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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).

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

3. Methodology

3.1 Research Design

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

3.2 Data Collection

The study uses a multiple case study design, which allows for a comparison between organizations that share similar features (within group comparison) as well as a comparison between organizations with very different features (across group comparison) (Eisenhardt, 2007). Our sampling method was to designate organizations first according to their *geographic* scope– the number of countries/regions where aid is provided (global versus local), and second, by their *thematic* scope or mission–the type of humanitarian relief the organization typically provides (emergency response versus long-term aid). We also collected secondary information from organizational websites and news databases (Factiva,

Reuters, Bloomberg), as well as operational procedures and protocols provided by interviewees, to determine the resource endowments of the sampled organizations.

Geographic scope: Geographic scope refers to a global organization providing aid to multiple countries and regions or a local organization near the epicenter of an event giving aid to victims affected by that crisis. Geographic scope was considered an essential criterion in case selection because it correlates with resource availability and scarcity (Shaheen *et al.,* 2022). *Global organizations* capable of providing aid to multiple disaster sites worldwide have relatively high resource endowments because they are typically funded by national governments or supranational funding sources such as the UN, the World Bank, or the IMF. These donor sources allow global organizations to retain salaried staff, own equipment and IT infrastructure, and hold a substantial inventory of relief materials. By contrast, *local organizations* have limited funding sources, rely on volunteers, and often operate using donated equipment and supplies (Shaheen *et al.*, 2022).

These factors were evident in the twelve organizations we sampled. The eight *global* organizations had national and supranational funding, more than 300 paid employees each, and extensive stocks of relief supplies (food, water, shelter, medicines) and equipment (vehicles, generators) stored in multiple locations worldwide. The four *local* organizations were run by volunteers using relief supplies provided by donations, primarily from the local community. We sampled more global than local organizations because they need a deeper examination due to the complexity of their distributed operations. Some of these organizations gave us access to multiple key informants working in global organizations (Action Against Hunger and Care International), who helped us distinguish operational from dynamic capabilities.

Mission: Thematic scope refers to whether the organization primarily focuses on emergency response, long-term development, or both. Of the eight *global* organizations in our sample, two primarily conducted emergency relief, two mostly provided long-term development aid, and the remaining four did an even mix of both. Two of the four local organizations conducted long-term development, and the other two conducted emergency response activities. Sampling organizations in this manner allowed us to identify similar and different operational and dynamic capabilities in the two-by-two categories: (1) global long-term aid, (2) global emergency response, (3) local long-term aid, and (4) local emergency response.

Key informants and the interview protocol: We followed the key-informant technique to identify potential interviewees at each of the selected organizations. Key informants must have extensive first-hand experience with the research phenomenon under investigation (Tremblay, 1957). Researchers using this method typically only need to gather data from a few interviewees due to the specificity and depth of information that key informants provide (Faifua, 2022). Using a purposive sampling technique (Short *et al.*, 2002), the research team sought key informants with in-depth operational and supply chain knowledge at each of the twelve organizations, based on the individual's job role and time in the position. At the outset, we identified 19 potential key informants with an operational or supply chain-

related job role and at least five years of experience. We asked them our qualifying questions and eliminated four potential informants who did not demonstrate enough knowledge of their organization's supply chain to assist in the study, leaving us with 15 (Table 1).

Insert Table 1 here.

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

Table 2 summarizes the responses regarding successive supply and demand shocks during COVID-19.

Insert Table 2 here.

3.3 Data Analysis

We analyzed the data following the Gioia method (Gioia *et al.*, 2013), including a first-order analysis using informant-centric terms and codes and a second-order analysis using theory-centric concepts, themes, and dimensions. The first researcher conducted the first analysis of the raw data, identifying 96 coding categories and then reducing the codes to 76 due to similarities. Each coding category received a label and descriptor based on the key informants' terminology. The second coder repeated this process to ensure inter-rater reliability (Armstrong *et al.*, 1997), arriving at 102 coding categories on the first pass at the data and 72 after removing redundancies. Finally, all three researchers discussed and iteratively synthesized the coding categories until we reached a consensus on 69 coding categories.

During the second-order coding, the researchers discussed the initial coding template, asking whether the emerging themes suggested concepts from the dynamic capabilities view that might explain the research phenomenon while remaining open to emerging concepts not addressed in the extant literature and dynamic capabilities view. After establishing a workable set of themes and concepts, the team distilled the emergent second-order themes into aggregate dimensions (Gioia *et al.*, 2013) and built an inductive model grounded in the data to theoretically capture the informants' experiences. The 'data structure' of the findings provides a graphical representation of how the data analysis progressed

from raw data to concepts and themes— a vital way to demonstrate rigor in qualitative research (Corley and Gioia, 2011). Figure 1 provides the data structure for *global* organizations providing emergency response and long-term aid. We created a similar data structure for *local* organizations.

Insert Figure 1 here.

4. Findings

Analyzing primary data helped us identify the organizations' operational and dynamic capabilities using the 2×2 categorization of global and local humanitarian organizations with long-term development or emergency response missions. A capability was categorized as *operational* if it enabled an organization to carry out its core relief activities – emergency response or long-term development – in an operating environment with relatively predictable supply and demand. Analysis of the interview data also provided insights into when a capability could be considered *dynamic*. Interviewees explained how their organization required additional and new capabilities to manage the severe disruptions caused to the supply of medicines and materials and to address the surges in demand seen during the first and second waves of COVID-19. These capabilities were categorized as dynamic when deployed to manage highly unpredictable swings in supply and demand, above and beyond what was required to manage the changing daily field operations. We also used secondary data to identify the resource endowments.

For many of the organizations in our study, demand surges and supply disruptions during the first two waves of the pandemic went well beyond disruptions experienced in day-to-day operations, rendering existing operational capabilities insufficient. By exploring their responses, we could examine their dynamic capabilities, described below, in terms of sensing, seizing, and reconfiguring capacities.

4.1 Global Humanitarian Organizations

The global organizations in our sample – with differences between long-term aid and emergency response organizations – had the sensing, seizing, and reconfiguring dynamic capabilities described below, along with the underlying operational capabilities and resource endowments.

4.1.1. Sensing: Implementing end-to-end supply chain surveillance systems (emergency response)

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

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).

Emergency response organizations such as MSF deployed rapid response kits to regional hubs worldwide, including water and sanitation equipment, tarps, rope, and medicines. An interviewee at MSF explained how his organization pre-positioned rapid response kits in Jordan to deliver supplies to disaster zones around the Middle East quickly.

> "It is difficult to forecast all the needs accurately, so we pre-position critical items before natural disasters and humanitarian crises and forecast based on experience. It is not always 100% accurate, but we try our best to pre-position critical materials inventory near the locations we consider strategic. At the end of the pandemic, we learned that it's all about pre-positioning critical material! This is something that we could have done better at the beginning." (MSF)

By pre-positioning rapid response kits, emergency relief organizations did not have to purchase goods on international markets, thereby avoiding the supply shortages, excessive price hikes, and currency fluctuations seen during the initial waves of the pandemic.

4.1.4. Seizing: Capability to transition to local procurement rapidly (*both*)

While the move to regionalized hubs was considered a critical response capability, interviewees also stressed the importance of having the capability to transition to the localized procurement of relief materials quickly. During the first half of 2020, the global organizations in our study highlighted the difficulty in procuring essential materials such as medicines and PPE on global markets. Instead, these organizations found PPE either in-country or from relief projects in neighboring countries. ACF Middle East explained that the main benefits of building a local supplier base were the enhanced speed and responsiveness of their service provision to beneficiaries:

> "Yes, speed and responsiveness are always the main points of emphasis behind local sourcing. By building capacities locally, we want people to be self-sufficient, and we, therefore, try to build up the resilience of the local area where we are. And we also want to be closer to our supplier to control them better. In some countries in the Middle East, you can find the same quality and sufficient items and products locally. It is a well-developed region." (ACF Middle East 1)

Interviewees explained that local procurement had the added benefit of creating jobs and sustaining the livelihood of local businesses, particularly during the pandemic when many people were under lockdown restrictions. An interviewee from MSF explained how local sourcing helped his

organization avoid currency fluctuations and international supply shortages while building the resilience of the local community:

> "We couldn't rely any longer on just one or two suppliers for one item. We had to extend the list of suppliers, and for critical items such as PPE materials, we especially had to build key relationships more locally for these materials. So, we could no longer rely too much on our Procurement Center, and now we aim to build more strategic partnerships locally". (MSF)

An interviewee at Chemonics explained how his organization invested in building a local supplier base of 3rd Party Logistics providers in Nigeria. His organization trained local suppliers on the skills and IT systems to deliver delicate test samples across particularly challenging terrains.

4.1.5. Seizing: Accessing the social capital established with governing bodies (*long-term development*)

The literature discusses the seizing capacity of for-profit organizations to build redundancies to mitigate disruptions and take on new market opportunities (Lomi and Pattison 2006; Sheffi and Rice 2005). Organizations achieve such seizing capacity usually by creating operational flexibility (Upton, 1995; Zhang *et al.*, 2003) or through a coordination capability, where supply chain actors collaborate to ensure a flexible response at short notice (Johnson *et al.*, 2013; Krause *et al.*, 2007; Mascaritolo and Holcomb, 2008). The literature on humanitarian operations expands on the for-profit conceptualizations of coordination to include swift trust between UN agencies, NGOs, and other relief organizations (Dubey *et al.*, 2019; Tatham and Kovács, 2010). However, our findings suggest that some humanitarian organizations (for example, MSF) actively avoid building relationships with governments and UN agencies to maintain their independence and avoid political interference.

Organizations that did not build social capital with governing bodies before the pandemic struggled to deliver aid consistently due to government-imposed lockdowns, restrictions on cross-country movement, and limited access to internally displaced people (IDP) camps. An interviewee at Care International stated that his organization could not get permission to travel across the country, which he attributed to a poor relationship with the national government. An interviewee at Action Against Hunger (ACF) explained that the Israeli government was actively restricting the flow of supplies to beneficiaries in Palestinian-controlled regions. He noted that the national government kept tabs on the movement of supplies to IDP camps and routinely cut off his organization's access to these camps during the pandemic lockdowns in 2020-21:

> "This was horrible. It's because it's so difficult to deal with it. Because it comes from the Israeli government, at the end of the day, everything is highly monitored in Gaza. This

> monitoring leads to a lack of medicine, indeed, a lack of everything. And most of the time, you cannot get past regulations because everything is government controlled." (Action Against Hunger Middle East 3)

Another unnamed organization, outside our sample and in 2023, corroborated the obstructions, saying that the Israelis had blocked tents from going to Gaza because they felt the tent poles could be used as weapons. As such, most global organizations in our study stressed that maintaining good relationships – with national governments, other aid organizations, and sometimes even warring factions – had been critical during the pandemic. Organizations such as the WHO Middle East could travel to areas controlled by different warring groups to provide essential services during the lockdowns, thanks to permission from the local rebel groups. An interviewee from Care International (Middle East) noted how his organization relied on the logistical infrastructure of UN agencies to secure critical medicines during the early stages of the COVID-19 pandemic. Similarly, an interviewee at Chemonics noted that good relationships with government agencies helped to overcome customs delays when moving aid convoys across borders.

4.1.6. Reconfiguring: Culture of beneficiary responsiveness embedded in operational processes (*both*)

Interviewees from global organizations explained that due to the scale and severity of the COVID-19 pandemic, contingency plans were either not in place or insufficient to provide a roadmap for relief activities. Without contingency plans, global organizations would have to reconfigure existing operational capabilities and resources. An interviewee from ACF Middle East explained that their capacity to transform how his organization provides aid consistently was due to a 'culture of responsiveness' built into the way his organization operates:

> "Yes, there is a culture of responsiveness. There is the capacity and experience to develop a plan quickly and rapidly, especially for those in an emergency context. So, aid organizations know how to develop things in an emergency mode. So that's why we don't do contingency plans systematically." (ACF Middle East 1)

The focus of the organization, either emergency response or long-term development, was found to influence how these flexible operational processes were designed and implemented. Long-term development organizations prioritized standard operating procedures, codifying them, and training all staff. Codifying and training ensured that service provision was standardized and routine, allowing these organizations to meet donor and beneficiary expectations consistently. In contrast, global emergency response organizations used guidelines and operational frameworks to steer decision-making. Still, they recognized that processes and procedures needed to change depending on the nature of the crisis.

To address COVID-19-related supply shocks, long-term development organizations activated emergency protocols to reconfigure their procurement processes quickly. These organizations recognized the need for in-country decision-making and lowered the financial threshold for purchasing without headquarters' approval. Care International explained how the pandemic changed procurement policies:

> "We started emergency procedures . . . For example, you have certain thresholds to get approvals, but in an emergency, we have another applicable policy that you can only use with the regional director's approval. So, we applied for it. And we changed our thresholds to increase the speed of the process". (Care International Middle East 2)

An interviewee at WFP Africa explained how triggering emergency protocols allowed her team to send requests for tenders only to suppliers with enough stock to fill orders. In the past, a minimum of four suppliers had to be included in the tending process, even if they did not have sufficient stock. Due to severe shortages in international markets, this selective tendering method to fewer suppliers reduced procurement lead times from weeks to days.

> "During COVID-19, we maintained almost the same process but had flexibility regarding emergencies. We would quickly review the available commodities and suppliers to determine who was actively working in the market. Then, the flexibility would be to invite only those suppliers. So, instead of inviting a list of 300 suppliers, you are given a waiver – on an exceptional level for that emergency purpose – to invite only the three currently available suppliers." (WFP Africa)

4.1.7. Operational capabilities and resource endowments

Underlying the dynamic capabilities are the global organizations' various operational capabilities and resources tied to their mission. Below, we describe the operational capabilities we found, along with the resources they use.

Partial supply chain visibility provided by ERP systems (*both*). The global organizations in our study had IT systems of varying degrees of sophistication in place before the first wave of the pandemic. The WHO, WFP, and ACF had made significant investments in enterprise resource planning (ERP) systems that provided visibility of the movement of staff and supplies to in-country distribution hubs. Other global organizations, such as Médecins Sans Frontières (MSF), used SAP-enabled systems to track stock from global suppliers to their distribution centers located around the globe. With IT infrastructure, these global organizations could manage standard operational deployments of materials and staff to disaster zones. An interviewee at ACF Middle East explained the level of visibility provided by their ERP systems as follows:

> "We have a supply chain ERP system. This system records, monitors, and shows all the steps and possible actions. Nothing can be done without including all the data and the decision process inside the system. So, yes, we have almost all the information there; we do some analysis to increase the visibility of this supply chain. We can see where our staff are, the lead time where they're being dispatched, and what relief items are required." (ACF Middle East 1)

However, interviewees described how their ERP systems only provided visibility into in-country distribution hubs. The systems often needed to account for final-mile delivery to beneficiaries, typically outsourced to a local third-party logistics provider (3PL) or a trucking company needing more technological sophistication to connect to the humanitarian organization's IT system. As a result, global organizations such as Care International often relied on traditional means of maintaining final-mile visibility using low-tech solutions such as periodic status reports via telephone or reports using Excel spreadsheets. An interviewee at UNICEF explained that his organization recognized the importance of end-to-end supply chain visibility, but often, frontline workers did not know how to operate these systems:

> "UNICEF puts much effort into increasing its supply chain visibility. We have created monitoring dashboards to show different stakeholders where the items are in the supply chain, both at the high and operational levels. However, the problem is that the visibility dashboard we created does not fit all items and stakeholders. The second problem is that some frontline officers don't know how to use it. So, we are putting effort into the training on everything to increase the monitoring and the visibility of the supply chain." (UNICEF MENA)

Similarly, global organizations had ERP systems connected to their strategic suppliers, providing real-time visibility of the suppliers' finished goods inventory. However, this connectivity did not extend past the first-tier suppliers. These organizations appreciated the importance of end-to-end supply chain visibility but faced connectivity issues to Tier-2-and-beyond suppliers upstream and last-mile distribution downstream.

Multiple sourcing arrangements and backup supplier agreements (*long-term aid*). Global long-term development organizations stressed the importance of having various supplier relationships, including backup supplier agreements, to manage high-probability, low-severity supply chain disruptions. Donors required organizations to send out numerous requests for tenders for each category of relief item to ensure transparency and a fair price. Long-term development agencies would then buy 70-80% of their requirement from one supplier and 20-30% from a second supplier to ensure they could

switch supply sources during a disruption. A multi-sourcing strategy also put downward pressure on prices as suppliers competed for contracts regularly.

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

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

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

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

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

> "WFP cannot afford not to have food when the beneficiary needs it in an emergency. So, we try to have our own modes of transport. We have our own transport equipment, like specialist trucks, for transporting bulk commodities like grains. We even have our own aviation means like helicopters. We often rent them out to other organizations." (WFP Africa)

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

4.2 Local Humanitarian Organizations

The local organizations in our sample – with differences between long-term aid and emergency response organizations – had the sensing, seizing, and reconfiguring dynamic capabilities described below, along with the underlying operational capabilities and resource endowments.

4.2.1. Sensing: Community knowledge and connections with beneficiaries (*both*)

Despite having only basic IT systems, local humanitarian organizations exhibited the capacity to quickly sense COVID-19-related supply and demand shocks, often faster than their global counterparts. Interviewees explained that this sensing capacity arose from knowledge of the local community and having shared a lived experience with the beneficiaries they serve. An interviewee from Glasswing International explained that this experience was rooted in her adolescent years living in deprivation. This experience motivated her to carry out relief work for her local community and allowed her to make quick connections with beneficiaries. Community knowledge was a critical sensing capacity for her organizations as COVID-19 spread through IDP camps and hospitals, and the demand profile for sanitary items, medicines, and vaccines quickly changed.

4.2.2. Seizing: Authority for increased spending and immediate deployment of aid (*emergency response*)

While global organizations had established procurement protocols with spending limits based on organizational hierarchy, local emergency response organizations had fluid procurement processes and limited bureaucracy within the organization. The local organizations in our sample explained that it would be impossible to plan in anticipation of a disruption of the scale of COVID-19. Instead, organizations like Meals of Happiness and Kieka Cupboard used their flat organizational structures to allow quick decision-making in the field based on the immediate needs of the target beneficiaries.

Instead of contingency planning, these organizations prioritized agility and decentralized decision-making to enable a rapid response to supply and demand disruptions.

> "We had no plan for the pandemic, and we had no set contingency plan. But we are a very agile, flexible organization that adapts well to change. I think this is because we are not big. Also, several of the organization's staff members have worked in emergencies. We didn't overthink or plan too much. When the pandemic hit us, we responded immediately. For example, we instantly switched our attention to secure emergency supplies. Hence, the other supplies like learning goods and mental health kits we often procured were not the priority initially." (Glasswing International).

4.2.3. Seizing: Scalable relief infrastructure (both)

While global organizations had the financial resources to purchase and maintain vehicle fleets, IT infrastructure, and other assets, local organizations did not. Instead, the local organizations in our sample turned to local trucking companies or independent drivers to deliver aid. Local organizations also leased vehicles short-term to manage larger in-country deliveries. IT equipment like radios or mobile phones was loaned from local businesses to support fieldwork. Not owning relief materials and IT equipment minimized overhead costs, while the infrastructure needed to deliver aid could be scaled up quickly based on demand. Scalability was an essential seizing capacity during the pandemic, as new categories of supplies (sanitation equipment, PPE, vaccines) needed to be procured locally and delivered at short notice.

> "We are a locally focused organization, and executing the programs is our main task. If we included everything like having our trucks, execution would become too big and expensive. So, we have a contract with a third party that does the specialized transportation for live samples across regions. These suppliers are locally certified and recommended by USAID and the CDC. They are very flexible and usually could accommodate most of our needs even during the pandemic" (Chemonics).

4.2.4. Reconfiguring: Experiential learning gained by serving local communities (*both*)

Local organizations regularly interacted with communities affected by crises, and over time, they understood their unique requirements. During the pandemic, these needs changed, with priorities for food and shelter quickly supplanted by the need for sanitation and the prevention of disease transmission. Interviewees explained how they learned by failing during the pandemic and, through this experience, gained knowledge of where to find suppliers and which companies to call to handle distribution. When the second wave of the pandemic hit, these local organizations established new procurement partners and final-mile distributors to service the fast-changing needs of affected

communities. Thus, the experiential learning of local organizations acted as a reconfiguring capacity, as they transformed their resources and operational capabilities to more dynamic methods of humanitarian aid delivery.

> "To respond to the crisis, we leveraged everything like our relationships with communities and donors, our knowledge of local suppliers, our credibility in hundreds of communities, and our volunteers. We learned as we went. So, each time there was a new wave, we responded better with creative ways of getting the suppliers we needed and delivering services. For example, all our programs were delivered in person, so transitioning to online delivery was very disruptive the first time. But in the following waves [of the pandemic], the transition was much faster, and we could even mobilize our mental health teams online to expand access to the local communities" (Glasswing International).

4.2.5. Operational capabilities and resource endowments

Underlying the dynamic capabilities are the local organizations' various operational capabilities and resource endowments depending on their mission of long-term development or emergency response. For small and resource-constrained organizations, the resources are the same, regardless of mission: (1) local donations of relief items, (2) donated equipment (e.g., IT), (3) funding from local players, and (4) volunteer staff from the local community. Donors do not tie their funding to specific projects, which is helpful for these organizations to respond to needs flexibly. Regarding operational capabilities, both types of local organizations have flat organizational structures, facilitating good communication and visibility. Long-term aid organizations develop local procurement as part of their strategy, while emergency response organizations develop decentralized decision-making without structured procedures or protocols.

Flat organizational structure and decentralized decision-making. Local emergency response organizations stressed the importance of being able to delegate decision-making to field operators during crises. An interviewee from Meals of Happiness discussed how his organization provided relief materials to flood victims by delegating distribution-related decisions to field operators. At the same time, she concentrated on media inquiries and responding to donors. The flat organizational structure of local organizations facilitated the delegation of decision-making, as did the absence of structured procedures for procuring supplies and delivering aid. As the founder of Meals of Happiness pointed out, when sudden-onset disasters like tsunamis or floods occurred, local organizations like hers were typically first on the scene to provide vital relief materials.

Local procurement. Because financial limits prevented local organizations from sourcing globally, they procured nearly all aid materials from local suppliers. Moreover, these organizations provided basic relief materials such as food and blankets that could be easily purchased locally. An interviewee from Keiki Cupboard noted that their supply chain was relatively simple as it comprised a

handful of local suppliers that provide materials to be delivered by volunteers. The founder of Meals of Happiness pointed out that local sourcing greatly enhanced her organization's procurement capacity and flexibility by simplifying the purchasing process and avoiding hazards of international sourcing, such as customs delays and exchange rate fluctuations.

The long-term development organizations among the local organizations said local procurement is critical for the financial longevity of local businesses, giving jobs to community members who would otherwise struggle to find work. The interviewee from Glasswing International explained that their organization prioritizes purchasing from small businesses owned by women and the youth, as they faced financial difficulties and deserved equitable support within their community:

> "Our procurement teams reach out to suppliers, and we do our best to support smaller, women-owned and youth-run businesses to impact local communities. Yes, value for money is important, but so is sustainability, like social impact and good, equitable business practices. They are just as important to us and sometimes more important than value for money." (Glasswing International)

Resources, including local funding sources and donated items, and volunteer staff. Unlike global organizations, local organizations do not own assets such as vehicles for transportation or other specialized resources for managing daily operations. The financial structure of local organizations is vastly different from global ones, with donations coming from municipal governments, local charities, community groups, local citizens, or the organization's founders. Financing for Meals of Happiness came from a small group of affluent local donors and contributions from local community members. Interviewees said the donations were irregular and often increased or decreased depending on the recency of the disaster and the media attention surrounding it. This inconsistency meant local organizations spent significant time campaigning for donations, often impeding aid delivery. Instead of ERP systems, local organizations used email, spreadsheets, and mobile phones to track supplies. Organizations such as Keiki Cupboard relied entirely on IT equipment donated by volunteers and local community groups.

The local organizations in our sample drew on the experience and skills of a select few, typically the founders, and mainly relied on volunteers deeply connected to the communities to execute most of their daily operations. These volunteers brought invaluable knowledge of the challenges faced in the communities affected by the crisis and an in-depth understanding of community dynamics, including religious and cultural differences. An interviewee at Keiki Cupboard emphasized how utilizing volunteers allowed his organization to allocate a significant portion of the community's donations to purchasing and delivering aid to local families in need:

> "As a small organization, we use volunteers to deliver all supplies and services to local communities. It's a nice small town; we can manage it with volunteers. Volunteers are very important to us; having them [instead of salaried staff] is more efficient and cost-effective to deliver aid". (Keiki Cupboard)

5. Discussion

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

5.1. Theoretical Framing

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

Insert Table 3 here.

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

Insert Figure 2 here.

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

Insert Figure 3 here.

5.2. Theoretical Implications and Further Research

Recall that this study was motivated to narrow a three-fold research gap in the humanitarian supply chain literature: (1) Existing studies shed some light on the antecedents of sensing, seizing, and reconfiguring capacities, but in isolation from each other; (2) existing humanitarian operations studies have yet to distinguish operational capabilities from dynamic ones; and (3) there is no distinction between the dynamic capabilities of different types of humanitarian organizations. Accordingly, our work has implications for the humanitarian supply chain literature and the dynamic capabilities view.

Our study provides empirical evidence with theoretical implications for how humanitarian organizations develop all three capacities – sensing, seizing, and reconfiguring – using the resources

and operational capabilities they have developed over time, consistent with their geographic scope (local or global) or mission (emergency response or long-term aid). In our study, the organizations' environment is marked by risk as foreseeable fluctuations in supply and demand against which they develop operational capabilities. However, when unforeseen disasters strike, over and above the daily risks they face, these organizations build sensing, seizing, and reconfiguring capacities using their resources and operational capabilities. Thus, humanitarian organizations seek to fulfill their goals of providing humanitarian relief, depending on the nature of the organization in terms of scope and mission. Thus, our work narrows all three gaps.

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

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

Another implication is understanding the essential – and potentially narrow – difference between profit-seeking and humanitarian organizations regarding dynamic capabilities. Instead of

profit-seeking organizations developing dynamic capabilities to seek competitive advantage in turbulent environments (Eisenhardt and Martin, 2000), our work shows that humanitarian organizations do so to seek the continuity of supply to beneficiaries during compounding crises. The resources and operational capabilities may be identical in both commercial and humanitarian organizations. For instance, flexible decision-making structures and localized procurement can help maintain supply, benefiting from local knowledge, regardless of whether the organization seeks profits or humanitarian relief. Yet, the *raison d'être* for commercial organizations differs fundamentally from humanitarian ones.

5.3. Managerial Implications

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

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

To conclude, our study offers a framework showing the dynamic capabilities of different types of humanitarian organizations and how these build on the different resources and operational capabilities of the different types of such organizations. Our findings show how the geographic (global versus local) and the thematic scope of humanitarian operations (emergency response versus long-term development) lead to distinct combinations of operational and dynamic capabilities. Future studies can provide field practitioners and their organizations with more comprehensive frameworks to prepare for future disasters and disruptions by better understanding the mechanisms by which humanitarian organizations develop and deploy dynamic capabilities.

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Figure 1

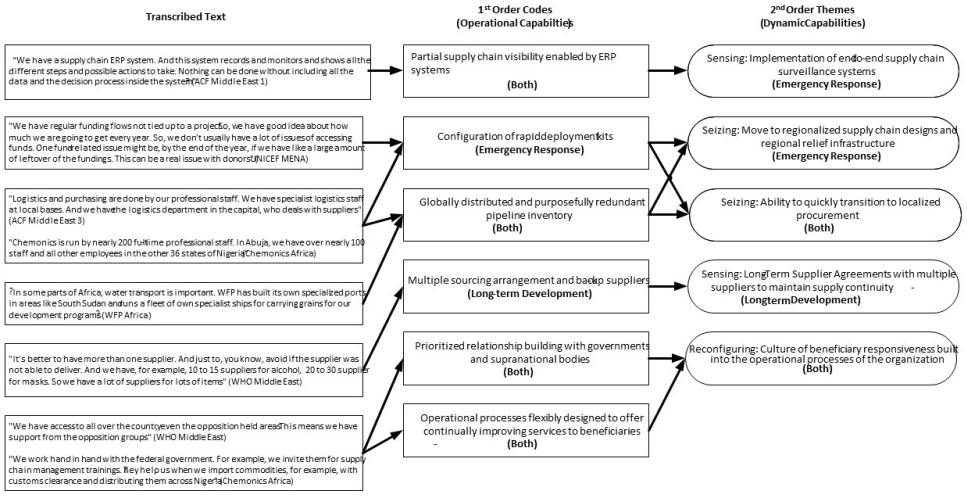

Figure 1

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Figure 2

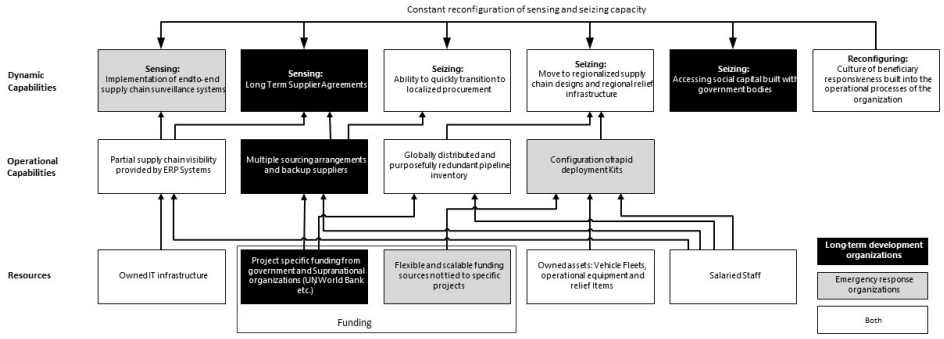

Figure 2

338x190mm (96 x 96 DPI)

Figure 3

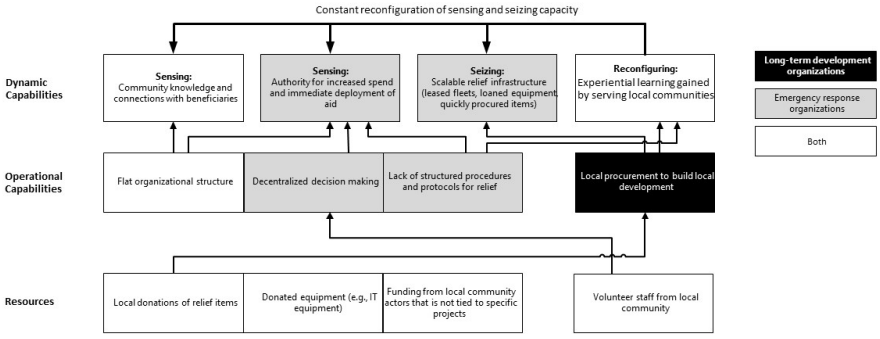

Figure 3

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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.

Organization	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 Match 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 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

<table>
<tr><th></th><th>Long-term development organizations</th><th>Emergency response organizations</th></tr>
<tr><td rowspan="2">Global organizations</td><td>- Long-term supplier agreements
- Accessing social capital built with government bodies
- Multi-sourcing arrangements and backup suppliers</td><td>- End-to-end supply chain visibility
- Configuration of rapid deployments kits</td></tr>
<tr><td colspan="2">- 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</td></tr>
<tr><td rowspan="2">Local organizations</td><td>- Local procurement for local development</td><td>- Authority for increased spend and immediate deployment of aid
- Decentralized decision-making
- Lack of structured procedures and protocols for relief</td></tr>
<tr><td colspan="2">- Community knowledge and connections with beneficiaries
- Scalable relief infrastructure
- Experiential learning gained for serving the local community
- Flat organizational structure</td></tr>
</table>

Appendix 1: Case Interview Protocol

Theme	Structured Question	Follow-up/Probing Questions
Personal Profile	1. Please provide a brief background about yourself. 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. 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	10. Prior to the emergence of COVID-19, what was the situation as regards supply and demand mismatch? 11. How was the situation of supply and demand mismatch affected by Covid-19?	10a) How did the organization deliver aid (materials or cash?) under these conditions?
Sensing Capabilities	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? 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.?	12a) Did you carry out this scanning activity with other stakeholders such as Governments, Donors or other NGOs?
Seizing capabilities	14. Did you have any contingency plans for disruptions larger than the 'normal' ones in your supply chain, possibly relying on existing resources? 15. Did your organisation have sufficient inventory or secondary suppliers in place to ensure the continuous provision of supplies throughout the pandemic?	14a) Did you draw on these contingencies and did the existing resources come through? 14b) Were these existing plans or resources useful/adequate in dealing with Covid-instigated disruptions, whether for increased demand or of disrupted suppliers?
Transforming Capabilities	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)? 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? 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? 19. What is your longer-term strategy for managing extreme conditions such as future pandemics or other major supply or demand disruptions?	16a) Did you have to devise new tasks and identify new resources in response to the difficulties imposed by Covid 19? 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?

	20. Has your organisation acquired any new capabilities from learning from COVID-19, which can be useful in future catastrophic disruption responses?	

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

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