environments (Teece, 2007). Dynamic capabilities differ from operational capabilities because they guide the evolution of how firms achieve competitive survival in turbulent environments, going above and beyond the standard operating procedures that maintain the status quo (Vanpoucke *et al.*, 2014; Zollo and Winter, 2002). Operational

capabilities refer to organizations' abilities to “make a living” and maintain the status quo in the short term (Ambrosini *et al.*, 2009; Eigenhardt and Martin, 2000; Helfat *et al.*, 2007; Winter, 2003).

The impact of dynamic capabilities on a firm's performance is indirect, shaped by transforming operational capabilities and the bundling and deployment of VRIN resources (Zott, 2003; Helfat and Peteraf, 2009). Some commonly cited examples of dynamic capabilities are a firm's ability to develop innovative products (Winter, 2003) and successfully carry out mergers and acquisitions (Eisenhardt and Martin, 2000). In operations and SCM, the use of dynamic capabilities as a theoretical lens (Aslam *et al.*, 2018) aids our understanding of how firms achieve supplier integration capabilities (Vanpouck *et al.*, 2014), continuous improvement capabilities (Anand *et al.*, 2009), and strategic flexibility (Kortmann *et al.*, 2014). Dynamic capabilities comprise threefold capacities: (1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to enhance, combine, protect, and reconfigure the enterprise's resources (Teece 2007). We must also be mindful of whether the capabilities are operational for day-to-day business or truly dynamic in response to external threats or changes.

2.1.1. Sensing

An organization's 'sensing' capacity enables it to scan the business environment continually to identify opportunities and threats (Teece 2007). Studies on the sensing capacities are typically related to how for-profit firms use deliberative learning strategies and knowledge-management techniques to sense (and shape) market opportunities and enhance a firm's competitive advantage (Anand *et al.*, 2009; Schilke *et al.*, 2018; Zollo and Winter, 2002). Like for-profit firms, humanitarian organizations need to sense threats and opportunities when faced with severe supply and demand shocks.

In a supply chain risk context, 'sensing' refers to an organization's capacity to regularly monitor vulnerabilities and threats of disruptions in its supply chain (Ambulkar *et al.*, 2015), with visibility across the various parts of the supply chain as a critical capability (Christopher and Peck, 2004). Organizations can achieve visibility by using information technology to gather real-time information on the location of supplies, labor, and supply chain assets (Tukamuhabwa *et al.*, 2015). During continuous long-term supply and demand disruptions, such as those seen during the COVID-19 pandemic, organizations seek to enhance visibility in their supply chains by involving a range of supply chain actors in collective sense-making to assess the nature and severity of disruptive events (Johnson *et al.*, 2013; Krause *et al.*, 2007; Olcott and Oliver, 2014).

2.1.2. Seizing

A 'seizing' capacity allows a firm to act quickly on the identified opportunities and threats (Teece 2007). In terms of supply chain risk, a seizing capacity responds to impending threats to the smooth flow of materials and services across each tier of the supply chain (Chowdhury and Quaddus, 2017) by establishing new redundancies and preparing to use pre-established redundancies such as backup suppliers (Lomi and Pattison 2006; Sheffi and Rice 2005), just-in-case inventory and excess capacity

(Christopher and Peck, 2004; Tukamuhabwa *et al.*, 2015). Seizing capacity can be operational or dynamic. As an *operational* capability, redundancy absorbs low-level demand and supply risk from normal day-to-day operations by acting as a buffer to absorb shocks (Lomi and Pattison, 2006; Sheffi and Rice, 2005; Chopra and Sodhi, 2004; 2014). However, supply chain responsiveness is a *dynamic* capability (Chopra *et al.*, 2021; Sodhi and Tang, 2021; Chopra and Sodhi, 2004; Zhang *et al.*, 2003; Upton, 1995). Acting quickly in response to a sensed disruption in the supply chain often requires flexibility and redundancy through well-positioned inventory at various tiers. Organizations can extend flexibility across the supply chain by swapping production volumes between regional manufacturing hubs, postponement strategies, and rapidly switching make-buy decisions (Brusset and Teller, 2017; Tukamuhabwa *et al.*, 2015). Organizations also need *coordination* capabilities across multiple supply chain actors at short notice to best utilize flexibility and redundancies (Johnson *et al.*, 2013; Krause *et al.*, 2007; Mascaritolo and Holcomb, 2008; Olcott and Oliver, 2014; Scholten *et al.*, 2014).

2.1.3. Reconfiguring

Reconfiguration refers to a firm's ability to recombine and reconfigure its resources and operational capabilities to respond to external change and uncertainty (Teece, 2007; Eisenhardt and Martin, 2000). The heightened uncertainty associated with prolonged supply chain disruptions, such as during the COVID-19 pandemic, creates ambiguity about the value and utility of existing planned responses that comprise operational capabilities and related resources (Ambulkar *et al.*, 2015). The firm may need to redesign the supply chain for long-term disruptions (Roscoe *et al.*, 2022). Such reconfigurations require an organizational mindset open to new ideas and working methods, including continuous improvement (Son *et al.*, 2021) and other transformations that support the emergence of reconfiguration in the supply chain (Aslam *et al.*, 2019).

2.2 Research Gap

The dynamic capability view examines how for-profit firms respond to disrupted environments, but researchers have only recently applied it to the humanitarian relief domain (Polater *et al.* 2021). The scholars who have applied a dynamic capability lens to humanitarian response have done so only to identify isolated capacities and their enablers for sensing, seizing, and reconfiguring. A handful of humanitarian supply chain studies discuss the *sensing* capacity, which includes demand forecasting (Tabaklar *et al.*, 2021), dynamic perception (Gralla *et al.*, 2016), and continual identification of operational improvement opportunities (Mishra *et al.*, 2022). Seizing has been studied in terms of enablers such as agility (Altay *et al.*, 2018; L'Hermitte *et al.*, 2015), collaboration (Gabler *et al.*, 2017; Lu *et al.*, 2019; Mishra *et al.*, 2022; Polater, 2021), redundancy (Tabaklar *et al.*, 2021) and flexibility (Altay *et al.* 2018; Polater 2021). However, the *reconfiguration* capacity of humanitarian organizations is rarely mentioned (Vaillancourt, 2017).

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3 Overall, there is a threefold *research gap* that we seek to narrow: (1) While these studies shed
4 some light on the antecedents of sensing, seizing, and reconfiguring capacities in isolation, there is
5 limited empirical evidence on how humanitarian organizations develop the three capacities holistically.
6 (2) Existing humanitarian operations studies have yet to distinguish operational capabilities from
7 dynamic ones. (3) There is no distinction between the dynamic capabilities of different types of
8 humanitarian organizations, whether by geographical scope (local vs. global) or mission (emergency
9 response vs. long-term aid). Narrowing this research gap is important because humanitarian
10 organizations must build dynamic capabilities to operate in disrupted environments and situations of
11 extreme uncertainty (Fikar *et al.*, 2018). This study is therefore motivated to answer the research
12 question: *What different dynamic capabilities do diverse humanitarian organizations with different*
13 *geographical scopes and missions have?*
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22 **3. Methodology**

23 **3.1 Research Design**

24 The rapid spread of COVID-19 around the globe complicated an already unpredictable operating
25 environment for humanitarian organizations delivering emergency relief and long-term aid. At the same
26 time, the pandemic also created a unique research opportunity to gather real-time information on how
27 global and local humanitarian organizations respond to the same compounding crisis. Our research
28 design is an inductive, theory-building approach using Gioia's (2013) systematic method of concept
29 development. We aimed to elaborate on the dynamic capabilities view by examining the context of
30 humanitarian organizations providing long-term aid during the successive supply and demand shocks
31 caused by the COVID-19 pandemic. Within this context, we were able to isolate how global and local
32 humanitarian organizations reconfigured their resource endowments and operational capabilities to
33 build dynamic capabilities. Throughout the data collection and analysis process, we remained open to
34 new and emerging concepts not yet addressed in the existing literature. We sought theoretical insights
35 to build on the dynamic capabilities view whenever we identified novel constructs.
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46 **3.2 Data Collection**

47 The study uses a multiple case study design, which allows for a comparison between organizations that
48 share similar features (within group comparison) as well as a comparison between organizations with
49 very different features (across group comparison) (Eisenhardt, 2007). Our sampling method was to
50 designate organizations first according to their *geographic* scope– the number of countries/regions
51 where aid is provided (global versus local), and second, by their *thematic* scope or mission–the type of
52 humanitarian relief the organization typically provides (emergency response versus long-term aid). We
53 also collected secondary information from organizational websites and news databases (Factiva,
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3 Reuters, Bloomberg), as well as operational procedures and protocols provided by interviewees, to
4 determine the resource endowments of the sampled organizations.
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6 *Geographic scope:* Geographic scope refers to a global organization providing aid to multiple
7 countries and regions or a local organization near the epicenter of an event giving aid to victims affected
8 by that crisis. Geographic scope was considered an essential criterion in case selection because it
9 correlates with resource availability and scarcity (Shaheen *et al.*, 2022). *Global organizations* capable
10 of providing aid to multiple disaster sites worldwide have relatively high resource endowments because
11 they are typically funded by national governments or supranational funding sources such as the UN, the
12 World Bank, or the IMF. These donor sources allow global organizations to retain salaried staff, own
13 equipment and IT infrastructure, and hold a substantial inventory of relief materials. By contrast, *local*
14 *organizations* have limited funding sources, rely on volunteers, and often operate using donated
15 equipment and supplies (Shaheen *et al.*, 2022).
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22 These factors were evident in the twelve organizations we sampled. The eight *global*
23 organizations had national and supranational funding, more than 300 paid employees each, and
24 extensive stocks of relief supplies (food, water, shelter, medicines) and equipment (vehicles, generators)
25 stored in multiple locations worldwide. The four *local* organizations were run by volunteers using relief
26 supplies provided by donations, primarily from the local community. We sampled more global than
27 local organizations because they need a deeper examination due to the complexity of their distributed
28 operations. Some of these organizations gave us access to multiple key informants working in global
29 organizations (Action Against Hunger and Care International), who helped us distinguish operational
30 from dynamic capabilities.
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36 *Mission:* Thematic scope refers to whether the organization primarily focuses on emergency
37 response, long-term development, or both. Of the eight *global* organizations in our sample, two
38 primarily conducted emergency relief, two mostly provided long-term development aid, and the
39 remaining four did an even mix of both. Two of the four local organizations conducted long-term
40 development, and the other two conducted emergency response activities. Sampling organizations in
41 this manner allowed us to identify similar and different operational and dynamic capabilities in the two-
42 by-two categories: (1) global long-term aid, (2) global emergency response, (3) local long-term aid, and
43 (4) local emergency response.
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49 *Key informants and the interview protocol:* We followed the key-informant technique to identify
50 potential interviewees at each of the selected organizations. Key informants must have extensive first-
51 hand experience with the research phenomenon under investigation (Tremblay, 1957). Researchers
52 using this method typically only need to gather data from a few interviewees due to the specificity and
53 depth of information that key informants provide (Faifua, 2022). Using a purposive sampling technique
54 (Short *et al.*, 2002), the research team sought key informants with in-depth operational and supply chain
55 knowledge at each of the twelve organizations, based on the individual's job role and time in the
56 position. At the outset, we identified 19 potential key informants with an operational or supply chain-
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3 related job role and at least five years of experience. We asked them our qualifying questions and
4 eliminated four potential informants who did not demonstrate enough knowledge of their organization's
5 supply chain to assist in the study, leaving us with 15 (Table 1).
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9 Insert Table 1 here.

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11 We developed our *interview protocol* (Appendix 1) to investigate the organizations' resources and
12 operational and dynamic capabilities. The 15 informant interviews lasted 45 minutes to an hour,
13 resulting in 750 minutes of interview recording time and 525 pages of typed transcript. We asked the
14 interviewees how they sensed new opportunities and threats in the external environment before and
15 during the COVID-19 pandemic. We also asked them to comment on their operational capabilities and
16 what new and dynamic capabilities their organizations developed to respond to the pandemic. The
17 research team was careful not to impose prior constructs or theories on the informants as *a priori* explain
18 their on-the-job experiences (Gioia *et al.*, 2013). Instead, the researchers strove to hear the unfiltered
19 opinions of the informants as a rich opportunity to discover new concepts rather than affirm existing
20 ones. Our questions sought to identify the resources and operational capabilities underpinning sensing,
21 seizing, and transforming capacities in a humanitarian organization setting.
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25 Table 2 summarizes the responses regarding successive supply and demand shocks during
26 COVID-19.
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33 **3.3 Data Analysis**

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35 We analyzed the data following the Gioia method (Gioia *et al.*, 2013), including a first-order analysis
36 using informant-centric terms and codes and a second-order analysis using theory-centric concepts,
37 themes, and dimensions. The first researcher conducted the first analysis of the raw data, identifying 96
38 coding categories and then reducing the codes to 76 due to similarities. Each coding category received
39 a label and descriptor based on the key informants' terminology. The second coder repeated this process
40 to ensure inter-rater reliability (Armstrong *et al.*, 1997), arriving at 102 coding categories on the first
41 pass at the data and 72 after removing redundancies. Finally, all three researchers discussed and
42 iteratively synthesized the coding categories until we reached a consensus on 69 coding categories.
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46 During the second-order coding, the researchers discussed the initial coding template, asking
47 whether the emerging themes suggested concepts from the dynamic capabilities view that might explain
48 the research phenomenon while remaining open to emerging concepts not addressed in the extant
49 literature and dynamic capabilities view. After establishing a workable set of themes and concepts, the
50 team distilled the emergent second-order themes into aggregate dimensions (Gioia *et al.*, 2013) and
51 built an inductive model grounded in the data to theoretically capture the informants' experiences. The
52 'data structure' of the findings provides a graphical representation of how the data analysis progressed
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3 from raw data to concepts and themes— a vital way to demonstrate rigor in qualitative research (Corley
4 and Gioia, 2011). Figure 1 provides the data structure for *global* organizations providing emergency
5 response and long-term aid. We created a similar data structure for *local* organizations.
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11 **4. Findings**

12 Analyzing primary data helped us identify the organizations' operational and dynamic capabilities using
13 the 2×2 categorization of global and local humanitarian organizations with long-term development or
14 emergency response missions. A capability was categorized as *operational* if it enabled an organization
15 to carry out its core relief activities – emergency response or long-term development – in an operating
16 environment with relatively predictable supply and demand. Analysis of the interview data also
17 provided insights into when a capability could be considered *dynamic*. Interviewees explained how their
18 organization required additional and new capabilities to manage the severe disruptions caused to the
19 supply of medicines and materials and to address the surges in demand seen during the first and second
20 waves of COVID-19. These capabilities were categorized as dynamic when deployed to manage highly
21 unpredictable swings in supply and demand, above and beyond what was required to manage the
22 changing daily field operations. We also used secondary data to identify the resource endowments.
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30 For many of the organizations in our study, demand surges and supply disruptions during the
31 first two waves of the pandemic went well beyond disruptions experienced in day-to-day operations,
32 rendering existing operational capabilities insufficient. By exploring their responses, we could examine
33 their dynamic capabilities, described below, in terms of sensing, seizing, and reconfiguring capacities.
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38 **4.1 Global Humanitarian Organizations**

39 The global organizations in our sample – with differences between long-term aid and emergency
40 response organizations – had the sensing, seizing, and reconfiguring dynamic capabilities described
41 below, along with the underlying operational capabilities and resource endowments.
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46 **4.1.1. Sensing: Implementing end-to-end supply chain surveillance systems (emergency response)**

47 We saw a clear link between a global organization's level of supply chain visibility and how it
48 responded to COVID-19-related supply chain disruptions. Emergency response organizations
49 prioritized end-to-end supply chain visibility and real-time monitoring of their staff and supplies. These
50 organizations quickly increased supply chain surveillance efforts as early as February 2020. Despite
51 having robust IT systems and extensive networks of field operators raising alarms, long-term
52 development organizations took significantly longer to set up their supply chain surveillance systems,
53 typically after the second wave of the pandemic, thus curbing their sensing capacity.
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4.1.2. Sensing: Long-term agreements (LTA) and supplier redundancies (long-term development)

During the first wave of the pandemic, development organizations prioritized setting up long-term agreements (LTA) with multiple suppliers, which forecasted but did not require the relief items to be purchased annually with the agreed price per item. Importantly, these contracts did not include a commitment to buy, only a long-term guarantee on price. Long-term development organizations thus gained sensing capacity as they had visibility of the supplier's available stock and a pre-agreed price for products, even when markets fluctuated wildly. An interviewee from UNICEF Middle East/North Africa (MENA) explained how these pre-agreed contracts proved extremely useful during the first wave of the pandemic when prices for personal protective equipment (PPE) skyrocketed on global markets:

"We may have signed LTAs with ten suppliers for masks, but we only buy from one. At least with LTAs, we know they have enough products, and at the fixed price we agreed, they can produce the needed amounts of products for us". (UNICEF MENA)

Similarly, an interviewee from Care International explained that maintaining a pool of pre-approved backup suppliers helped to maintain supply continuity during the initial stages of the pandemic:

"We are now trying to assign as many LTAs as possible with our suppliers. Ensuring the quality of the items and signing the LTA doesn't mean we have to buy from them, but at least LTAs set a standard, so if the supplier meets the standards, we can buy from them. We have a large pool of LTAs with international and local suppliers." (Care International Middle East 1)

Care International used this strategy to sense supply disruptions quickly as it had identified suppliers on global markets with available stock and those struggling to maintain production.

4.1.3. Seizing: Regionalized supply chain design and regional relief infrastructure (both)

Both long-term development and emergency response organizations rapidly implemented regionalized supply chain designs during the first waves of the pandemic. Under the United Nations umbrella, organizations pooled their PPE stocks and other COVID-19-related medical and relief supplies as strategic buffers in UN Humanitarian Response Depots (UNHRD) in regional hubs worldwide. The WFP manages these depots for all UN agencies, serving 86 partners, including government and non-governmental organizations (NGOs). An interviewee from WFP Africa explained the importance of the hubs during the initial COVID-19 wave in early 2020:

"It was challenging initially, but we have UNHRD, our savior, as it had all the emergency stocks we needed." (WFP Africa).

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4 Emergency response organizations such as MSF deployed rapid response kits to regional hubs
5 worldwide, including water and sanitation equipment, tarps, rope, and medicines. An interviewee at
6 MSF explained how his organization pre-positioned rapid response kits in Jordan to deliver supplies to
7 disaster zones around the Middle East quickly.
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12 “It is difficult to forecast all the needs accurately, so we pre-position critical items before
13 natural disasters and humanitarian crises and forecast based on experience. It is not
14 always 100% accurate, but we try our best to pre-position critical materials inventory near
15 the locations we consider strategic. At the end of the pandemic, we learned that it's all
16 about pre-positioning critical material! This is something that we could have done better
17 at the beginning.” (MSF)
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23 By pre-positioning rapid response kits, emergency relief organizations did not have to purchase
24 goods on international markets, thereby avoiding the supply shortages, excessive price hikes, and
25 currency fluctuations seen during the initial waves of the pandemic.
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29 *4.1.4. Seizing: Capability to transition to local procurement rapidly (both)*

30 While the move to regionalized hubs was considered a critical response capability, interviewees also
31 stressed the importance of having the capability to transition to the localized procurement of relief
32 materials quickly. During the first half of 2020, the global organizations in our study highlighted the
33 difficulty in procuring essential materials such as medicines and PPE on global markets. Instead, these
34 organizations found PPE either in-country or from relief projects in neighboring countries. ACF Middle
35 East explained that the main benefits of building a local supplier base were the enhanced speed and
36 responsiveness of their service provision to beneficiaries:
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43 “Yes, speed and responsiveness are always the main points of emphasis behind local
44 sourcing. By building capacities locally, we want people to be self-sufficient, and we,
45 therefore, try to build up the resilience of the local area where we are. And we also want
46 to be closer to our supplier to control them better. In some countries in the Middle East,
47 you can find the same quality and sufficient items and products locally. It is a well-
48 developed region.” (ACF Middle East 1)
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55 Interviewees explained that local procurement had the added benefit of creating jobs and
56 sustaining the livelihood of local businesses, particularly during the pandemic when many people were
57 under lockdown restrictions. An interviewee from MSF explained how local sourcing helped his
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3 organization avoid currency fluctuations and international supply shortages while building the
4 resilience of the local community:
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8 "We couldn't rely any longer on just one or two suppliers for one item. We had to extend
9 the list of suppliers, and for critical items such as PPE materials, we especially had to
10 build key relationships more locally for these materials. So, we could no longer rely too
11 much on our Procurement Center, and now we aim to build more strategic partnerships
12 locally". (MSF)
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17 An interviewee at Chemonics explained how his organization invested in building a local supplier base
18 of 3rd Party Logistics providers in Nigeria. His organization trained local suppliers on the skills and IT
19 systems to deliver delicate test samples across particularly challenging terrains.
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23 24 *4.1.5. Seizing: Accessing the social capital established with governing bodies (long-term* 25 *development)* 26

27 The literature discusses the seizing capacity of for-profit organizations to build redundancies to mitigate
28 disruptions and take on new market opportunities (Lomi and Pattison 2006; Sheffi and Rice 2005).
29 Organizations achieve such seizing capacity usually by creating operational flexibility (Upton, 1995;
30 Zhang *et al.*, 2003) or through a coordination capability, where supply chain actors collaborate to ensure
31 a flexible response at short notice (Johnson *et al.*, 2013; Krause *et al.*, 2007; Mascaritolo and Holcomb,
32 2008). The literature on humanitarian operations expands on the for-profit conceptualizations of
33 coordination to include swift trust between UN agencies, NGOs, and other relief organizations (Dubey
34 *et al.*, 2019; Tatham and Kovács, 2010). However, our findings suggest that some humanitarian
35 organizations (for example, MSF) actively avoid building relationships with governments and UN
36 agencies to maintain their independence and avoid political interference.
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43 Organizations that did not build social capital with governing bodies before the pandemic
44 struggled to deliver aid consistently due to government-imposed lockdowns, restrictions on cross-
45 country movement, and limited access to internally displaced people (IDP) camps. An interviewee at
46 Care International stated that his organization could not get permission to travel across the country,
47 which he attributed to a poor relationship with the national government. An interviewee at Action
48 Against Hunger (ACF) explained that the Israeli government was actively restricting the flow of
49 supplies to beneficiaries in Palestinian-controlled regions. He noted that the national government kept
50 tabs on the movement of supplies to IDP camps and routinely cut off his organization's access to these
51 camps during the pandemic lockdowns in 2020-21:
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58 "This was horrible. It's because it's so difficult to deal with it. Because it comes from the
59 Israeli government, at the end of the day, everything is highly monitored in Gaza. This
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3 monitoring leads to a lack of medicine, indeed, a lack of everything. And most of the
4 time, you cannot get past regulations because everything is government controlled."
5
6 (Action Against Hunger Middle East 3)
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9 Another unnamed organization, outside our sample and in 2023, corroborated the obstructions,
10 saying that the Israelis had blocked tents from going to Gaza because they felt the tent poles could be
11 used as weapons. As such, most global organizations in our study stressed that maintaining good
12 relationships – with national governments, other aid organizations, and sometimes even warring
13 factions – had been critical during the pandemic. Organizations such as the WHO Middle East could
14 travel to areas controlled by different warring groups to provide essential services during the lockdowns,
15 thanks to permission from the local rebel groups. An interviewee from Care International (Middle East)
16 noted how his organization relied on the logistical infrastructure of UN agencies to secure critical
17 medicines during the early stages of the COVID-19 pandemic. Similarly, an interviewee at Chemonics
18 noted that good relationships with government agencies helped to overcome customs delays when
19 moving aid convoys across borders.
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28 *4.1.6. Reconfiguring: Culture of beneficiary responsiveness embedded in operational processes (both)*
29 Interviewees from global organizations explained that due to the scale and severity of the COVID-19
30 pandemic, contingency plans were either not in place or insufficient to provide a roadmap for relief
31 activities. Without contingency plans, global organizations would have to reconfigure existing
32 operational capabilities and resources. An interviewee from ACF Middle East explained that their
33 capacity to transform how his organization provides aid consistently was due to a ‘culture of
34 responsiveness’ built into the way his organization operates:
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41 “Yes, there is a culture of responsiveness. There is the capacity and experience to
42 develop a plan quickly and rapidly, especially for those in an emergency context. So,
43 aid organizations know how to develop things in an emergency mode. So that's why we
44 don't do contingency plans systematically.” (ACF Middle East 1)
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49 The focus of the organization, either emergency response or long-term development, was found
50 to influence how these flexible operational processes were designed and implemented. Long-term
51 development organizations prioritized standard operating procedures, codifying them, and training all
52 staff. Codifying and training ensured that service provision was standardized and routine, allowing these
53 organizations to meet donor and beneficiary expectations consistently. In contrast, global emergency
54 response organizations used guidelines and operational frameworks to steer decision-making. Still, they
55 recognized that processes and procedures needed to change depending on the nature of the crisis.
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3 To address COVID-19-related supply shocks, long-term development organizations activated
4 emergency protocols to reconfigure their procurement processes quickly. These organizations
5 recognized the need for in-country decision-making and lowered the financial threshold for purchasing
6 without headquarters' approval. Care International explained how the pandemic changed procurement
7 policies:
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13 “We started emergency procedures . . . For example, you have certain thresholds to get
14 approvals, but in an emergency, we have another applicable policy that you can only
15 use with the regional director's approval. So, we applied for it. And we changed our
16 thresholds to increase the speed of the process”. (Care International Middle East 2)
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20
21 An interviewee at WFP Africa explained how triggering emergency protocols allowed her team
22 to send requests for tenders only to suppliers with enough stock to fill orders. In the past, a minimum
23 of four suppliers had to be included in the tending process, even if they did not have sufficient stock.
24 Due to severe shortages in international markets, this selective tendering method to fewer suppliers
25 reduced procurement lead times from weeks to days.
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29
30 “During COVID-19, we maintained almost the same process but had flexibility regarding
31 emergencies. We would quickly review the available commodities and suppliers to
32 determine who was actively working in the market. Then, the flexibility would be to invite
33 only those suppliers. So, instead of inviting a list of 300 suppliers, you are given a waiver
34 – on an exceptional level for that emergency purpose – to invite only the three currently
35 available suppliers.” (WFP Africa)
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41 4.1.7. *Operational capabilities and resource endowments*

42
43 Underlying the dynamic capabilities are the global organizations' various operational capabilities and
44 resources tied to their mission. Below, we describe the operational capabilities we found, along with
45 the resources they use.
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48 *Partial supply chain visibility provided by ERP systems (both).* The global organizations in our
49 study had IT systems of varying degrees of sophistication in place before the first wave of the pandemic.
50 The WHO, WFP, and ACF had made significant investments in enterprise resource planning (ERP)
51 systems that provided visibility of the movement of staff and supplies to in-country distribution hubs.
52 Other global organizations, such as Médecins Sans Frontières (MSF), used SAP-enabled systems to
53 track stock from global suppliers to their distribution centers located around the globe. With IT
54 infrastructure, these global organizations could manage standard operational deployments of materials
55 and staff to disaster zones. An interviewee at ACF Middle East explained the level of visibility provided
56 by their ERP systems as follows:
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4 “We have a supply chain ERP system. This system records, monitors, and shows all the
5 steps and possible actions. Nothing can be done without including all the data and the
6 decision process inside the system. So, yes, we have almost all the information there; we
7 do some analysis to increase the visibility of this supply chain. We can see where our staff
8 are, the lead time where they’re being dispatched, and what relief items are required.”
9
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12 (ACF Middle East 1)
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15 However, interviewees described how their ERP systems only provided visibility into in-country
16 distribution hubs. The systems often needed to account for final-mile delivery to beneficiaries, typically
17 outsourced to a local third-party logistics provider (3PL) or a trucking company needing more
18 technological sophistication to connect to the humanitarian organization's IT system. As a result, global
19 organizations such as Care International often relied on traditional means of maintaining final-mile
20 visibility using low-tech solutions such as periodic status reports via telephone or reports using Excel
21 spreadsheets. An interviewee at UNICEF explained that his organization recognized the importance of
22 end-to-end supply chain visibility, but often, frontline workers did not know how to operate these
23 systems:
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31 “UNICEF puts much effort into increasing its supply chain visibility. We have created
32 monitoring dashboards to show different stakeholders where the items are in the supply
33 chain, both at the high and operational levels. However, the problem is that the visibility
34 dashboard we created does not fit all items and stakeholders. The second problem is that
35 some frontline officers don't know how to use it. So, we are putting effort into the
36 training on everything to increase the monitoring and the visibility of the supply chain.”
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40 (UNICEF MENA)
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44 Similarly, global organizations had ERP systems connected to their strategic suppliers, providing real-
45 time visibility of the suppliers’ finished goods inventory. However, this connectivity did not extend past
46 the first-tier suppliers. These organizations appreciated the importance of end-to-end supply chain
47 visibility but faced connectivity issues to Tier-2-and-beyond suppliers upstream and last-mile
48 distribution downstream.
49
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51 *Multiple sourcing arrangements and backup supplier agreements (long-term aid).* Global long-
52 term development organizations stressed the importance of having various supplier relationships,
53 including backup supplier agreements, to manage high-probability, low-severity supply chain
54 disruptions. Donors required organizations to send out numerous requests for tenders for each category
55 of relief item to ensure transparency and a fair price. Long-term development agencies would then buy
56 70-80% of their requirement from one supplier and 20-30% from a second supplier to ensure they could
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3 switch supply sources during a disruption. A multi-sourcing strategy also put downward pressure on
4 prices as suppliers competed for contracts regularly.

5
6 *Globally distributed excess pipeline inventory (both).* Whether focused on long-term
7 development or emergency response, global organizations highlighted the importance of holding
8 pipeline inventory, where items such as grain and flour are stored in containers and moved worldwide
9 on ocean freight vessels as “floating warehouses.” This pipeline inventory was regularly accessed while
10 in transit worldwide to address surges in demand. Donors, such as the WFP or the WHO, often requested
11 inventory holdings of up to six months of stock.

12
13 *Configuration of rapid-deployment kits (emergency response).* Global emergency response
14 organizations use resources such as owned assets and salaried staff to help configure rapid deployment
15 kits as an operational capability in an emergency.

16
17 *Resources, including project-specific (long-term aid) or flexible (emergency response) funding.*
18 Long-term development organizations and their emergency response counterparts have good IT
19 infrastructure, typically ERP systems, which affords them at least partial supply chain visibility as an
20 operational capability. Both long-term aid and emergency-response organizations own assets like
21 vehicles and retain salaried staff as resources.

22
23 Funding, though constrained, is a significant resource, and well-funded donors, including
24 national governments and supranational bodies, supported the global humanitarian organizations in our
25 study. These organizations sometimes received aid materials from corporations, such as Merck, which
26 donated Ivermectin to the World Health Organization (WHO) to control river blindness in Africa and
27 Latin America (Merck, 2022). Other donor sources included charitable trusts, foundations, grant-
28 making bodies funded by national governments, and private donations.

29
30 The funding for global organizations was useful for hiring full-time salaried staff deployed in
31 various operations around the globe. An interviewee at Action Against Hunger (ACF) Middle East
32 explained that having full-time salaried staff was necessary because it allowed her organization to hire
33 professionals with specialized skills such as inventory management, procurement of pharmaceuticals,
34 and international logistics, enabling efficient delivery of relief materials in line with donor
35 requirements. Another interviewee from the World Food Program (WFP) stressed the importance of
36 owning specialized logistics equipment (such as off-road vehicles and cold-chain equipment) and having
37 supporting infrastructure, such as specialized port facilities to facilitate the movement of medicines and
38 vaccines to difficult-to-reach areas:

39
40 “WFP cannot afford not to have food when the beneficiary needs it in an emergency.

41
42 So, we try to have our own modes of transport. We have our own transport equipment,
43 like specialist trucks, for transporting bulk commodities like grains. We even have our
44 own aviation means like helicopters. We often rent them out to other organizations.”

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46 (WFP Africa)

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5 The funding structure of long-term development organizations differs from that of emergency
6 response organizations. *Long-term development organizations* receive funding for a stated humanitarian
7 crisis or community rebuilding project. Donors specify the amount of financing available for the project
8 and set the expected timelines and deliverables. Interviewees explained that this created issues when a
9 compounding crisis occurred, such as COVID-19, because the organizations had to approach donors
10 again to establish new project terms, which led to delays in receiving money and materials. In contrast,
11 the *emergency response organizations* in our study received annually renewed funding not tied to a
12 specific project. Structuring funding in this manner gave emergency response organizations the
13 flexibility to quickly deploy to disasters as they occurred without having to wait for donors' approvals
14 to reallocate funds.
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22 **4.2 Local Humanitarian Organizations**

23
24 The local organizations in our sample – with differences between long-term aid and emergency response
25 organizations – had the sensing, seizing, and reconfiguring dynamic capabilities described below, along
26 with the underlying operational capabilities and resource endowments.
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30 *4.2.1. Sensing: Community knowledge and connections with beneficiaries (both)*

31
32 Despite having only basic IT systems, local humanitarian organizations exhibited the capacity to
33 quickly sense COVID-19-related supply and demand shocks, often faster than their global counterparts.
34 Interviewees explained that this sensing capacity arose from knowledge of the local community and
35 having shared a lived experience with the beneficiaries they serve. An interviewee from Glasswing
36 International explained that this experience was rooted in her adolescent years living in deprivation.
37 This experience motivated her to carry out relief work for her local community and allowed her to make
38 quick connections with beneficiaries. Community knowledge was a critical sensing capacity for her
39 organizations as COVID-19 spread through IDP camps and hospitals, and the demand profile for
40 sanitary items, medicines, and vaccines quickly changed.
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48 *4.2.2. Seizing: Authority for increased spending and immediate deployment of aid (emergency 49 response)*

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51 While global organizations had established procurement protocols with spending limits based on
52 organizational hierarchy, local emergency response organizations had fluid procurement processes and
53 limited bureaucracy within the organization. The local organizations in our sample explained that it
54 would be impossible to plan in anticipation of a disruption of the scale of COVID-19. Instead,
55 organizations like Meals of Happiness and Kieka Cupboard used their flat organizational structures to
56 allow quick decision-making in the field based on the immediate needs of the target beneficiaries.
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3 Instead of contingency planning, these organizations prioritized agility and decentralized decision-
4 making to enable a rapid response to supply and demand disruptions.
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8 “We had no plan for the pandemic, and we had no set contingency plan. But we are a very
9 agile, flexible organization that adapts well to change. I think this is because we are not
10 big. Also, several of the organization's staff members have worked in emergencies. We
11 didn't overthink or plan too much. When the pandemic hit us, we responded immediately.
12 For example, we instantly switched our attention to secure emergency supplies. Hence,
13 the other supplies like learning goods and mental health kits we often procured were not
14 the priority initially.” (Glasswing International).
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20 21 4.2.3. *Seizing: Scalable relief infrastructure (both)*

22 While global organizations had the financial resources to purchase and maintain vehicle fleets, IT
23 infrastructure, and other assets, local organizations did not. Instead, the local organizations in our
24 sample turned to local trucking companies or independent drivers to deliver aid. Local organizations
25 also leased vehicles short-term to manage larger in-country deliveries. IT equipment like radios or
26 mobile phones was loaned from local businesses to support fieldwork. Not owning relief materials and
27 IT equipment minimized overhead costs, while the infrastructure needed to deliver aid could be scaled
28 up quickly based on demand. Scalability was an essential seizing capacity during the pandemic, as new
29 categories of supplies (sanitation equipment, PPE, vaccines) needed to be procured locally and
30 delivered at short notice.
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38 “We are a locally focused organization, and executing the programs is our main task. If
39 we included everything like having our trucks, execution would become too big and
40 expensive. So, we have a contract with a third party that does the specialized
41 transportation for live samples across regions. These suppliers are locally certified and
42 recommended by USAID and the CDC. They are very flexible and usually could
43 accommodate most of our needs even during the pandemic” (Chemonics).
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49 4.2.4. *Reconfiguring: Experiential learning gained by serving local communities (both)*

50 Local organizations regularly interacted with communities affected by crises, and over time, they
51 understood their unique requirements. During the pandemic, these needs changed, with priorities for
52 food and shelter quickly supplanted by the need for sanitation and the prevention of disease
53 transmission. Interviewees explained how they learned by failing during the pandemic and, through this
54 experience, gained knowledge of where to find suppliers and which companies to call to handle
55 distribution. When the second wave of the pandemic hit, these local organizations established new
56 procurement partners and final-mile distributors to service the fast-changing needs of affected
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3 communities. Thus, the experiential learning of local organizations acted as a reconfiguring capacity,
4 as they transformed their resources and operational capabilities to more dynamic methods of
5 humanitarian aid delivery.
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8 “To respond to the crisis, we leveraged everything like our relationships with
9 communities and donors, our knowledge of local suppliers, our credibility in hundreds
10 of communities, and our volunteers. We learned as we went. So, each time there was a
11 new wave, we responded better with creative ways of getting the suppliers we needed
12 and delivering services. For example, all our programs were delivered in person, so
13 transitioning to online delivery was very disruptive the first time. But in the following
14 waves [of the pandemic], the transition was much faster, and we could even mobilize
15 our mental health teams online to expand access to the local communities” (Glasswing
16 International).
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24 4.2.5. *Operational capabilities and resource endowments*

25 Underlying the dynamic capabilities are the local organizations' various operational capabilities and
26 resource endowments depending on their mission of long-term development or emergency response.
27 For small and resource-constrained organizations, the resources are the same, regardless of mission: (1)
28 local donations of relief items, (2) donated equipment (e.g., IT), (3) funding from local players, and (4)
29 volunteer staff from the local community. Donors do not tie their funding to specific projects, which is
30 helpful for these organizations to respond to needs flexibly. Regarding operational capabilities, both
31 types of local organizations have flat organizational structures, facilitating good communication and
32 visibility. Long-term aid organizations develop local procurement as part of their strategy, while
33 emergency response organizations develop decentralized decision-making without structured
34 procedures or protocols.
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41 *Flat organizational structure and decentralized decision-making.* Local emergency response
42 organizations stressed the importance of being able to delegate decision-making to field operators
43 during crises. An interviewee from Meals of Happiness discussed how his organization provided relief
44 materials to flood victims by delegating distribution-related decisions to field operators. At the same
45 time, she concentrated on media inquiries and responding to donors. The flat organizational structure
46 of local organizations facilitated the delegation of decision-making, as did the absence of structured
47 procedures for procuring supplies and delivering aid. As the founder of Meals of Happiness pointed
48 out, when sudden-onset disasters like tsunamis or floods occurred, local organizations like hers were
49 typically first on the scene to provide vital relief materials.
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55 *Local procurement.* Because financial limits prevented local organizations from sourcing
56 globally, they procured nearly all aid materials from local suppliers. Moreover, these organizations
57 provided basic relief materials such as food and blankets that could be easily purchased locally. An
58 interviewee from Keiki Cupboard noted that their supply chain was relatively simple as it comprised a
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3 handful of local suppliers that provide materials to be delivered by volunteers. The founder of Meals of
4 Happiness pointed out that local sourcing greatly enhanced her organization's procurement capacity
5 and flexibility by simplifying the purchasing process and avoiding hazards of international sourcing,
6 such as customs delays and exchange rate fluctuations.
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9 The long-term development organizations among the local organizations said local procurement
10 is critical for the financial longevity of local businesses, giving jobs to community members who would
11 otherwise struggle to find work. The interviewee from Glasswing International explained that their
12 organization prioritizes purchasing from small businesses owned by women and the youth, as they faced
13 financial difficulties and deserved equitable support within their community:
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19 "Our procurement teams reach out to suppliers, and we do our best to support smaller,
20 women-owned and youth-run businesses to impact local communities. Yes, value
21 for money is important, but so is sustainability, like social impact and good, equitable
22 business practices. They are just as important to us and sometimes more important
23 than value for money." (Glasswing International)
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28 *Resources, including local funding sources and donated items, and volunteer staff.* Unlike
29 global organizations, local organizations do not own assets such as vehicles for transportation or other
30 specialized resources for managing daily operations. The financial structure of local organizations is
31 vastly different from global ones, with donations coming from municipal governments, local charities,
32 community groups, local citizens, or the organization's founders. Financing for Meals of Happiness
33 came from a small group of affluent local donors and contributions from local community members.
34 Interviewees said the donations were irregular and often increased or decreased depending on the
35 recency of the disaster and the media attention surrounding it. This inconsistency meant local
36 organizations spent significant time campaigning for donations, often impeding aid delivery. Instead of
37 ERP systems, local organizations used email, spreadsheets, and mobile phones to track supplies.
38 Organizations such as Keiki Cupboard relied entirely on IT equipment donated by volunteers and local
39 community groups.
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47 The local organizations in our sample drew on the experience and skills of a select few,
48 typically the founders, and mainly relied on volunteers deeply connected to the communities to execute
49 most of their daily operations. These volunteers brought invaluable knowledge of the challenges faced
50 in the communities affected by the crisis and an in-depth understanding of community dynamics,
51 including religious and cultural differences. An interviewee at Keiki Cupboard emphasized how
52 utilizing volunteers allowed his organization to allocate a significant portion of the community's
53 donations to purchasing and delivering aid to local families in need:
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3 “As a small organization, we use volunteers to deliver all supplies and services to local
4 communities. It's a nice small town; we can manage it with volunteers. Volunteers are
5 very important to us; having them [instead of salaried staff] is more efficient and cost-
6 effective to deliver aid”. (Keiki Cupboard)
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10 11 **5. Discussion**

12 Our findings indicate that the capabilities – dynamic or operational – differ by geographical scope and
13 mission. Moreover, the findings also suggest that global and local organizations have different resource
14 endowments underpinning different operational capabilities. Below, we propose a framework for
15 capabilities for global and local organizations, distinguishing their missions, and then present theoretical
16 and managerial implications and opportunities for further research.
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20 21 **5.1. Theoretical Framing**

22 Based on our findings, we propose diverse sets of dynamic capabilities for humanitarian organizations,
23 as summarized in Table 3, categorizing these organizations as having a geographic scope that is global
24 (Figure 2) or local (Figure 3) and a mission of delivering emergency response or long-term development
25 aid.
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29 Insert Table 3 here.

30 Figure 2 provides a framework with resource endowments and global humanitarian
31 organizations' operational and dynamic capabilities. The framework shows how resources and
32 operational capabilities interact and combine to support the development of dynamic capabilities,
33 highlighting the differences between emergency response and long-term development organizations.
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38 Insert Figure 2 here.

39 Figure 3 provides a framework that explains how local humanitarian organizations' resources and
40 operational capabilities interact and combine to create dynamic capabilities.
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45 Insert Figure 3 here.

46 47 **5.2. Theoretical Implications and Further Research**

48 Recall that this study was motivated to narrow a three-fold research gap in the humanitarian supply
49 chain literature: (1) Existing studies shed some light on the antecedents of sensing, seizing, and
50 reconfiguring capacities, but in isolation from each other; (2) existing humanitarian operations studies
51 have yet to distinguish operational capabilities from dynamic ones; and (3) there is no distinction
52 between the dynamic capabilities of different types of humanitarian organizations. Accordingly, our
53 work has implications for the humanitarian supply chain literature and the dynamic capabilities view.
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57 Our study provides empirical evidence with theoretical implications for how humanitarian
58 organizations develop all three capacities – sensing, seizing, and reconfiguring – using the resources
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3 and operational capabilities they have developed over time, consistent with their geographic scope
4 (local or global) or mission (emergency response or long-term aid). In our study, the organizations'
5 environment is marked by risk as foreseeable fluctuations in supply and demand against which they
6 develop operational capabilities. However, when unforeseen disasters strike, over and above the daily
7 risks they face, these organizations build sensing, seizing, and reconfiguring capacities using their
8 resources and operational capabilities. Thus, humanitarian organizations seek to fulfill their goals of
9 providing humanitarian relief, depending on the nature of the organization in terms of scope and
10 mission. Thus, our work narrows all three gaps.

11
12 Still, our work is limited to our specific research question, the study period (2020-21), and the
13 small number of organizations studied, thus we aim for analytical generalization (Yin, 2017). Future
14 studies should examine more humanitarian organizations to further build theory and test it. The scope
15 of the studies needs to be widened, too. An important aspect is preparation. Existing frameworks for
16 managing risk in humanitarian settings focus on the capabilities for managing the aftermath of a
17 particular disaster (Jahre, 2017; Shaheen *et al.*, 2021) rather than preparing for future disasters. The
18 need for preparation is not just for rapid onslaught disasters like earthquakes but also for those foreseen
19 or already unfolding, as with long-term crises. For example, the UNRWA's Commissioner-General,
20 Philippe Lazzarini, notes that "the plight of Palestine refugees remains the longest unresolved refugee
21 crisis in the world" (UN, 2023), with 700,000 Palestinians permanently displaced in 1948 and another
22 2 million displaced in 2023 with little hope of settlement anywhere. We also face the almost certain
23 permanent displacement of millions of people in low-lying areas caused by rising ocean waters in the
24 coming years (as of writing) as the ice caps continue to melt. Researchers need to study how national
25 and supranational humanitarian organizations (and countries) develop the three capacities to respond to
26 such impending disasters with high certainty, longevity, and impact, in contrast to those with high
27 uncertainty.

28
29 Our work has implications for extending the dynamic-capabilities view, which focuses on
30 profit-seeking organizations. Sensing, seizing, and reconfiguring apply to profit-making organizations
31 for which the dynamic-capabilities view seeks to develop a competitive advantage in line with RBV.
32 The implication of our work is not only how these commercial organizations develop these capacities
33 but how the development of these capacities *depends on the nature of the organization*. So, we need to
34 identify the features of commercial organizations for classification just as we have the geographic scope
35 and mission of humanitarian organizations. Moreover, rather than a focus on competitive advantage for
36 profit-seeking organizations, perhaps RBV and dynamics capability literature need a more general view
37 of the organization and its purpose to subsume humanitarian and commercial organizations, possibly
38 using the notion of hybrid organizations and supply chains in development settings (Sodhi and
39 Knuckles, 2021).

40
41 Another implication is understanding the essential – and potentially narrow – difference
42 between profit-seeking and humanitarian organizations regarding dynamic capabilities. Instead of
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3 profit-seeking organizations developing dynamic capabilities to seek competitive advantage in
4 turbulent environments (Eisenhardt and Martin, 2000), our work shows that humanitarian organizations
5 do so to seek the continuity of supply to beneficiaries during compounding crises. The resources and
6 operational capabilities may be identical in both commercial and humanitarian organizations. For
7 instance, flexible decision-making structures and localized procurement can help maintain supply,
8 benefiting from local knowledge, regardless of whether the organization seeks profits or humanitarian
9 relief. Yet, the *raison d'être* for commercial organizations differs fundamentally from humanitarian
10 ones.
11

16 **5.3. Managerial Implications**

17 Managers of humanitarian organizations can apply our frameworks to identify critical resources and
18 operational capabilities needed to support dynamic capability development depending on their
19 organization's geographic scope and mission. Contingency planning is limited against rare and high-
20 impact events such as the COVID-19 pandemic because of high uncertainty, leaving the development
21 of dynamic capabilities as the only practical means of tackling future events. Our proposed framing
22 highlights the importance of resources and capabilities such as flat organizational structures and
23 decision-making decentralized to local organizations during extreme supply and demand shocks.
24

25 A responsiveness culture coupled with enacting emergency guidelines allows global
26 humanitarian organizations to reconfigure their standard operating routines (and operational capabilities)
27 during severe disruptions. The most responsive organizations in our study were those that worked with
28 local staff and businesses to procure medical items, relief supplies, and PPE during the first wave of the
29 pandemic. Local procurement allowed these organizations to avoid currency fluctuations and extreme
30 price hikes on international markets while enabling local businesses to stay solvent throughout the
31 pandemic. Organizations that pivoted from global to local procurement helped build more resilient
32 communities to withstand the subsequent supply and demand shocks that accompanied the second and
33 third waves of the COVID-19 pandemic.
34

35 To conclude, our study offers a framework showing the dynamic capabilities of different types
36 of humanitarian organizations and how these build on the different resources and operational
37 capabilities of the different types of such organizations. Our findings show how the geographic (global
38 versus local) and the thematic scope of humanitarian operations (emergency response versus long-term
39 development) lead to distinct combinations of operational and dynamic capabilities. Future studies can
40 provide field practitioners and their organizations with more comprehensive frameworks to prepare for
41 future disasters and disruptions by better understanding the mechanisms by which humanitarian
42 organizations develop and deploy dynamic capabilities.
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58 which have helped us tremendously. Any mistakes are our own, of course.
59
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References

- Alawa, J., Alawa, N., Coutts, A., Sullivan, R., Khoshnood, K. and Fouad, F.M. (2020), "Addressing COVID-19 in humanitarian settings: a call to action", *Conflict and Health*, Vol. 14 No. 1, pp. 64–68.
- Altay, N., Gunasekaran, A., Dubey, R. and Childe, S.J. (2018), "Agility and resilience as antecedents of supply chain performance under moderating effects of organizational culture within the humanitarian setting: a dynamic capability view," *Production Planning & Control*, Vol. 29 No. 14, pp. 1158–1174.
- Ambulkar, S., Blackhurst, J. and Grawe, S. (2015), "Firm's resilience to supply chain disruptions: Scale development and empirical examination," *Journal of Operations Management*, Vol. 33–34 No. 1, pp. 111–122.
- Anand, G., Ward, P.T., Tatikonda, M.V. and Schilling, D.A. (2009), "Dynamic capabilities through continuous improvement infrastructure," *Journal of Operations Management*, Vol. 27 No. 6, pp. 444–461.
- Armstrong, D., Gosling, A., Weinman, J. and Marteau, T. (1997), "The place of inter-rater reliability in qualitative research: An empirical study," *Sociology*, Vol. 31 No. 3, pp. 597–606.
- Aslam, H., Blome, C., Roscoe, S., and Azhar, T.M. (2018), "Dynamic supply chain capabilities: How to market sensing, supply chain agility, and adaptability affect supply chain ambidexterity," *International Journal of Operations & Production Management*, Vol. 38 No. 12, pp. 2266–2285.
- Barney, J.B. (2001), "Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view," *Journal of Management*, Vol. 27 No. 6, pp. 643–650.
- Brusset, X. and Teller, C. (2017), "Supply chain capabilities, risks, and resilience," *International Journal of Production Economics*, Vol. 184, pp. 59–68.
- Chowdhury, M.M.H. and Quaddus, M. (2017), "Supply chain resilience: Conceptualization and scale development using dynamic capability theory," *International Journal of Production Economics*, Vol. 188, pp. 185–204.
- Chopra, S. and Sodhi, M.S. (2004), "Managing risk to avoid supply-chain breakdown," *MIT Sloan Management Review*, Fall, pp 53–61.
- Chopra, S., Sodhi, M. and Lücker, F. (2021), Achieving supply chain efficiency and resilience by using multi-level commons. *Decision Sciences*, 52: 817–832. <https://doi.org/10.1111/deci.12526>.
- Christopher, M. and Peck, H. (2004), "Building the Resilient Supply Chain", *International Journal of Logistics Management*, Vol. 15 No. 2, pp. 1–14.
- Corley, K.G. and Gioia, D.A. (2011), "Building theory about theory building: what constitutes a theoretical contribution?" *Academy of Management Review*, Vol. 36 No. 1, pp. 12–32.
- Craighead, C.W., Blackhurst, J., Rungtusanatham, M.J. and Handfield, R.B. (2007), "The severity of supply chain disruptions: design characteristics and mitigation capabilities," *Decision Sciences*, Vol. 38 No. 1, pp. 131–156.
- Dubey, R., Altay, N. and Blome, C. (2019), "Swift trust and commitment: The missing links for humanitarian supply chain coordination?" *Annals of Operations Research*, Vol. 283 No. 1, pp. 159–177.
- Eisenhardt, K.M. (1989), "Building theories from case study research. *Academy of Management Review*", Vol. 14 No. 4, pp. 532–550.
- Eisenhardt, K.M. and Martin, J.A. (2000), "Dynamic capabilities: what are they?", *Strategic Management Journal*, Vol. 21 No. 10–11, pp. 1105–1121.
- Faifua, D. (2022), *The Key Informant Technique in Qualitative Research*, SAGE Publications, Ltd.
- Fikar, C., Hirsch, P. and Nolz, P.C. (2018), "Agent-based simulation optimization for dynamic disaster relief distribution," *Central European Journal of Operations Research*, Vol. 26 No. 2, pp.423–442.
- Gabler, C.B., Richey Jr, R.G., and Stewart, G.T. (2017), "Disaster resilience through public–private short-term collaboration", *Journal of Business Logistics*, Vol. 38 No. 2, pp. 130–144.
- Gioia, D.A., Corley, K.G. and Hamilton, A.L. (2013), "Seeking Qualitative Rigor in Inductive Research: Notes on the Gioia Methodology," *Organizational Research Methods*, Vol. 16 No. 1, pp. 15–31.

- 1
2
3 Gralla, E., Goentzel, J. and Fine, C. (2016), "Problem formulation and solution mechanisms: a
4 behavioral study of humanitarian transportation planning," *Production and Operations*
5 *Management*, Vol. 25 No. 1, pp. 22–35.
- 6 Helfat, C.E. and Peteraf, M.A. (2009), "Understanding dynamic capabilities: progress along a
7 developmental path," *Strategic Organization*, Sage publications Sage UK: London, England.
- 8 Helfat, C.E. and Winter, S.G. (2011), "Untangling dynamic and operational capabilities: Strategy for
9 the (N) ever-changing world," *Strategic Management Journal*, Vol. 32 No. 11, pp. 1243–1250.
- 10 Jahre, M. (2017), "Humanitarian supply chain strategies—a review of how actors mitigate supply chain
11 risks," *Journal of Humanitarian Logistics and Supply Chain Management*, Vol. 7 No. 2, pp. 82–
12 101.
- 13 Johnson, N., Elliott, D. and Drake, P. (2013), "Exploring the role of social capital in facilitating supply
14 chain resilience," *Supply Chain Management: An International Journal*, Vol. 18 No. 3, pp. 324–
15 336.
- 16 Kovács, G. and Falagara Sigala, I. (2021), "Lessons learned from humanitarian logistics to manage
17 supply chain disruptions," *Journal of Supply Chain Management*, Vol. 57 No. 1, pp. 41–49.
- 18 Kortmann, S., Gelhard, C., Zimmermann, C., and Piller, F.T. (2014), "Linking strategic flexibility and
19 operational efficiency: The mediating role of ambidextrous operational capabilities," *Journal*
20 *of Operations Management*, Vol. 32 No. 7-8, pp. 475-490.
- 21 Krause, D.R., Handfield, R.B. and Tyler, B.B. (2007), "The relationships between supplier
22 development, commitment, social capital accumulation, and performance improvement,"
23 *Journal of Operations Management*, Vol. 25 No. 2, pp. 528–545.
- 24 L'Hermitte, C., Bowles, M., Tatham, P. and Brooks, B. (2015), "An integrated approach to agility in
25 humanitarian logistics," *Journal of Humanitarian Logistics and Supply Chain Management*,
26 Vol. 5 No. 2, pp. 209–233.
- 27 Lomi, A. and Pattison, P. (2006), "Manufacturing relations: An empirical study of the organization of
28 production across multiple networks," *Organization Science*, Vol. 17 No. 3, pp. 313–332.
- 29 Lu, Q., Wu, J., Goh, M. and De Souza, R. (2019), "Agility and resource dependency in ramp-up process
30 of humanitarian organizations," *The International Journal of Logistics Management*, Vol. 30
31 No. 3, pp. 845–862.
- 32 Mascaritolo, J. and Holcomb, M.C. (2008), "Moving towards a resilient supply chain," *Journal of*
33 *Transportation Management*, Vol. 19 No. 2, pp. 71–83.
- 34 Merck. "Over 30 Years: The Mectizan® Donation Program." Merck.com, May 25, 2022,
35 www.merck.com/stories/mectizan/.
- 36 Mishra, J.L., Chiwenga, K.D., Mishra, N. and Choudhary, S. (2022), "Extending dynamic capabilities
37 towards lean thinking in humanitarian supply chains," *Production Planning & Control*, Vol. 33
38 No. 6–7, pp. 655–675.
- 39 Olcott, G. and Oliver, N. (2014), "Social capital, sense-making, and recovery: Japanese companies and
40 the 2011 earthquake", *California Management Review*, Vol. 56 No. 2, pp. 5–22.
- 41 Pedraza-Martinez, A.J., and Van Wassenhove, L.N. (2016), "Empirically grounded research in
42 humanitarian operations management: The way forward," *Journal of Operations Management*,
43 Vol. 45 No. 1, pp. 1–10.
- 44 Polater, A. (2021), "Dynamic capabilities in humanitarian supply chain management: A systematic
45 literature review," *Journal of Humanitarian Logistics and Supply Chain Management*, Vol. 11
46 No. 1, pp. 46–80.
- 47 Roscoe, S., Aktas, E., Petersen, K.J., Skipworth, H.D., Handfield, R.B., and Habib, F. (2022),
48 "Redesigning global supply chains during compounding geopolitical disruptions: the role of
49 supply chain logics," *International Journal of Operations & Production Management*, Vol. 42
50 No. 9, pp. 1407-1434.
- 51 Schilke, O., Hu, S. and Helfat, C.E. (2018), "Quo vadis, dynamic capabilities? A content-analytic
52 review of the current state of knowledge and recommendations for future research", *Academy*
53 *of Management Annals*, Vol. 12 No. 1, pp. 390–439.
- 54 Scholten, K., Scott, P.S. and Fynes, B. (2014), "Mitigation processes - antecedents for building supply
55 chain resilience," *Supply Chain Management*, Vol. 19 No. 2, pp. 211–228.
- 56
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59
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2
3 Shaheen, I., Azadegan, A. and Roscoe, S. (2021), "Who Takes Risks? A Framework on Organizational
4 Risk-Taking During Sudden-Onset Disasters", *Production and Operations Management*, Vol.
5 30 No. 11, pp. 4023–4043.
- 6 Shaheen, I., Azadegan, A. and Davis, D.F., 2022. Resource scarcity and humanitarian social innovation:
7 observations from hunger relief in the context of the COVID-19 pandemic. *Journal of Business*
8 *Ethics*, pp.1-21.
- 9 Sheffi, Y. and Rice, JB (2005), "A supply chain view of the resilient enterprise," *MIT Sloan*
10 *Management Review*.
- 11 Short, J.C., Ketchen Jr, DJ, and Palmer, T.B. (2002), "The role of sampling in strategic management
12 research on performance: A two-study analysis," *Journal of Management*, Vol. 28 No. 3, pp.
13 363–385.
- 14 Sodhi, M.S. and Knuckles, J. (2021), "Development-aid supply chains for economic development and
15 post-disaster recovery," *Production and Operations Management*, Vol. 30, No. 1, pp. 4412-
16 4434.
- 17 Sodhi, M.S., and Tang, C.S. (2021), "Supply chain management for extreme conditions: Research
18 opportunities," *Journal of Supply Chain Management*, 57(1): 7-15.
- 19 Son, B., Chae, S. and Kocabasoglu-Hillmer, C. (2021), "Catastrophic supply chain disruptions and
20 supply network changes: A study of the 2011 Japanese earthquake", *IJOPM*, Vol. 41, No. 6,
21 pp. 781–804.
- 22 Tabaklar, T., Sorkun, M.F., Yurt, O. and Yu, W. (2021), "Exploring the microfoundations of dynamic
23 capabilities for social innovation in a humanitarian aid supply network setting", *Industrial*
24 *Marketing Management*, Vol. 96, pp. 147–162.
- 25 Tang, C.S. (2006), "Perspectives in supply chain risk management", *International Journal of Production*
26 *Economics*, Vol. 103, No. 2, pp. 451-488.
- 27 Tatham, P. and Kovács, G. (2010), "The application of 'swift trust' to humanitarian logistics,"
28 *International Journal of Production Economics*, Vol. 126 No. 1, pp. 35–45.
- 29 Teece, DJ (2007), "Explicating dynamic capabilities: The nature and microfoundations of (sustainable)
30 enterprise performance", *Strategic Management Journal*, Vol. 28 No. 13, pp. 1319–1350.
- 31 Tremblay, M.A. (1957), "The key informant technique: A nonethnographic application", *American*
32 *Anthropologist*, Vol. 59 No. 4, pp. 688–701.
- 33 Tukamuhabwa, B.R., Stevenson, M., Busby, J. and Zorzini, M. (2015), "Supply chain resilience:
34 Definition, review and theoretical foundations for further study," *International Journal of*
35 *Production Research*, Vol. 53 No. 18, pp. 5592–5623.
- 36 UN (2023), "UN marks 75 years since displacement of 700,000 Palestinians," *United Nations News*,
37 May 15, 2023, accessed <https://news.un.org/en/story/2023/05/1136662> on Dec. 23, 2023.
- 38 Upton, D.M. (1995), "Flexibility as process mobility: The management of plant capabilities for quick
39 response manufacturing," *Journal of Operations Management*, Vol. 12 No. 3–4, pp. 205–224.
- 40 Wamba, SF, Queiroz, M.M., Roscoe, S., Phillips, W., Kapletia, D. and Azadegan, A. (2021), Guest
41 editorial: Emerging technologies in emergency situations, *International Journal of Operations*
42 *and Production Management*, Vol. 41 No. 9, pp. 1405-1416.
- 43 Winter, S.G. (2003), "Understanding dynamic capabilities," *Strategic Management Journal*, Vol. 24 No.
44 10, pp. 991-995.
- 45 World Food Programme. (2023, May 30). *United Nations Humanitarian Response Depot*. Retrieved
46 from <https://www.wfp.org/unhrd>
- 47 Vaillancourt, A. (2017), "Procurement consolidation in humanitarian supply chains: a case study,"
48 *International Journal of Procurement Management*, Vol. 10 No. 2, pp. 178–193.
- 49 Vanpoucke, E., Vereecke, A. and Wetzels, M. (2014), "Developing supplier integration capabilities for
50 sustainable competitive advantage: A dynamic capabilities approach," *Journal of Operations*
51 *Management*, Vol. 32 No. 7–8, pp. 446–461.
- 52 Yin, R.K. (2017), *Case Study Research and Applications: Design and Methods*, SAGE Publications.
- 53 Zollo, M. and Winter, S.G. (2002), "Deliberate learning and the evolution of dynamic capabilities,"
54 *Organization Science*, Vol. 13 No. 3, pp. 339–351.
- 55 Zott, C. (2003), "Dynamic capabilities and the emergence of intraindustry differential firm
56 performance: insights from a simulation study," *Strategic Management Journal*, Vol. 24 No. 2,
57 pp. 97–125.
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Figure 1

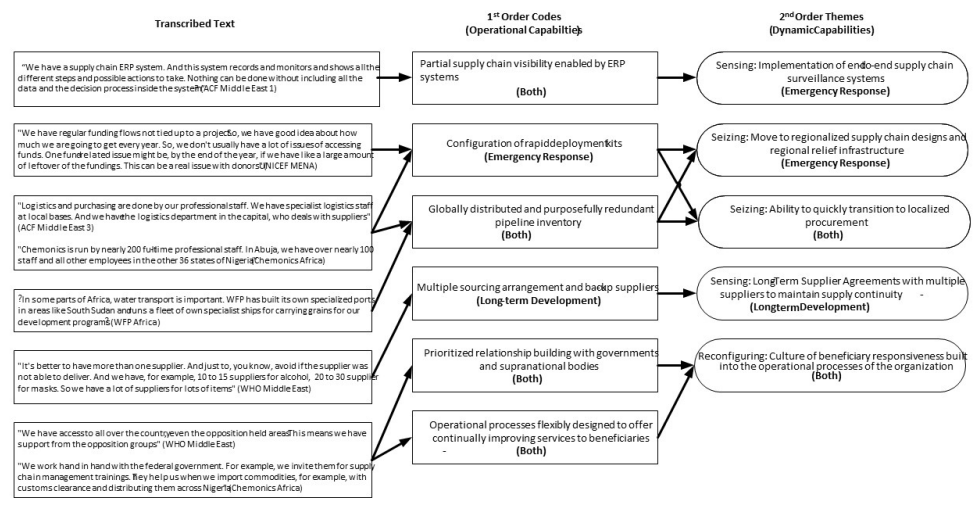


Figure 1

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Figure 2

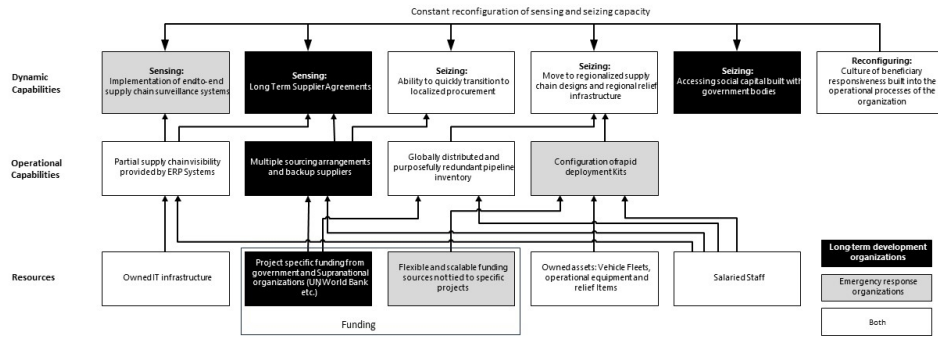


Figure 2

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Figure 3

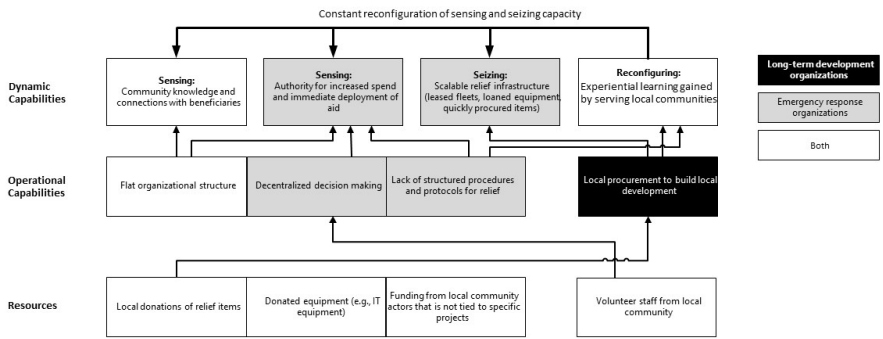


Figure 3

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Table 1: Organization and interviewee profile (the exact office location is anonymized). Note: - Chemonics is a for profit organization and the figure is its net income in 2019.

Humanitarian organization	Interviewee position	Budget in USD as of 2019	Geographic scope	Thematic scope	Nature of supply chain disruptions before COVID-19
WHO (Middle East, war zones)	Supply chain and logistics manager	4.4 billion USD	Global (149 countries)	Emergency Response and Long-Term Development	-Global shipping delays, -Suppliers refusing to sell to a sanctioned country sanction, -Changes of prices due to unstable exchange rate
UNICEF (Middle East and North Africa)	Supply chain data analyst	5.91 billion USD	Global (190 countries)	Emergency Response and Long-Term Development	-Shipping delay
Action against Hunger (Middle East)	(1) Refugee camp operator (2) Field Operator (3) Field Coordinator	400.2 million USD	Global (55 countries)	Emergency Response and Long-Term Development	-Delays in delivery and quality issues caused by security issues - Corruption, security issue, creating delays- -Delay by internal procedures for international procurement, - Logistics delay due to lack of infrastructure, -Receiving products not fit for purpose
WFP (Africa)	Procurement manager	9.8 billion USD	Global (120 countries)	Emergency Response and Long-Term Development	-Delays due to security issue and fuel shortage
Chemonics (Africa)	Logistics manager	-1.5 billion USD	Global (70 countries)	Long-Term Development	-Delays in delivery to healthcare facilities due to poor infrastructure, - Demand/supply mismatch caused by data input error by local healthcare facilities,
USAID working in partnership with Chemonics	Supply chain manager (USAID)	65.1 million USD	Global (80 countries)	Long-Term Development	-Changes of prices due to unstable exchange rate, -Delay in custom clearance

Care international (Middle East)	(1) Gender Protection Manager (2) Child Protection Officer	808.1 million USD	Global (100 countries)	Emergency Response	-Missing inventory due to theft, fire, fraud, -Many security issues like conflicts, terrorist attacks -Delay in delivery due to UN bureaucracy, -Delays distributions due to the ongoing war
Doctors without borders (Africa)	Supply chain manager	653.2 million USD	Global (72 countries)	Emergency Response	-Shortage of critical items, e.g., medicine
APIN (Africa) for CDC Atlanta	Supply chain manager	48.7 million USD	Local (Africa)	Long-Term Development	-Small supply chain disruptions but no major issue
Glasswing International	Field coordinator	6.3 million USD	Local (South America)	Long-Term Development	-Small supply chain disruptions but no major issue
Meals of happiness	Founder	NA	Local (India)	Emergency Response	-Small supply chain disruptions but no major issue
Keiki Cupboard	Field operator	20 thousand USD	Local (The US)	Emergency Response	-Small supply chain disruptions but no major issue

Table 2: A summary of responses to Covid-19-related disruptions as gathered from the interviews. The severity of disruption according to the interviewee (out of 3): 0=no disruption, 1=mild, 2=severe, 3=extremely severe disruption.

Organiza-tion	Initial COVID-19 responses	New services/ product delivered during COVID-19	Disruptions during COVID-19	Severity of disruption	COVID-19 disruption responses
WHO (Middle East, war zone)	-Poor, taken by surprise, -Initial responses was securing medical supplies globally, -Effective crisis leadership by the HQ	-PPEs, -PCR testing kits, -Supporting the government to set up testing labs	-PPE shortage, -Shortage of essential medical supplies	3	-Increasing local sourcing, -Moving to services to online
Chemonics (Africa working for USAID)	-Initial responses were satisfactory, -The main task was checking safety stocks at each of local warehouse	-PPEs, -PCR testing kits, transport for bio samples	-Disruption in distribution due to the shortage of 3PLs willing to visit healthcare facilities and carrying COVID samples,	1	-Increasing supplier pay
USAID	-Maintaining safety stocks and accessing PPE and PCR testing kits	Transport for bio samples and testing kits	-Shortage of specialist supplies from abroad (e.g., test kits, reagents for HIV)	1	-Increasing supplier pay
Care international 1 (Middle East)	-Poor leadership, - Due to the lack of effective initial responses, they had no choice but adapt as it came	-Focusing on primary care by cancelling non-essential programs and those with large participants (e.g., education)	-Some disruptions from local vendors due to the lockdown and their people becoming sick	2	-Moving to services to online
UNICEF (MENA)	-Taken by surprise, - Around the mid-February in 2020, actual prep work such as monitoring began, -High-level of skepticism.	-PPEs, -Sanitation kits	-Shortage of COVID related items like PPEs and sanitation kits, non-COVID items caused by lockdowns in China	2	-Increasing local sourcing
Action against Hunger 1 (Middle East)	-Around the February in 2020, we started prep work, e.g., forming a crisis team to create contingency plan.	-No change	- Accessing beneficiaries to provide services such as training and mental health sessions was a big issue. -Big disruption in providing f2f services created significant operational burdens.	0	-Moving to services to online, -Operational adjustment such as more sessions with a smaller number of participants

Care International 2 (Middle East, Warzone)	-Lack of leadership resulted in a big delay at the field level, -Only in April 2020 did the top management team started initial responses (training, working from home, procurement re-evaluation, refitting programs for delivery during COVID)	No change	-Shortage of all imported items due to the regional shortage (in Turkey), -Planning COVID related procurement was difficult due to the lack of local data, -Due to quarantine and lockdown, huge delay in delivering services (e.g., victim supports)	2	-Moving to services to online
Action against Hunger 2 (Middle East)	-Starting from the February 2020, -Assessments for the existing bases and transportation, -Continuing monitoring of cost factors, security	-Health education for COVID control, -Mental health service due to the stress created by lockdowns	-Lockdown, travel ban (cancelled internal flights), restricted movement of staff across Iraq creating difficulty in interacting with other stakeholders, -Delivering services with social distancing is very challenging	1	-Moving to services to online
APIN (Africa) working for CDC Atlanta	-As it was the middle of the financial year, lots of planning had been done, and little need for initial responses	-PPEs, -PCR testing	-PPE shortage due to the weaker local currency, -Lockdown and restrictions on staff movement created disruption in products and service delivery	1	-Stockpiling consumables, -Negotiation with the Nigerian government for special permits for movement of people and supplies
Action against Hunger 3 (Middle East)	-Not much was done	- New COVID related projects such as education for prevention, -PPEs	-Not much difficulty in securing PPEs, -Due to social distancing, some programs (requiring interaction with refugees) were postponed or cancelled	2	
Meals of happiness	-Not much was done	-Big increase in demand	-Operational burdens due to increase in demand	2	-Looking for new sources of funding
Doctors without	-Stockpiling, -Searching for local	-No change.	-Supplier delay by lockdowns	1	-Increasing local sourcing

borders (Africa)	suppliers, -Information sharing on inventory across all HQs				
WFP (Africa)	-They were used to crises, so COVID was not considered as a major crisis, -Immediate setup of a taskforce, -Rapid allocation of extra fund, -By the March 2020, all teams were up and running, -Simplifying procurement process for emergency response	-Meeting demand from increased number of beneficiaries needing assistance (by 10%)	-Some difficulty in procuring PPEs	0	-Sharing PPEs with other UN agencies
Keiki Cupboard	-Monitoring the situation, -Minimizing personal contacts, -Checking inventories, -Checking vulnerabilities in the organization	-Sanitization kits	-Price rise in COVID-related items	1	
Glasswing International	-Passive monitoring news	-PPEs, -Basic diagnostic equipment, -Sanitization kits, -Food assistance	-Disruption in delivering f2f services due to lockdowns, -Difficulty in getting PPEs, -Difficulty in getting IT equipment	2	-Prioritizing emergency supplies over regular ones

Table 3: The dynamic and operational capabilities of the different types of humanitarian organizations in our sample

	Long-term development organizations	Emergency response organizations
Global organizations	<ul style="list-style-type: none"> - Long-term supplier agreements - Accessing social capital built with government bodies - Multi-sourcing arrangements and backup suppliers 	<ul style="list-style-type: none"> - End-to-end supply chain visibility - Configuration of rapid deployments kits
	<ul style="list-style-type: none"> - Ability to transition to local procurement and to move to regional supply chain designs and relief infrastructure - Partial supply chain visibility with ERP - Culture of beneficiary responsiveness - Globally distributed and redundant inventory 	
Local organizations	<ul style="list-style-type: none"> - Local procurement for local development 	<ul style="list-style-type: none"> - Authority for increased spend and immediate deployment of aid - Decentralized decision-making - Lack of structured procedures and protocols for relief
	<ul style="list-style-type: none"> - Community knowledge and connections with beneficiaries - Scalable relief infrastructure - Experiential learning gained for serving the local community - Flat organizational structure 	

Appendix 1: Case Interview Protocol

Theme	Structured Question	Follow-up/Probing Questions
Personal Profile	1. Please provide a brief background about yourself. <ol style="list-style-type: none"> a) Job role b) Experience in the current organization c) Experience in a wider sector 	
Organization Profile	2. Please provide brief information about your current organizations. <ol style="list-style-type: none"> a) Current location and geographical area of working b) Number of employees c) What types of relief supplies or aid do you deliver in your region? 	2a) What is the main purpose or aim of your organization in your region? 2b) Who are your main partners in your region? 2c) Do you have direct engagement with the end user of the aid that you supply in your region? If so, how?
Contextual Factors	3. Can you give me an overview of how your supply chain and distribution operations worked prior to the emergence of COVID-19 in your region? 4. What is the size of your supply base (first tier) and where are your suppliers located in relation to your distribution locations? 5. How much visibility does your organisation have of its end-to-end supply chain, and how do you maintain/monitor your supplies and supplier activities? 6. Prior to the emergence of COVID-19, how did you organization manage disruptions to the supply of materials in your upstream (supply) and downstream (distribution) supply chain? 7. Prior to the emergence of COVID-19, how did your organization manage a lack of labour availability throughout the supply chain and distribution of materials to end users? 8. Prior to the emergence of COVID-19, how did your organization manage disruptions to financial flows or access to donor funds? 9. Prior to Covid, what were your key performance measures and did you measure delivery times to end-users/stakeholders such as On-Time/In Full delivery? If so what were these metrics?	3a) How do you get supplies from your distribution centres to the end user in your region including final mile delivery? 4a) How do you get supplies to your regional distribution centres?

Demand/supply mismatch	<p>10. Prior to the emergence of COVID-19, what was the situation as regards supply and demand mismatch?</p> <p>11. How was the situation of supply and demand mismatch affected by Covid-19?</p>	10a) How did the organization deliver aid (materials or cash?) under these conditions?
Sensing Capabilities	<p>12. When the first spread of Covid 19 as a global pandemic was reported in China in Feb or March 2020, what kind of efforts were made to look for vulnerabilities in your supply chain and monitor the situation?</p> <p>13. What was the initial impact on your upstream (supply) and downstream (distribution) supply chain when COVID-19 emerged in this region and when did this become clear? For instance, not having enough needed products based on projected need — PPE supplies, testing, sterilization, sanitization, ventilators, different medical equipment etc.?</p>	12a) Did you carry out this scanning activity with other stakeholders such as Governments, Donors or other NGOs?
Seizing capabilities	<p>14. Did you have any contingency plans for disruptions larger than the ‘normal’ ones in your supply chain, possibly relying on existing resources?</p> <p>15. Did your organisation have sufficient inventory or secondary suppliers in place to ensure the continuous provision of supplies throughout the pandemic?</p>	<p>14a) Did you draw on these contingencies and did the existing resources come through?</p> <p>14b) Were these existing plans or resources useful/adequate in dealing with Covid-instigated disruptions, whether for increased demand or of disrupted suppliers?</p>
Transforming Capabilities	<p>16. How did you change or adapt your operations to respond to the difficulties imposed by COVID-19 (e.g., online delivery of services, flexibility in decision-making, changing schedules)?</p> <p>17. Reflecting upon the changes in the supply chain over the last 9 months or so, have you changed your supply chain design, in terms of suppliers, transportation methods and manufacturing locations in relation to regions served in response to the Covid-19 pandemic?</p> <p>18. What are your key performance measures today and how have these metrics changed as a result of the processes/structures you have put in place to manage Covid 19?</p> <p>19. What is your longer-term strategy for managing extreme conditions such as future pandemics or other major supply or demand disruptions?</p>	<p>16a) Did you have to devise new tasks and identify new resources in response to the difficulties imposed by Covid 19?</p> <p>16b) Has this meant that you have fewer financial and human resources available for other essential medicines and supplies? Or has COVID-19 brought more donations/supplies to your organization?</p>

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	20. Has your organisation acquired any new capabilities from learning from COVID-19, which can be useful in future catastrophic disruption responses?	
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3 **Dynamic Capabilities of Global and Local Humanitarian Organizations with Emergency Response**
4 **and Long-Term Development Missions**
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