Humanitarian response by grassroots associations during a military conflict

Renata Konrad
The Business School, Worcester Polytechnic Institute, Worcester, Massachusetts, USA
Solomiya Sorokotyaha
Faculty of Applied Sciences, Ukrainian Catholic University, L'viv, Ukraine, and
Daniel Walker
The Business School, Worcester Polytechnic Institute, Worcester, Massachusetts, USA

Abstract
Purpose – Conflict and violence are the main drivers of globally escalating humanitarian needs. Local grassroots initiatives are pivotal in distributing humanitarian supplies in the acute response phase until more established humanitarian aid organizations can enter. Nevertheless, scant research exists regarding the role of grassroots associations in providing humanitarian assistance during a military conflict. The purpose of this paper is to understand the role of grassroots associations and identify important themes for effective operations.

Design/methodology/approach – This paper adopts a case-study approach of three Ukrainian grassroots associations that began operating in the immediate days of the full-scale invasion of Ukraine. The findings are based on analyzing primary sources, including interviews with Ukrainian volunteers, and are supported by secondary sources.

Findings – Grassroots associations have local contacts and a contextual understanding of population needs and can respond more rapidly and effectively than large intergovernmental agencies. Four critical themes regarding the operations of grassroots associations emerged: information management, inventory management, coordination and performance measurement. Grassroots humanitarian response operations during conflict are challenged by personal security risks, the unpredictability of unsolicited supplies, emerging volunteer roles, dynamic transportation routes and shifting demands.

Originality/value – Grassroots responses are central to humanitarian responses during the acute phase of a military conflict. By examining the operations of grassroots associations in the early months of the 2022 war in Ukraine, the authors provide a unique perspective on humanitarian logistics. Nonetheless, more inclusive models of humanitarian responses are needed to harness the capacities and resilience of grassroots operations in practice.

Keywords Humanitarian logistics, Civil-military cooperation, Emergency logistics

Paper type Research paper

1. Introduction

The consequences of military conflict are abysmal and enduring: taking lives, destroying local economies and devastating infrastructure. Worldwide, an estimated 27 conflicts are ongoing (CPA, 2023). The Global Conflict Tracker categorizes them into three groups: “worsening,” “unchanging” and “improving.” However, no single conflict is currently described as “improving” (CPA, 2023). Conflict and violence affect millions worldwide by disrupting access to essential services like food and water, health care and shelter, often most acutely impacting vulnerable populations such as children and the elderly.

Conflict and violence are the main drivers behind globally escalating humanitarian needs (Wagner and Jamiew, 2020). Conflict-generated demand for humanitarian aid is rising (Hostetter, 2019). Often, populations rely on humanitarian aid for basic survival, while the efficient distribution and delivery of aid are critical. Therefore, myriad intergovernmental organizations (e.g. the UN and the WHO), nongovernmental organizations (NGOs), government agencies, grassroots associations and compassionate individuals strive to meet the humanitarian needs of those vulnerable to conflict. These organizations offer critical support at different points during a conflict.

For example, the extremely rapid unfolding of the conflict in Ukraine in late February 2022 meant that large, established...
humanitarian aid organizations were unprepared for the scale and scope of the humanitarian disaster, so most could not enter the country or region (ACAPS, 2022a, 2022b; OCHA, 2022; Stoddard et al., 2022). Grassroots movements comprised of local volunteers rapidly mobilized to fill the critical gap of providing humanitarian and medical aid to millions affected by the conflict (Cullen Dunn and Kaliszewska, 2023; Parker, 2022; Stoddard et al., 2022). In the late winter/early spring of 2022, there was a heavy reliance on first-time relief responders, individuals, volunteers and self-mobilized civic groups: grassroots movements to aid delivery rather than centralized governments or international NGOs (ACAPS, 2022a). One report by UK-based Humanitarian Hub found that for the first six weeks postinvasion, virtually all humanitarian aid inside Ukraine was organized and implemented by local actors, including an estimated 1,700 newly formed local aid groups, with 150 preexisting national NGOs and church groups (Government of Ukraine, 2022; Stoddard et al., 2022). These local aid groups, here called “grassroots associations,” developed organically to fill the gaps established international aid organizations acknowledged were present because of a lack of preparedness and contingency planning (ACAPS, 2022a; Stoddard et al., 2022). Hence, what could have been an even worse humanitarian catastrophe was averted by hundreds of thousands of grassroots volunteers in Ukraine.

Briefly, grassroots associations are local volunteer groups (Smith, 2000; Sutherland et al., 2014; Uphoff, 1993). “Grassroots” refers to the basic local building blocks of society (Uphoff, 1993): small communities or neighborhoods where the “common man” lives (Batiwala, 2002). McCambridge (2008) extended this definition by highlighting that grassroots associations not only reflect “the voices of those people most affected by the issue being addressed but are responsive to and largely led by these constituencies.” Such initiatives have also been labeled as “citizen aid” (Fechter and Schwittay, 2019), “grassroots humanitarians” (Sandri, 2018) and “everyday humanitarians” (Schwittay, 2014). Importantly, grassroots associations are mission-driven and represent their local constituents’ core values and interests (Cole and Foster, 2001). By definition, grassroots movements are emerging associations that organizationally, structurally and culturally differ from established NGOs and government organizations (Chowdhury et al., 2021; Smith, 2000).

Compared to NGOs, grassroots associations are more locally grounded and embedded and have a different lifecycle (Chowdhury et al., 2021). Grassroots associations tend to have a more informal organization (i.e. less bureaucracy), more internal democracy, substantial socio-demographic homogeneity and fewer economic resources other than the imputed value of volunteer time and commitment (Chowdhury et al., 2021; Smith, 2000). Moreover, grassroots associations generally elect top leaders (compared to appointment by a board of directors) who are volunteers (vs paid staff) and show more charisma and more consideration for participants while offering lower supervision and looser priority-setting than NGOs (Smith, 2000). Grassroots associations have shown to be lynchpins for humanitarian delivery, particularly in the early phases of a disaster when extensive, systemic solutions are not in place. For example, in the full-scale invasion of Ukraine (Stoddard et al., 2022) and the subsequent refugee crisis in Poland, the aftermath of the Kermanshah earthquake (Hosseini et al., 2023) and refugees in Lesvos (Haaland and Wallevik, 2019; Kitching et al., 2016).

As noted in the humanitarian response literature, successful early response relies on the proximity to involved actors (Crisis Group, 2016; Rohwerder, 2017). However, given the nature and complexity of operating in conflict-affected areas, it is considerably challenging, if not impossible, for many humanitarian actors to deliver timely aid, particularly in high-security zones restricted by the government or hostile factions that impose security and logistical constraints on international NGO operations (Elkahlout and Eligibali, 2020; Stoddard et al., 2022). Therefore, local grassroots initiatives are pivotal in distributing humanitarian supplies during acute response phases until more established humanitarian aid organizations can enter (Fechter and Schwittay, 2019; Kitching et al., 2016; Sheppard et al., 2013).

In the literature, such grassroots responses are an understudied, underused modality (Kuipers et al., 2019; Sheppard et al., 2013). Nonetheless, locals are almost invariably the first responders at the center of relief operations (Elkahlout and Eligibali, 2020). Emerging evidence has lauded the advantages of local, ad hoc, grassroots movements providing rapid, cost-effective and efficient responses (Bennett et al., 2016; Cullen Dunn and Kaliszewska, 2023; Donini and Maxwell, 2013), better alignment with local needs (Kuipers et al., 2019), frontline experience and knowledge locally (Norton and Gibson, 2019) and resiliency (Cullen Dunn and Kaliszewska, 2023). Nevertheless, informal, nonaffiliated humanitarian operations that are well-intended can lead to issues in the delivery of humanitarian aid, such as inappropriate last-mile distribution and wasted resources (Hosseini et al., 2023), volunteer burnout, low financial resources and inexperience in fundraising (Stoddard et al., 2022).

Cullen Dunn and Kaliszewska (2023) argued that the “rise of self-organized, noninstitutionalized volunteer aid at a massive scale signals a change in the nature of humanitarian action itself.” They defined such a phenomenon as “distributed humanitarianism.” The authors argued that distributed humanitarianism (what we refer to as grassroots) is faster, more cost-efficient and more resilient than large-scale institutionalized aid in the immediate aftermath of a disaster, particularly when volunteers have a fellow feeling for beneficiaries, as was seen by Polish citizens helping millions of refugees escaping from the area in neighboring Ukraine (Cullen Dunn and Kaliszewska, 2023) and after the Kermanshah earthquake in Iran (Hosseini et al., 2023).

Despite the critical role of local grassroots movements, scant research exists regarding their operations and their role in humanitarian relief, especially during the acute phases of a conflict. Although humanitarian relief operations are well-established and have been studied in the context of natural disasters, research on conflict-induced situations is much scarcer. Furthermore, existing studies’ responses have tended to focus on theories and models of humanitarian operations by established organizations such as governments and NGOs (Abidi et al., 2014).

Hence, the main objective of this study is to explore grassroots humanitarian response during a full-scale, unprovoked invasion. The purpose is to draw lessons for
logistics management in humanitarian disasters using the Ukrainian grassroots response within the country during the onset of a full-scale conflict. With an appreciation of the wide variety of humanitarian actors involved in conflict-generated relief efforts, a gap remains in understanding the operations of grassroots movements and their effectiveness in delivering aid until more established organizations can enter a region. To help close this gap, we present a case study of local volunteer grassroots associations operating in the early phases of a full-scale invasion of Ukraine. We pose two questions which investigate how and why grassroots associations play an indispensable role in humanitarian relief during the early phases of a full-scale military invasion and how an understanding of the important operational elements of volunteer grassroots associations can facilitate the effective deployment of humanitarian relief in future disasters.

Thus, this study critically analyzes the scenario involved in delivering aid during the initial two months of a full-scale invasion of Ukraine to answer these questions and provide theoretical implications. The remainder of this paper is structured as follows. First, humanitarian relief in conflict situations is discussed, highlighting the importance of a locally driven response and the role of volunteers. Next is this study’s methodology, followed by an overview of grassroots association operations in Ukraine during the first two months of an unprompted, full-scale invasion. Subsequently, the study identifies four important themes emerging from our case study and discusses the implications. The final part concludes the paper.

2. Literature review
This section discusses the relevant background regarding humanitarian relief operations in a conflict. It addresses the increasingly recognized importance of local response in disaster relief, including volunteers. Finally, it positions this study in the general humanitarian operations response literature, including a discussion of operational challenges facing humanitarian responders.

2.1 Humanitarian relief during conflict
Research regarding humanitarian relief operations has overwhelmingly focused on responses to natural disasters (Pedraza-Martinez and Van Wassenhove, 2016), although 80% of humanitarian funding goes to conflict-driven disasters (Girling and Urguhart, 2021). Only a small fraction of humanitarian logistics research has explicitly addressed human-made disasters and conflicts (Chiappetta Jabbour et al., 2019; Kunz and Reiner, 2012). Research regarding humanitarian response during the acute phase of a military conflict has been largely lacking for apparent reasons. Due to safety issues, collecting quantitative or qualitative data during a military conflict is rare. Moreover, it is challenging to obtain contextual information since responders are in the process of saving lives, not collecting data.

A growing body of literature regarding humanitarian operations in conflict zones has presented several case studies on the immediate need for local humanitarian interventions (Aburas et al., 2018; Duclos et al., 2019; Kuipers et al., 2019). These case studies reflect local actors’ roles in providing humanitarian assistance (mostly medical services), as the risk to international organizations is high during conflicts. Specifically, a small branch of literature has examined remotely managed humanitarian operations that aim to continue service provision when the risk to international organizations working in conflict zones is too high (Chaudhri et al., 2019; Elkahlout and Elgibali, 2020; Stoddard et al., 2009).

Not only do international humanitarian organizations face risks in conflict, but supply chain costs under such conditions are higher than natural disasters. In their expenditure analysis of different types of humanitarian emergencies, Stumpf et al. (2022) found that conflicts come with the highest share of supply chain expenses (80%), which the researchers attributed to high security and access restriction costs. These researchers noted that one way to address the particularly high supply chain costs in conflicts is the use of local organizations with a better understanding of the local context and stronger relationships with authorities and communities, a view shared by others (Matopoulos et al., 2014; Sheppard et al., 2013; Tanner and Moro, 2016). For example, in their review of the humanitarian system response in a conflict-driven emergency, Tanner and Moro (2016) concluded that local organizations contribute to the effectiveness of the humanitarian response in a conflict through ad hoc timely action, communication and accountability to local communities.

2.2 Locally led humanitarian response
Although local, national and international humanitarian actors struggle to respond to conflict, each critically contributes to disaster response (Tanner and Moro, 2016). However, the capacity of local actors is often poorly understood and underestimated by international organizations (Matopoulos et al., 2014; Sheppard et al., 2013; Tanner and Moro, 2016). Locally led response in the humanitarian system, or “localization,” has emerged as a practical response and an academic field (Elkahlout and Elgibali, 2020; Pincock et al., 2021; Wilkinson et al., 2022). However, evaluations of the challenges and capabilities of localization have been driven primarily by communities of practice rather than empirically grounded, theoretically informed research (Elkahlout and Elgibali, 2020).

A small number of studies have investigated the realities of localization in practice, particularly in conflict-affected settings of humanitarian response (Pincock et al., 2021), despite difficulties in access, security risks and the impact of conflict on local data collection and information systems (Elkahlout and Elgibali, 2020). A growing research agenda on localization in conflict settings has emerged, so empirical studies have examined a range of issues, such as negotiating humanitarian access with armed groups in Eastern DRC (James, 2022), knowledge production by local NGOs in the Central African Republic (Piquard, 2022) and disaster management in conflict-affected contexts, such as the humanitarian response to a mudslide in Colombia (Kuipers et al., 2019). Nevertheless, scant research exists at the intersection of localization and aid distribution in the acute phase of a conflict. Hence, our study investigates how local grassroots associations respond to the need to distribute humanitarian aid during an unprovoked invasion.
2.3 Role of volunteers
A discussion of grassroots efforts would be incomplete without examining the concept of volunteerism in humanitarian response. A vital distinction must be made between localization (as discussed previously) and volunteerism. Localization implies that response efforts are locally driven, where actors could be employed or part of an established, local organization, such as the National Red Crescent Society or an NGO (Piquard, 2022). In comparison, volunteerism in disaster response is when individuals assist (or drive) humanitarian response without reimbursement (Smith, 1981). Using these definitions, we refer to a grassroots response as both a localized and volunteer-driven response.

In the wake of a disaster, volunteers often support humanitarian organizations. Some volunteers are affiliated with established humanitarian organizations, such as the International Federation of Red Cross and Red Crescent Societies. Other volunteers are primarily spontaneous, unaffiliated actions of citizens (Fothergill and Lowe, 2003). For example, in the aftermath of 9/11, over 15,000 people gathered at Ground Zero offering their services (Fothergill and Lowe, 2003). Thus, the roles of volunteerism and volunteer management have been discussed in disaster and emergency management (for an overview, see Alexander, 2010; Whittaker et al., 2015).

Furthermore, the literature has recognized that the effective use of these additional volunteer capabilities in responding to disasters is invaluable and must not be neglected. Therefore, some researchers have examined volunteer scheduling, formulated as a bi-objective optimization model that seeks to minimize the number of unmet task demands and the number of volunteer assignments to undesired tasks or time slots (Falasca et al., 2009; Falasca and Zobel, 2012). Another approach by Aman et al. (2012) used a goal programming model to schedule volunteers responding to a volcano to minimize deviations from task demands and each volunteer’s desired number of shifts (Aman et al., 2012). Moreover, integer linear programming (ILP) has been used to coordinate volunteer teams and minimize travel costs (Liu and Wang, 2013). For instance, Pierorz and Lampert (2015) used ILP to optimally assign 36,000 volunteers for Team Österreich to selected locations (Pierorz and Lampert, 2015).

Research regarding spontaneous volunteerism scheduling (i.e. unaffiliated volunteers) has been limited. A handbook of studies have examined this phenomenon. For example, Rauchecker and Schryen (2018) developed an empirically-validated scheduling optimization model to coordinate spontaneous volunteers in disaster relief. Moreover, Mayorga et al. (2017) presented a queuing system to model the uncertain arrivals and departures of spontaneous volunteers using four heuristics to assign volunteers to queues.

2.4 Humanitarian operations
The field of humanitarian operations, logistics and supply chain has received much attention across several disciplines, including operations research (OR) and operations management (OM). Several OR and OM literature surveys have identified gaps and future research directions (Altay and Green, 2006; Altay and Narayanan, 2020; Banomyong et al., 2019; Chiappetta Jabbour et al., 2019; Galindo and Batta, 2013; Hoyos et al., 2015). Most of these reviews identified that the extant literature has focused on (1) natural disasters, (2) theories and models instead of empirical studies and applications and (3) the mitigation or preparedness phases of the four-phase disaster life cycle (Coppola, 2006).

Pérez-Rodriguez and Holguín-Veras (2016) distinguished between regular- and posthumanitarian disaster logistics, noting that postdisaster is profoundly different because of emergent behaviors such as material convergence (Holguín-Veras et al., 2014) and extreme human suffering (Holguín-Veras et al., 2012). The authors noted that most analytical formulations in posthumanitarian logistics have extended models originally developed for commercial logistics to minimize logistical costs or a similar objective function (Pérez-Rodriguez and Holguín-Veras, 2016). However, following a disaster in the response phase (Coppola, 2006) or during a disaster (in our case), minimizing logistical costs is rarely the most crucial consideration, as emerging needs cannot be met. Therefore, ongoing and postdisaster operations aim to deliver scarce resources to maximize aid effectiveness (Pérez-Rodriguez and Holguín-Veras, 2016). Of the studies focusing on postdisaster relief, only a handful have described and analyzed real-life posthumanitarian disaster logistics (Benini et al., 2009; Holguín-Veras et al., 2007, 2012, 2014). Furthermore, many practical and conceptual barriers exist in studying humanitarian response during a military conflict, including the chaotic human dimensions of conflict, the imprecision of conflict prediction (Galindo and Batta, 2013) and structural challenges in the global humanitarian aid system (Hostetter, 2019).

2.5 Challenges for humanitarian logistics analysis
The field of humanitarian logistics has undoubtedly advanced over the past decades. Nevertheless, researchers have highlighted operational challenges, some of which are presented here. For example, collecting data for use in operations remains a challenge. As discussed by Anjomshoae et al. (2022), Kaewkitipong et al. (2016) and Kunz (2019), the highly fluid and fast-moving context of humanitarian operations rarely provides the luxury of collecting complete and reliable quantitative information. Not only does the dynamic nature of disaster response complicate data collection, the context of a disaster, compounded by poor data, challenges conventional inventory management methods. Researchers have identified that nonsituational exogenous factors are characteristic of the humanitarian relief environment (van der Laan et al., 2016), such as uncertainty about the size, timing and location of demand for aid (Beamon, 2004).

Moreover, coordination and communication are fundamental to the response. For instance, Dwivedi et al. (2018) identified how the lack of communication among humanitarian actors in disaster-relief operations hindered effective and efficient coordination. In addition, performance measurement is an integral component of decision-making for disaster-relief operations’ effectiveness, efficiency and transparency (D’Haene et al., 2015), with an established stream of literature. However, surveys of metrics for humanitarian logistics have concluded that the literature has focused on theories and models with limited application to humanitarian supply chains (Abidi et al., 2014). A more recent
review (Anjomshoae et al., 2022) established that the growing body of performance measurement of humanitarian supply chain literature still has limited empirical evidence and that most existing research studies have largely focused on simulation and predictive studies.

2.6 Summary
Our review of the existing literature on humanitarian logistics concurred with several researchers concerning a lack of academic understanding of real humanitarian operations by grassroots associations, particularly during a conflict (Cullen Dunn and Kaliszewska, 2023; Elkahlout and Elgibali, 2020; Kitching et al., 2016; Sheppard et al., 2013; Stumpf et al., 2022; Tanner and Moro, 2016; Wilkinson et al., 2022). In the field, empirical evidence has acknowledged the value of local expertise, particularly in high-risk settings such as conflict (Elkahlout and Elgibali, 2020; Tanner and Moro, 2016). Hence, local volunteer efforts play a significant role in humanitarian relief, particularly in the acute phases of a disaster, challenging the applicability of prescriptive, planning-based optimization models.

A handful of studies considering volunteers have viewed them as a resource to provide additional surge capacity required in (often natural) disaster response. Therefore, some researchers have advocated that the role of volunteers in disaster response must be evaluated since these people have been unjustly portrayed as “informal” resources, with their efforts often undervalued (Whitaker et al., 2015). Moreover, the growing and detailed body of academic work on humanitarian relief operations has primarily adopted a perspective of the cost-saving logic of anticipatory action. However, as Pedraza Martinez et al. (2011) identified, although theoretical optimization models are valuable, it is first necessary to examine the conditions under which operations happen for them to be implemented in humanitarian operations.

Hence, the following sections empirically study local volunteer grassroots operations during a conflict, considering an often-overlooked aspect of relief efforts: the role of grassroots volunteer associations in relief operations. This aspect has been understudied despite the rising needs of millions affected by conflict. While not proposing a prescriptive, planning-based model, this study can inform scholarship on two phases of humanitarian relief operations – response and recovery – which have received less attention than the mitigation and preparedness phases. Moreover, this study can provide information on an understudied yet critical form of humanitarian response: local volunteers who self-organize in a grassroots fashion.

3. Methods
A case-study approach was used based on the research question to provide compelling evidence in humanitarian supply chain research (Banomyong and Sopadang, 2010; Pedraza Martinez et al., 2011; Piotrowicz, 2018; Salam and Khan, 2020). This approach was useful for investigating relationship mechanisms (Yin, 2013) and developing new theoretical propositions and theory testing (Voss, 2002). Two recent reviews asserted that qualitative case studies have been well-established in the humanitarian logistics and supply chain management literature (Chiappetta Jabbour et al., 2019; Vega, 2018). Gray (2013) explained that single-case studies are useful for observing a unique example, while Yin (2013) maintained that single-case studies can confirm, challenge and extend existing theories.

Therefore, we followed the framework Vega (2018) proposed for case-study research in humanitarian logistics. We refer the reader to Vega (2018) for details. However, the framework briefly consists of four “check questions” that we followed to design the case study:

- the why – the purpose of the study;
- the what – when, where and disaster type;
- the how practically – techniques for data collection and analysis; and
- the how conceptually – how existing frameworks contribute.

3.1 The why
The purpose of the case study was twofold. First, we illustrated and understood local volunteer grassroots associations’ role in humanitarian response to address our first research question. Then, to address our second research question, we identified important operational aspects for effective humanitarian logistics in the grassroots context to facilitate the effective deployment of relief in future disasters.

3.2 The what
This study focused on humanitarian relief operations by grassroots associations during the initial phases of a full-scale invasion. It specifically focused on early local volunteer grassroots response to the rapid onset of humanitarian demand during a swiftly escalating disaster between late February and mid-May 2022 in Ukraine. Three associations were studied (details in Section 4), spontaneously self-organized by local volunteers.

3.3 The how practically
Data were predominantly collected through semi-structured and informal interviews from three grassroots associations operating in Ukraine between late February to mid-May 2022. Because of the exploratory nature of this research, we collected qualitative open-ended data for interpretation (Edmondson and Mcmanus, 2007) and used open-ended questions that we anticipated would reveal unexpected relationships and qualitative information (Eisenhardt, 1989). Given the exploratory nature of our research, we used the data collected to examine emerging patterns to inductively answer our research questions (Eisenhardt, 1989; Eisenhardt and Graebner, 2007), giving prominence to the common themes expressed by study participants (Eisenhardt and Graebner, 2007). These common themes were then compared to those in the literature to realize opportunities and challenges for humanitarian operations in conflict zones.

We also used a strategy of working as participant-observers (Cornwall and Jewkes, 1995; Gaillard and Peak, 2019; Jørgensen, 1989). Working with several grassroots associations, one researcher helped source, sort and package donations in the USA, while the other helped sort and package donations in Western Ukraine. The participant-observer method permitted us much more accurate insights into situations than would otherwise be possible (Vinten, 1994), particularly in situations
where personal security is at risk and trust is essential, as later discussed.

In March 2022, we preliminarily interviewed individual volunteers via telephone or onsite for approximately one hour to overview the association’s organization, inventory, demand management practices, data collection processes and operations. Then, through snowball sampling (Goodman, 1961), interviews were conducted with volunteers who self-identified as logistics coordinators and inventory managers. The data collection concerned information management, distribution methods, demand forecasting, inventory management methods and processes, the supply chain, information sharing and performance measurement systems. We chose a semi-structured interview format as it was “flexible, accessible, intelligible and capable of disclosing important and often hidden facets of human and organizational behavior” (Qu and Dumay, 2011). Furthermore, it enabled our interviewees to respond on their terms, providing an effective and convenient way to gather information for an exploratory descriptive study. Interviews were conducted in Ukrainian.

Because of the threat to personal safety and security (e.g. data being made public to the aggressor), some interviewees were reluctant to share information, including their contact details. As a result, the data’s quantity and quality varied. Face-to-face onsite interviews with some volunteers allowed us to gather qualitative supplementary information regarding organizational processes, culture and structures. Moreover, direct observation, access to internal data (when possible) and participatory research (Cornwall and Jewkes, 1995) were used as supplementary information sources, ensuring data triangulation. Finally, the analysis consisted of data reduction (Miles and Huberman, 1994) and cross-case comparisons to identify the associations’ main differences and common behaviors (Yin, 2013).

In parallel, we reviewed the literature on grassroots associations and ad hoc volunteer movement operations used in the humanitarian context to respond to conflict-induced disasters. This review identified operational-related issues via scholarly journals focused on the topic. Our study represents one of the few attempts to analyze the operations of humanitarian assistance delivered in Ukraine since there is scarce research focused on grassroots organizations and their role in humanitarian support, particularly during a conflict. As a result, there is minimal coverage in peer-reviewed literature, so additional updates, reports, news and press releases were reviewed.

3.4 The how conceptually

Vega (2018) suggested discussing humanitarian logistic case studies related to frameworks or theories. Thus, we followed Kovacs and Spens (2011), who asserted that logistical concepts are appropriate to apply for case studies in humanitarian research. Moreover, they constitute a conceptual basis for selecting interview questions and the structure definition for analysis.

4. Case summary: grassroots humanitarian response during the full-scale invasion of Ukraine

4.1 The Ukrainian context

Indeed, conflict has fueled numerous humanitarian crises throughout history. However, Ukraine possesses a robust and proactive host government and a well-established civil society (Burlyuk et al., 2018; Stoddart et al., 2022). Furthermore, the country benefits from a substantial and mature social protection system (Channell-Justice, 2022; Stoddart et al., 2022).

In 2014, Russia annexed Crimea and backed separatists in the Donbas region of Eastern Ukraine. Since then, the Ukrainian Armed Forces and the separatist forces have fought along a contact line separating government-controlled from nongovernment-controlled areas in the Donetsk and Luhansk oblasts (ACAPS, 2022b). However, the conflict in Ukraine dramatically escalated on February 24, 2022, when the Russian military entered the country. At the time of writing, in the spring of 2022, substantial fighting occurred nationwide, particularly in the east and south, which resulted in heavy civilian casualties and significant damage to infrastructure and buildings, especially in Mariupol, Kherson and Chernihiv (OCHA, 2022; UNHCR, 2022).

At the time of writing, an estimated 8 million people were displaced within Ukraine, which was expected to rise (International Organization for Migration, 2022). Alarmingly, millions were stranded in affected areas. The movement of civilians was limited because of shelling and mines, hindering access to essential goods and services and leading to water and electricity cuts (FAO, 2022). Humanitarian corridors were often temporary and subject to change (PressTV, 2022). People needing humanitarian assistance increased from 2.9 million before the February 24th escalation to 15.7 million after the escalation, with numbers expected to continue increasing because of ongoing hostilities (ACAPS, 2022b). Hence, approximately 24 million people are estimated to have been affected by the conflict (ACAPS, 2022b). More than 8 million refugees from Ukraine (an estimated 90% are women and children) are now in neighboring countries (e.g. Poland, Hungary, Romania and Slovakia) or have traveled further to other countries (UNHCR, 2022).

Since February 2022, multiple reports have documented the ability of Ukrainian grassroots movements (i.e. local communities and the diaspora) to provide humanitarian aid in Ukraine (DEMAC, 2022; Mak et al., 2022; McMahon, 2022), with most volunteers having no previous experience in humanitarian delivery. Such assistance has been widespread, reaching areas inaccessible to the rest of the humanitarian community. This ability has put local aid groups and volunteers at the center of the response.

Volunteer grass movements delivering assistance (e.g. medicines and food) are usually small in capacity and transport aid via private cars and buses (ACAPS, 2022a). In many cases, local volunteers and faith-based organizations have established trust and are in close contact with the community and municipal administrations, equipping them to better understand the populations’ needs (ACAPS, 2022a). Post 2013 civic initiatives aiming to protect Ukraine’s territorial integrity have enjoyed high public trust throughout the country (Oleinik, 2018). When Russia invaded the Donbas region in 2014, an estimated 23% of the Ukrainian population was engaged in volunteer aid (Burlyuk et al., 2018; Channell-Justice, 2022; Uehling, 2023). Volunteer action by Ukrainians has been viewed as a form of resistance to Russian attack and domination (Slim, 2022). Thus, many Ukrainians view their
volunteerism and contributions to the humanitarian response as a way of participating in the national effort.

Such informal networks and grassroots movements are crucial in aid delivery, particularly to remote and conflict-affected communities, while ensuring that the needs of these communities are communicated (ACAPS, 2022a). While grassroots associations’ capacities are limited compared to large international aid organizations, these associations are more agile in their ability to reach the affected population, even in the most hazardous areas, with a better understanding of local needs (ACAPS, 2022b; Cullen Dunn and Kaliszewska, 2023; Sheppard et al., 2013; Tanner and Moro, 2016). In many cases, particularly in the acute phases of the current invasion, these associations have operated independently of known coordination systems, making the quantification of their responses challenging (ACAPS, 2022a). Hence, much of this assistance has been largely unreported. Although it is difficult to quantify the direct impact of grassroots movements on delivering humanitarian aid in the early phases of conflict, indisputably, these associations have played a critical role in assisting large segments of the population needing aid. Indeed, a report by the Humanitarian Hub in the UK stated, “Most of the aid that Ukrainians have been able to access during the crisis have come from informal volunteer efforts” rather than from international aid agencies or governments (Stoddard et al., 2022, p. 8).

4.2 Sample description
The sample associations selected belong to different communities and locations. We used “association” to describe a group of volunteers who united organically to address a common cause (Smith, 2000). We focused on the operations of three grassroots associations in Ukraine and their experiences providing humanitarian relief in the first two months following the outbreak of intense conflict. These associations emerged to become aid distribution centers: receiving donations (from other grassroots associations), obtaining requests and coordinating and distributing aid:

**Association A** self-formed in the last days of February 2022, immediately after the first missiles hit Ukraine. Based in Western Ukraine, which had been largely spared the most brutal and intense aggression and casualties at the time of writing, Association A collected, sorted and delivered medicines, food, hygienic products, clothing and supplies countrywide.

**Association B** was based in Central Ukraine, undergoing intense conflict during the study period. Like Association A, this association self-formed in late February to collect, sort and deliver food, medical and tactical supplies in Central and Eastern Ukraine.

**Association C** was an established countrywide social organization connected to the Ukrainian diaspora. However, after February 2022, some members and many local nonmembers emerged to form a volunteer grassroots association focusing on humanitarian aid delivery. This study focused on a city in Western Ukraine. Like Associations A and B, the organization collected, sorted and delivered medical and humanitarian aid.

These associations did not coordinate with each other, although some individuals volunteered at Associations A and C.

4.3 Description of studied grassroots associations

**Membership.** Initially (from the end of February to early March, 2022), all three associations were inundated by volunteers wanting to help distribute humanitarian aid. Volunteers were local, internally displaced Ukrainians, including some international volunteers who arrived in Ukraine to help. The operational challenges of emergent volunteerism have been well-documented in the humanitarian response to natural disasters (Whittaker et al., 2015). Indeed, after the first few days, the self-identified organizers of the three associations realized that unrestricted membership, while civilly altruistic, posed operational challenges, including imbalanced workflows and communication with a lack of standardization. More crucially, unrestricted access posed security risks. Thus, organizers feared saboteurs identifying volunteers as instances of Russian torture of Ukrainian civilians emerged. Therefore, organizers restricted membership to verified individuals within their community in all three associations.

**Organizational structure.** We interviewed volunteers at all three associations regarding roles and responsibilities within their association and observed the emergence of self-appointed roles. For example, an individual self-identified as a “volunteer coordinator” within the first few days of operations at Association A, initially overseeing volunteers and then creating shifts, teams and schedules only two weeks later. All surveyed associations had self-appointed “logistics teams” responsible for finding volunteer drivers and private vehicles, arranging delivery details and maintaining communication with recipients until aid was delivered early in the conflict. However, as the conflict protracted, delivery routes became established, and those requesting humanitarian aid began picking it up directly from the three associations.

Moreover, each association had self-identified “inventory managers” who understood approximate inventory levels, made decisions regarding storing donations and approved requests for aid. In the case of Association A, the inventory manager was assisted by two self-appointed “data managers.” Backup roles, crosstraining and contingency plans were eliminated early in the conflict. Thus, if a volunteer with a vital organizational role suddenly became unavailable, all associations risked a loss of institutional knowledge. As the conflict extended, associations recognized the importance of preserving their association while informally crosstraining volunteers.

**Operations.** The three associations functioned as distribution and aid coordination centers, each securing a physical space to accept, sort, pack and distribute aid. All three received humanitarian aid donations. They also received requests from civilians, hospitals and civilian territorial defense groups across Ukraine and sent aid to these requestors.

Humanitarian and medical supplies collected by global grassroots movements arrived in Ukraine via neighboring Poland and Romania. Through informal networks of volunteer drivers, these supplies entered Ukraine in private vehicles. Supplies arrived randomly on any given day, so an association would not know the expected items, quantities or source. Relationships were fluid and not established. Well-meaning individuals, organizations and other associations arrived at an association’s location with a vehicle of donated aid.

Notably, aid was primarily pushed to Associations A, B and C without input from the associations or recipients. For example, vanloads of donated clothing arrived from Europe while clothing was collected locally, leading to enormous surpluses. The content of a donor delivery was typically unknown by the grassroots associations, and most boxes needed to be unpacked and sorted by volunteers. For example,
a single box delivered to a center could contain clothing, food and medical items. Thus, volunteers needed to sort arriving items into designated areas (e.g. separate areas for diapers, canned food, military equipment like helmets and medical supplies). After several chaotic weeks, grassroots donor operations stabilized and became more predictable.

In contrast to supply arrivals, requests for aid from recipients followed a pull system. Typically, a request for humanitarian aid to the association originated from personal connections (e.g. a volunteer knew someone living in a hotspot) or referrals. Aid from an association’s distribution center was transported using informal networks of grassroots volunteers driving personal vehicles. Recipients alerted the associations when the aid was received. Nevertheless, despite the tremendous efforts of the initial responses, this grassroots humanitarian response faced several challenges, as subsequently outlined.

5. Findings and discussion

The following section overviews four major themes regarding relief response by grassroots movements in the early stages of a full-scale invasion. The findings are presented and compared against the literature.

5.1 Importance of information management

Researchers and practitioners have stressed the critical role of information management in shaping effective humanitarian response (Altay and Labonte, 2014; Day et al., 2009) while recognizing the impediments to collecting data to support humanitarian aid in natural disasters (Day et al., 2009). In conflict situations, data collection was further hampered by security concerns and, as we found, human behavior.

Data security. Grassroots associations operating in military conflict face enormous data privacy and security challenges (Anjomshoae et al., 2022). For example, from late February to mid-April, when North and Central Ukraine were under direct aggression, Association B only maintained paper records of aid requests destroyed at the end of each day. The data were purposefully destroyed so that no record existed of individuals requesting aid, the supplies on hand or where aid was delivered for fear of Russian reprisal. In contrast, Associations A and C did not face the same intensity of aggression and initially did not record the data. Then, as members determined they did not face the immediate threat of aggression, gradual data collection and record-keeping were established.

Data collection. In the fast-paced and dynamic realm of humanitarian operations, gathering comprehensive and dependable quantitative data is seldom possible due to its constantly changing nature (Anjomshoae et al., 2022; Kaewkitipong et al., 2016; Kunz, 2019). In our study, data collection was indeed viewed as a secondary need by the surveyed associations. Hence, collection efforts were unstructured, particularly during the first few weeks of the current invasion. The literature has noted similar attitudes in responses to natural disasters (Day et al., 2009). Despite the difficulty of collecting data, the role of data has been well-recognized as invaluable for decision-making related to aid distribution in disasters (Zheng et al., 2013). Indeed, in our interviews, at least one individual from each association agreed about the potential benefits of collecting data, but all surveyed volunteers did not share this view. Despite the initial yet warranted hesitation and delays, all three associations collected and stored inventory-related data with varying degrees of adoption.

True to a grassroots movement, each association organically identified data collection, storage and sharing procedures. Myriad approaches documented requests for aid and inventory while managing the request process. For instance, one association used Google Sheets, another used Prozorro (a public procurement platform and a collaboration environment to connect donors with recipients) and the third used Atlassian Jira project management software. However, data collection processes were difficult to implement and maintain, so they were initially not standardized and ad hoc.

The data collection process for Association A illustrated the challenges Ukrainian grassroots associations experienced in collecting data after some volunteers recognized its importance. Other organizations followed somewhat similar processes, only the platforms differed. Association A used Google Sheets to document requests and supplies on hand. Only two volunteers (self-titled “data managers”) could access the documents for security purposes. Communications between requesting actors, volunteers unpacking donations, volunteers fulfilling requests and aid recipients occurred ad hoc through various channels. Data regarding quantities packed and unpacked were communicated with the data manager verbally or via messaging apps, paper, smartphone screenshots and text messages. Some volunteers communicated periodically (e.g. once a box was unpacked), while others communicated at the end of shifts. Daily, the data manager aggregated all communication and entered it into predefined categories in two Google Sheets documenting the inventory of 419 unique items.

Associations B and C experienced similar processes. Interviews at all three associations stated that various communication and documentation modes during operations led to significant data integrity issues. From an efficiency perspective, standardizing the data entry technology and formatting was unequivocal; however, operationally, it was another story. Volunteers, particularly in the very early days of operations, received little instruction or training. Simple paper-based inventory tracking was attempted; however, volunteers preferred mobile communication, chat and texting platforms to track inventory counts. While all studied associations acknowledged the importance of data, it was not easy to standardize operationally, particularly during early operations.

5.2 Importance of inventory management

Military conflicts produce unstable demand patterns regarding demand location and type of items requested. Thus, we discuss how this unpredictability was challenging for inventory management. We also consider its implications.

Supply. Grassroots movements rely on donors for aid, typically from other grassroots associations, individuals, private corporations and other community groups. We observed that the arrival and quantity of supply items were largely unknown, and delivery times were unpredictable (sometimes completely unknown). Because of the uncertainty of supply arrivals, the associations we studied tended to ship items shortly after receipt rather than holding inventory to meet anticipated future demand. For example, Figure 1 depicts the quantities of food items received at Association A per food type (e.g. coffee and baby food) daily. Figure 2 depicts the quantities of food items...
shipped to demand points by food type per day. A general trend shows that, in many cases, the inventory of a particular item was distributed within a day or two of receipt.

We dove deeper into this pattern by examining the supply arrival and shipments for the most requested food item: “salted canned goods” (i.e. canned fish, meat and beans). Figure 3 presents a more granular view of supply versus demand for this category, confirming the observed pattern of items being shipped almost immediately after receipt, while inventory restocking rarely happened.

In contrast to high-demand items (e.g. food was shipped almost immediately), all three associations received unneeded, unsolicited items (e.g. abundant used clothing), an issue documented in natural disaster-relief operations (Mora-Ochomogo et al., 2016). The unpredictability of the supplies challenged the operations of all three associations: the item type, the arrival date and the quantity.

Because of the uncertainty in supplies, not all demands were met. For example, Figure 4 compares the number of requests for aid that Association A agreed to fulfill with those later declined. Notably, the association only agreed to accept requests it believed could be fulfilled, primarily based on intuition with incomplete information regarding supply quantities. After a request was accepted, volunteers sometimes realized that inventory levels were too low when they assembled the items, so the request could not be fulfilled. No surveyed association captured the number of requests denied. Of the 569 accepted requests recorded by Association A, 20% were unfulfilled.

Figures 1, 3 and 4 illustrate the downward trends in supplies arriving and the number of requests for aid. Associations B and C did not collect the same detailed data during this time frame, making a quantitative comparison impossible. However, the interviews revealed that both associations observed similar patterns.

Patterns of decreased donations have been well-documented in the humanitarian response literature. Given the protracted nature of many modern crises, some donors face “donor fatigue”: a reluctance to continue providing aid for a seemingly endless need (Margesson, 2015), which may have been the case here. A second reason for these downward trends could have been that more established NGOs and government agencies mobilized, responded and delivered aid that the grassroots movement could not accomplish in the initial conflict phases, further underscoring grassroots associations’ unique role.

Demand. Nonsituational exogenous factors are characteristic of the humanitarian relief environment (van der Laan et al., 2016), such as uncertainty about the size, timing and location of demand for aid (Beamon, 2004). Undeniably, these factors were encountered by the associations surveyed. For example, in April 2022, Russian rockets hit an automotive chemical manufacturer in Kharkiv. While existing delivery channels providing food and first aid supplies to the city were established a few weeks prior, grassroots associations and humanitarian aid organizations attempted to rapidly source and send chemical poisoning treatment supplies (У Харкові Російські Ракети Знищили Автохімічне Підприємство, 2022). Although all three surveyed
Figure 2 Total quantity of supplies sent to those requesting aid per day, by item

Source: Figure created by authors

Figure 3 Inventory of salted canned goods

Source: Figure created by authors
associations provided aid to the Kharkiv region at the time, chemical poisoning treatments became a priority request that associations could not source. At the same time, the few established organizations in a position to source these items were nonoperational in the area, further underlining the unique role of grassroots associations in early response.

“Panic requests” are another example of the challenges grassroots associations face regarding the demand for aid. In this case, at the beginning of March, a week after the war started, most of the population experienced panic. Hence, requesters contacted several relief organizations to increase their chances of receiving aid, hoping their needs would be met. Moreover, if aid was received from one organization, the requesters canceled the request at the other. As a result, associations were inundated with requests, only to learn that some requestors were trying to meet their demands from multiple sources.

Logistics. Logistical support and routes changed almost daily. Transportation channels used one day could be damaged or destroyed by aggression the next, forcing alternative routes for delivery or alternative volunteer drivers requiring significant time and effort (Latschan, 2022).

5.3 Importance of coordination
The benefit of coordination between local groups in providing an effective aid supply chain has been well-documented (Dubey et al., 2018, 2022). Indeed, a few weeks into the current conflict in Ukraine, humanitarian logistics analysts stressed the importance of connecting local Ukrainian volunteer networks to the international response to facilitate coordination and information sharing (ACAPS, 2022a). Moreover, because of their connection to local on-the-ground communities, grassroots associations provided an overlooked yet critical response, particularly in its acute stages. Thus, coordination between grassroots associations and established responders presented a valuable opportunity to implement localized solutions and use local networks to thoroughly understand local dynamics and needs.

All three surveyed associations responded that coordination was initially challenging due to security and safety concerns. However, micro-level coordination emerged in the early weeks. In contrast to the literature advocating for formal, prescribed structures (see the surveys in sub section 2.4), coordination efforts were more organic and informal. For example, some volunteers at Association A also volunteered at Association C and began to synergize efforts. In another example of coordination, relationships between those requesting and those providing aid became more established. We found that most of the coordination to create supply chains was built on webs of acquaintances – for example, alumni from the same university and members of a scouting organization. Indeed, Cullen Dunn and Kaliszewska (2023) observed that the “volunteer aid chains” that emerged in Ukraine in 2022 were primarily temporary and highly mutable and, as we observed, were largely based on previous personal or social connections. As Cullen Dunn and Kaliszewska (2023) highlighted, while large NGOs and international aid agencies struggled to find institutionalized local partners to sign subcontracts, volunteers in Ukraine “moved much more quickly to form chains that lasted only hours or days, but then dissolved to create other chains to move other kinds of resources” (Figure 4).
aid or to deliver aid to other locations.” During the study period, no interviewed association coordinated with established NGOs or international aid agencies since they were still largely absent.

5.4 Importance of performance evaluation
As the conflict became protracted, at least one member from each association recognized the role that operational metrics played in aligning demand and supply, coordinating donors, maintaining and motivating volunteers and ensuring operational sustainability. High volunteer turnover created a situation of poor knowledge retention and poor “institutional memory.” Indeed, similar challenges have been observed in natural disaster response (Anjomshoae et al., 2017). In addition, the intangibility of an association’s scope and services while defining a successful outcome made it difficult to establish measurable performance indicators. Given that these associations operated in incredibly challenging contexts, it is unsurprising that performance measurement was not a priority.

Four important themes for grassroots humanitarian operations emerged from our study: information management, inventory management, coordination and performance measurement. Our data collection efforts identified these areas and their places in the literature. Hence, our findings provide implications for theory and practice in humanitarian logistics. Next, we outline them.

6. Study implications
The present research used a single-case-study method due to the distinctive nature of disaster scenarios that vary significantly in their consequences, scale, timing and geographical location. Nonetheless, Section 5 identified four important operational aspects of a grassroots response during a full-scale invasion of Ukraine, opening up several avenues for future theoretical exploration in humanitarian logistics. Therefore, this section highlights these avenues requiring further theoretical and practical exploration.

We acknowledge that several perspectives have illuminated managing humanitarian operations during a disaster (e.g. organizational, management and behavioral theories). These theories have explained coordination and behavioral intentions among actors while providing insights for building resilient humanitarian responses and developing inventory strategies for disaster-relief efforts. Thus, we conclude this section by discussing two possible frameworks through which grassroots associations can be studied in responding to rapid-onset, conflict-generation demands.

6.1 Implications for information management
Our findings revealed that information management in a grassroots response was affected by human behavior: how the individuals perceived the security risks and the data’s importance. Accordingly, considering the implications of human behavior on information management could be worthwhile. While behavioral factors have been documented as critical in operations and management science (Becker, 2016; Brocklesby, 2016; Villa and Castañeda, 2018), a significant gap has existed in considering actors’ behavioral traits using analytical models due to a lack of appropriate theories (Guo, 2019). Information and data are significant components of operational models and practices in humanitarian logistics. Thus, we discussed human behavior in the context of information management. We recognize that human behavior has implications for the other three areas discussed in Section 5, presenting the concept here so that the reader can consider this perspective while reading Section 6.

Behavioral studies on humanitarian operations have been scarce (Sankaranarayanan et al., 2018), and the existing conversation has primarily centered on coordinating organizations and prepositioning supplies, secondary considerations for grassroots associations in a military conflict. A few studies have identified behavioral gaps between normative models, practice and implementation (Villa and Castañeda, 2018; White, 2016). However, little empirical, descriptive and normative work in this area has particularly related to how grassroots responders approach information management.

Sensemaking and agent-based modeling (ABM) offer two possible techniques to study the behavioral aspects of humanitarian response in the acute phases of a disaster. For instance, Gralla, Goentzel and Fine (2016) investigated ill-defined, urgent operations problems through a sensemaking lens, providing a promising foundation for acknowledging behavioral aspects in an evolving problem formulation setting, such as humanitarian responses characterized by extensive uncertainty and rapid action. Their results suggested that humans likely rely on sensemaking and search incorporation. Therefore, this approach could develop insights into how on-the-ground grassroots associations collect information and data.

Similarly, ABM is a promising methodology for understanding the effect of individual organizational actions on the overall response performance (Sankaranarayanan et al., 2018). Indeed, grassroots movements providing humanitarian aid are well-suited to such an approach. As we found, data collection efforts within an association differed. Individuals differed on the importance of data collection, methods and timing. However, some forms of data collection and information management eventually emerged. ABM has recently attracted the attention of researchers in the humanitarian sector, with a small but growing number of applications (Altay and Pal, 2014; Diez-Echavarria et al., 2019; Krejci, 2015; Menth and Heier Stamm, 2015). Notably, DiezEchavarria et al. (2019) used ABM to analyze decision-making in humanitarian operations. Hence, a similar approach could be used to examine information management in grassroots responses.

6.2 Implications for inventory management
In a disaster-relief situation, inventories cannot be designed as a repetitive model (Ozgucven and Ozbay, 2013). Therefore, inventory management decisions must be made with the available information, which is unlikely to be the same as in previous or subsequent periods, making planning and standardizing challenging (Mora-Ochomogo et al., 2016). However, existing inventory management models for humanitarian relief assume that the decision-making manager has basic information about the distribution system, such as the set of demand nodes, the source of supplies, the vehicles used to transport the supplies and the network. Nevertheless, in the
acute phases of a military conflict, these assumptions do not hold. Uncertainty is further exacerbated by the unknown conflict duration, contrasting single-event natural disasters (e.g. earthquakes and floods). Such uncertainty in a conflict setting makes decision-making problematic about what and when to send or purchase.

An emerging avenue of research specific to humanitarian relief in conflict situations is incorporating uncertainty in data (i.e. supply, demand and location). This area has experienced recent discussion and advancement (Anjomshoae et al., 2021). However, existing approaches for modeling uncertainty have used stochastic programming techniques (Ghasemi and Khalili-Damghani, 2021; Hoyos et al., 2015) and fuzzy logic theory (Anjomshoae et al., 2021; Peidro et al., 2010) that are difficult to implement, particularly in the contexts described in Section 4.

For future work, it would be worthwhile to establish simple-to-use approaches for an association to establish minimal inventory levels for key items to improve fulfillment rates. We stress that several methods may be needed to account for variations in data availability. For example, some associations may have established a pattern of supply delivery and an understanding of lead times, while others may have little information regarding supplies but a general sense of requests. Another area for future work is creating a set of applicable metrics for data-poor associations. Fulfillment rates and response times are difficult to capture accurately, yet such metrics are essential for decision-making, motivating volunteers and providing donor feedback.

6.3 Implications for coordination
The benefit of coordination between local actors in providing an effective aid supply chain has been well-documented (Dubey et al., 2018, 2022). Indeed, a few weeks into the current conflict in Ukraine, humanitarian logistics analysts stressed the importance of connecting local Ukrainian volunteer networks to the international response to facilitate coordination and information sharing (ACAPS, 2022a). Moreover, because of their connection to local on-the-ground communities, grassroots movements provided an overlooked but critical response, particularly in the acute stages of the disaster response. Thus, coordination between grassroots associations and established responders presents a valuable opportunity to implement localized solutions and use local networks to thoroughly understand local dynamics and needs.

However, by definition, grassroots movements are emerging associations, organizationally, structurally and culturally different from established NGOs and government organizations (Smith, 2000). While the benefits of coordination between responders are irrefutable, a gap exists between the academic and gray literature and practice regarding the coordination of grassroots movements. In addition to coordination challenges in the literature (i.e. insufficient preparation and nonstandardized communication technologies and protocols; Rouhi et al., 2019), security is a top concern among volunteers.

The role of swift trust (Kramer and Tyler, 1995) between ad hoc organizations and its impact on disaster supply chains is an emerging theme in the humanitarian response (Schiffing et al., 2020; Tatham and Kovács, 2010). However, to date, swift trust between actors has only been studied in the context of natural disaster responses and between humanitarian organizations established before the onset of a disaster. Thus, exploring the role of companion-based trust (Newell and Swan, 2000) in forming logistical networks observed in a case study would be worthwhile. Moreover, an empirical study of grassroots response under a swift-trust lens could also reveal new ways of trust formation in disaster-relief supply chains.

6.4 Implications for performance measurement
Performance measurement is integral in decision-making for disaster-relief operations' effectiveness, efficiency and transparency (D’Haene et al., 2015). This topic has an established stream of literature. However, surveys of metrics for humanitarian logistics have concluded that the literature has focused on theories and models with limited application to humanitarian supply chains (Abidi et al., 2014). A more recent review (Anjomshoae et al., 2022) established that the growing body of performance measurement of humanitarian supply chain literature still has limited empirical evidence and that most research studies have largely focused on simulation and predictive studies.

Performance measurement is a context-dependent process (Anjomshoae et al., 2022). A grassroots response in a conflict context is remarkably different from an international intergovernmental agency response to a natural disaster since performance metrics developed for one case are inapplicable to the other. Therefore, applying case-study research tailored to a specific context is a valuable future direction (Anjomshoae et al., 2022), particularly since suitable performance metrics for humanitarian responses in conflict are lacking, as are appropriate metrics for grassroots movements.

Another avenue of research is to consider the perspective of performance metrics. In the humanitarian literature, performance measurements of operational aspects are overwhelmingly derived from an organizational or donor perspective (Cardoso et al., 2023), except for Cardoso et al. (2023), who developed performance metrics from the beneficiaries’ perspective. A somewhat related (but small) body of literature has considered the concept of deprivation costs: quantifying human suffering in humanitarian operations (Holguin-Veras et al., 2013). However, performance metrics from the volunteers’ perspective have been scarce (Sauer et al., 2014) and much less operationalized.

In these case studies, most responses in the early phases of the conflict were entirely dependent on volunteers. Volunteer burnout and retention have been challenges documented in responses to natural disasters (Thieme et al., 2020), so it is inevitable that as the conflict protracts, initial enthusiasm diminishes while the level of volunteerism drops. Although research about human service worker retention has been plentiful, it has focused less on volunteer retention. The volunteer management literature has focused on preventing burnout (Capner and Caltabiano, 1993) while using appropriate performance metrics as a motivation source has not been studied. Therefore, developing performance measurement frameworks and structures is needed to motivate and empower volunteers critical to providing humanitarian relief, particularly during conflicts.
6.5 Perspectives for analyzing grassroots associations

The Ukraine case is an example of a bottom-up, demand-driven humanitarian response with a limited international presence. Humanitarian relief for the first several weeks was overwhelmingly provided by an informal aid sector comprised mainly of new, local, volunteer grassroots associations that were organic, fluid and emerging. These features enabled an agile response to an unpredictable situation, effectively demonstrated in humanitarian responses. However, the extant humanitarian logistics models, approaches and literature have not accounted for the unique features of grassroots associations, much less so in conflict situations: temporary coordination, volunteerism and security impediments. Thus, we suggest two perspectives that could be useful to understand study grassroots associations in the context of humanitarian responses in conflict situations: contingency theory and the knowledge maturity model (KMM).

Contingency theory provides a viewpoint for analyzing the gap emerging from the case study. The contingency perspective (Woodward, 1958) argues that there is no best way to organize a corporation, lead an organization or make decisions. Instead, the best course of action is contingent (dependent) on internal and external factors. Grassroots movements are organic, fluid and emerging. As demonstrated in humanitarian responses, these features enable an agile response to unpredictable situations. Thus, contingency theory provides a promising framework to examine how emerging organizational structures and membership in grassroots responses acknowledge and account for such operational features.

A second approach to deepen the analysis of the role of grassroots associations is through the lens of the KMM (Lotti Oliva, 2014). Previous research has suggested this approach to nonprofits operating in the international development sector (Miković et al., 2019) and inventory management (Niemi et al., 2009). Our case findings reflect that grassroots associations in Ukraine were in the early stages of adopting techniques and tools, developing organizational processes and measuring performance. Therefore, the KMM approach could be useful in assessing operational practices in grassroots associations responding to humanitarian disasters: identifying development focus areas while prioritizing development efforts. Such a study would be context-dependent.

7. Concluding thoughts

Humanitarian response to a disaster is challenging. Grassroots responses are central to humanitarian responses during acute phases of a disaster. As eloquently expressed by Elizabeth Dunn (2022), grassroots movements are “by definition not standardized. Instead, they are the result of a million individual responses to a crisis: one room to share, one person driving a car, and so on.” Because grassroots movements are local and have a contextual understanding of population needs with on-the-ground situational awareness, grassroots associations can mobile and effectively respond to humanitarian disasters. Such responses are critical when establishing NGOs since international and intergovernmental agencies cannot operate in a location because of the scale of destruction or military conflict.

Our research was guided by two questions:

Q1. Understanding how and why grassroots associations played an indispensable role in humanitarian relief during the early phases of a full-scale military invasion;

Q2. Understanding which elements of grassroots operations facilitated the effective deployment of humanitarian relief in future disasters.

The contribution of this paper moves along two directions, reviewing research on grassroots associations and their role in humanitarian response to conflict and conducting and discussing a case study. As a third contribution element, the paper provides indications for future research.

First, the literature was reviewed regarding the role of grassroots movements and their role in humanitarian operations. The review revealed that the impact of local, grassroots volunteers has rarely been considered. The few studies considering the role of volunteers have viewed them as a resource to provide additional surge capacity in disaster response. However, volunteer grassroots associations are vital lynchpins in humanitarian response when established NGOs and government agencies cannot deliver aid.

Therefore, we conducted a case study of grassroots associations providing humanitarian aid during the early phase of the 2022 military conflict in Ukraine. The empirical evidence gathered supports the hypothesis put forward by previous works (Alexander, 2010; Altay and Narayanan, 2020; Anjomshoae et al., 2022; Banomyong et al., 2019; Hoyos et al., 2015; Whittaker et al., 2015) of a gap between the models and methods developed by research and their actual adoption in humanitarian operations. The case study identified four thematic areas that were important in the operations of grassroots associations responding to rapid-onset demand in the early days of the full-scale invasion of Ukraine.

The paper’s third contribution is identifying streams for future research to bridge this gap, presented in Section 5. A major effort should go toward defining research frameworks with an integrated perspective on the role of grassroots movements, behavioral aspects, inventory management, coordination and performance measurement. Such a perspective has been overlooked in research and practice. Therefore, this paper provides a unique perspective on the humanitarian response of grassroots associations during the acute phase of the 2022 war in Ukraine, studying three grassroots associations by gathering empirical data on their emerging operations in the acute phases of a military conflict.

References


Channell-Justice, E. (2022), Without the State: Self-Organization and Political Activism in Ukraine, University of Toronto Press.


Humanitarian response
Renata Konrad, Solomiya Sorokotyaha and Daniel Walker


Mak, T., Shapiro, A., Lonsdorf, K., Dorning, C. and Ozug, M. (2022), “International and grassroots groups alike are working to get supplies into Ukraine”, NPR, available at: www.npr.org/2022/03/11/1086153827/international-and-grassroots-groups-alike-are-working-to-get-supplies-into-ukraine


Miles, M.B. and Huberman, A.M. (1994), Qualitative Data Analysis: An Expanded Sourcebook, SAGE.


Humanitarian response

Renata Konrad, Solomiya Sorokeyaha and Daniel Walker


Journal of Humanitarian Logistics and Supply Chain Management

Yin, R.K. (2013), Case Study Research: Design and Methods, SAGE.


Corresponding author

Renata Konrad can be contacted at: rkonrad@wpi.edu