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Purchasing and supply management in humanitarian settings

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ABSTRACT

Purchasing and Supply Management (PSM) plays a critical role in the work of Humanitarian Organizations (HOs). This position paper reviews the existing literature and analyzes two contemporary cases from practice to provide an overview of the key characteristics of humanitarian PSM. It highlights the unique objectives of humanitarian operations in contrast to profit-seeking firms. It also notes a convergence of boundary conditions, as uncertainty and disruptions become increasingly prevalent across all contexts. Despite sectoral differences, commercial PSM can significantly benefit from the strategies and practices developed in humanitarian settings. Using the Disaster Management Lifecycle to differentiate segments of humanitarian work, PSM is positioned not as a mere transactional function, but as a strategic enabler of humanitarian missions. To stimulate further research in humanitarian PSM, five key themes in the research landscape are summarized: make-or-buy decisions, global or local sourcing, collaboration and alliances, sustainable sourcing, and digitalization.

1. Introduction

Humanitarian Organizations (HOs) that deliver aid to those in need are increasingly the subject of rigorous research. This development is visible in the field of operations research and Purchasing and Supply Management (PSM), which is the focus of this article. After all, the goods and services that HOs distribute are rarely produced in-house; they are typically sourced from external suppliers, donors, and service providers. PSM plays a critical role in humanitarian settings because procurement accounts for the largest share of HOs' expenses (Moshtari et al., 2021) – up to 65% of total costs (Falasca and Zobel, 2011). Despite this, the strategic importance of PSM in ensuring effective and efficient delivery of aid remains underappreciated by both practitioners and academics. The authors, therefore, draw upon years of their collective experience to demonstrate the research potential in humanitarian PSM. While not a research paper, this thought piece seeks to inspire the research community to further explore the field.

In principle, non-profit PSM should build on the abundance of existing research on profit-seeking firms; the question is how. The principles of commercial PSM should be applicable, with humanitarian operations framed as extreme cases of commercial practice. For example, procuring and prepositioning stock to prepare for a natural disaster could be compared to stocking fashion items in advance of the season to mitigate the uncertainties of mid-season replenishment. To determine how much stock to preposition in anticipation of disasters, the newsvendor model should theoretically solve the problem.

The similarities between commercial and humanitarian PSM diminish when we acknowledge that the primary objective of humanitarian operations is to save lives. The parameterization of models must define shortage costs for situations where, over time, stockouts can literally cause death. How should researchers "cost out" morbidity and mortality for organizations whose financial systems manage mostly budgets and audits? The recent drug shortages experienced by many countries, including the wealthiest, present another compelling problem set (Ahlqvist et al., 2022). Medical stock is perishable, and the deadly outcomes of shortages render operational decision-making more consequential than, say, the optimal procurement of retail apparel. Challenges like these lead some scholars to argue that transferring practices from commercial and civilian contexts to humanitarian settings is often impractical (Holguín-Veras et al., 2012; Moshtari et al., 2021).

Consider also the fact that humanitarian procurement teams operate

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under boundary conditions that commercial organizations rarely (if ever), encounter. They face extreme uncertainty in both demand and supply, combined with the task of balancing prepositioned investments with post-disaster procurement expenditures (Eftekhar et al., 2022; Falasca and Zobel, 2011; Torabi et al., 2018). While commercial procurement involves confidentiality agreements when negotiating with suppliers, their humanitarian counterparts are subject to intense global media attention, which can directly intervene in supply chain flows. The publicity given to devastating events typically results in a surge of donations, which subsides quickly, creating budget volatility which must be managed during the recovery and reconstruction phases. In the wake of a disaster, markets may suffer high inflation, harmful competition between local and international actors, and complications from volatile currency exchange rates and import restrictions. Supply bases are subject to sudden changes. In one of the interviews we conducted for this article, a procurement officer at the International Committee of the Red Cross (ICRC) noted, "*One of the complexities of dealing with Ukraine [was that] we suddenly had to develop a supply base outside of Ukraine*." Humanitarian programs also procure and distribute more than just material goods; certain missions deliver aid in the form of cash and vouchers. Since these technical systems have significant social effects, they must be established in ways that do not disrupt the typically fragile local economy. Furthermore, man-made disasters, such as military conflicts and their knock-on effects, pose unique challenges to humanitarian supply chains, which must be designed for access to both facilities (first-mile), and target populations (last-mile), often under dangerous and unstable conditions.

At the same time, we observe a convergence of boundary conditions in humanitarian disaster management and commercial operations. Heightened levels of market uncertainty, combined with environmental, regulatory, geopolitical, and other factors, have defined a new normal for profit-seeking firms, that must prioritize resilience and business continuity (Knight et al., 2022). Crises like the COVID-19 pandemic and the Ukraine war, as examples of "extreme supply chain management", revealed important opportunities for cross-sectoral learning (Miroudot and Thakur-Weigold, 2024; Sodhi and Tang, 2021). In the following sections, we explore the complexity of humanitarian PSM, to highlight what should strongly interest the scholarly community.

2. Approach and methodology

As a thought piece, the approach of this paper consists of three elements: literature review, case study analysis, and expert insights derived from the authors' experiences. We begin with a broad review of the literature on humanitarian logistics, supply chain management, and PSM. Its scope spans academic journals, practitioner publications, and reports from humanitarian organizations, to identify key themes, challenges, and gaps in the extant research on humanitarian PSM.

To ground our discussion in a real-world context, we analyzed two recent cases of humanitarian operations: the emergency response to the February 2023 earthquake in Türkiye and Syria, and the ongoing humanitarian efforts in Ukraine's military conflict, which began in February 2022. These cases were selected because they are recent, and highlight a number of significant challenges, and because the authors had in-depth access to the organizations involved. The case data were drawn from a combination of publicly available reports, organizational documents, and interviews with key personnel engaged in ongoing operations.

To interpret the findings from the literature and cases, the authors drew upon their collective knowledge as experienced researchers and their interactions with practitioners in humanitarian logistics. This knowledge base yielded nuanced insights into the practical challenges and strategic considerations of humanitarian PSM, which may not be captured in published sources alone. While the case studies and expert interpretations are illustrative, they are neither exhaustive nor representative of all humanitarian operations. The key themes and research opportunities identified in the following sections aim to engage the scholarly community, and inspire further research.

3. Strategic PSM in a humanitarian context

Contrary to widespread perceptions influenced by the media, humanitarian operations extend beyond emergency relief. Disaster response and recovery constitute just one of several phases, and forms of assistance provided by HOs. Representative examples include *Terre des Hommes*, (https://www.tdh.org/en/our-impact/health), which builds healthcare capacity for vulnerable children in remote regions, or the Water and Sanitation infrastructure developed by HOs in Afghanistan. Much of this non-emergency work proceeds unseen and underfunded, as it does not enter the news cycle. Whether they are high- or low-profile, all humanitarian programs vitally depend on professional PSM to make the most of their constrained resources. The limited donations they received not only affect total spend, but are also subject to restrictions on their disbursement. An optimal solution determined by a traditional optimization model may not necessarily comply with donor requirements.

In recent decades, management theory has advanced in studying the strategic importance of individual operational functions such as manufacturing, IT, and logistics. Commercial PSM is now recognized as more than just the technical transaction of buying; it is strategic when designed to support an organization's purpose and performance targets (Kraljic, 1983). Applying this logic, we also recommend a strategic segmentation of PSM in the humanitarian context. For example, the PSM for a long-term food assistance program aimed at reducing hunger in a region will differ from the PSM that distributes emergency shelter and medical supplies following a natural disaster. In each case, the PSM strategy must be fit for purpose.

The Disaster Management Lifecycle (Altay and Green, 2006; Carter, 1991; Tomasini and Van Wassenhove, 2009), provides a useful framework for strategic segmentation (Fig. 1). Each phase of the cycle anticipates the necessary activities and processes, with specific performance targets: search and rescue must be fast, while capacity-building tends to be slow. This differentiation also applies to whether the activities of any one phase should be slow (and cost-efficient) or speedy (at all costs), planned or agile. While no hard boundaries separate the individual phases, each quadrant creates prerequisites and consequences for the adjacent ones. Furthermore, while some HOs focus mostly on one phase (e.g., disaster response), many operate across multiple phases. Their staff may simply already be working in the area, as was the case with Medair (https://www.medair.org/) whose refugee team rushed from the Beka'a valley to downtown Beirut after an explosion ripped through the port in 2020 (Parris and Thakur-Weigold, 2021). Effective humanitarian PSM must not only define the requirements for each phase, but also ensure effective handovers of resources, information, and programming between them.

We divide our discussion on humanitarian PSM strategy into two subsections. First, we focus on disaster preparedness and response, using the operations of İhtiyaç Haritası or Needs Map (https://www.needsmap.coop) as an illustrative case. Next, we review the case of the ICRC, to demonstrate how acute emergency response can transition into long-term recovery and development activities. The case data presented is based on interviews with key informants in the cited organizations, conducted by the authors in Autumn (2023). The interview with Needs Map was performed by the third author on October 26, 2023, while the interview with ICRC was performed by the first and third authors on November 10, 2023.

3.1. Disaster preparedness and response

In the aftermath of a disaster, humanitarian operations prioritize the searching for survivors in the impacted area, treat the wounded, and deliver the critical aid needed for survival (i.e., food, medicine, shelter,

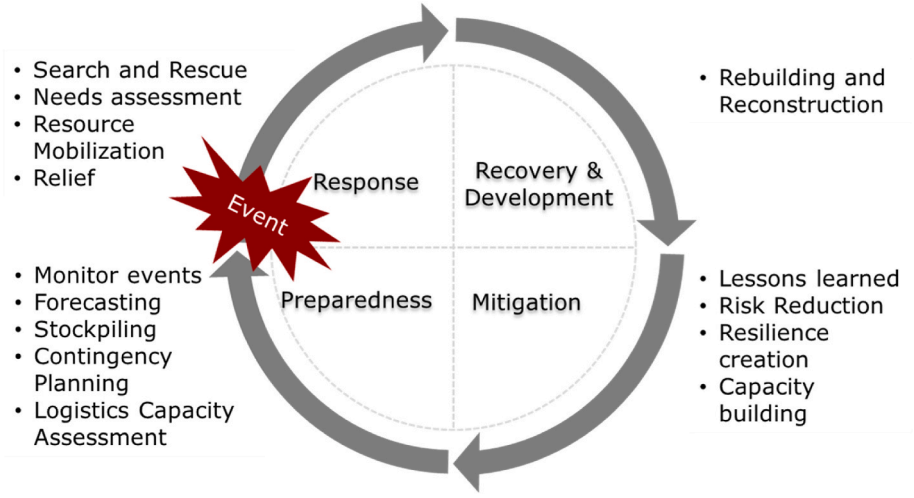


Fig. 1. The disaster management lifecycle (adapted from Carter (1991), Altay and Green (2006), and Tomasini and Van Wassenhove (2009)).

and security). Unlike the commercial sector, where procurement is a planned input to a generally stable, functioning supply chain, PSM in disaster preparedness and response operates in a vastly different environment. Their supply chains are largely non-existent prior to the disaster and must be rapidly established afterwards. Essential infrastructure, such as transportation and communication, is often disrupted, and supplies are scarce compared to the urgent needs of large populations. Demand in emergency humanitarian settings is highly unpredictable and constantly evolving. As information about the actual needs emerges, HOs must quickly adapt their operational decisions to adjust their course of action. Unlike the trade-offs in commercial supply chains, there is no objective costing of backorders or lost demand. The stakes of meeting—or failing to meet—demand cannot be quantified in time to properly parameterize the system. Lastly, the people served by humanitarian operations effectively wield no power, in stark contrast to paying consumers who specify what they order, as well as when and where it is to be received.

3.1.1. The Needs Map case

In the wake of the 2023 Türkiye earthquakes, the Needs Map organization was one of the first to grasp the gravity of the situation and take action. Their teams immediately transitioned from routine operations to an emergency response mode. As one field specialist recalled:

> *"Staff members … reached the affected area quickly … we could not communicate with them for almost 48 hours due to failure of [infrastructure] … However, based on our experience, we knew that our staff members would make the necessary arrangements and set up a depot."*

After establishing a local office, the organization quickly leveraged its database of local suppliers, fully aware that many might have been affected by the disaster as well. The availability of supplies was highly uncertain, but the teams worked tirelessly to assess both demand and supply, adapting their procurement processes to the evolving situation:

> "*The earthquake-affected area was huge - 12 cities. Yet, actually, there were only 3 that were totally devastated, also economically, and where life totally stopped i.e., Hatay, Maraş, Adıyaman. However, other partially-affected cities (Adana and Gaziantep), were available for sourcing supplies … We immediately contacted and visited the chambers of commerce in those cities. We established a field operation office. We also used local chambers' databases to find regional suppliers to meet the needs.*"

Despite these efforts, the overwhelming demand and limited local supply necessitated broader sourcing. They had to procure goods from regions beyond the immediate disaster zone, but still relatively close to the affected cities:

> "*These two cities' capacity was insufficient to meet the need for drinking water, and we supplied them from other close cities to the affected region. … However, the donors wanted to send the first thing they heard in the media, and it was sometimes not logical; for example, sending water from Istanbul 800 km away from the region.*"

Insufficient or inappropriate supplies were only one of the challenges Needs Map faced. While cost typically drives procurement decisions, in this emergency, the focus shifted entirely to securing life-saving supplies as quickly as possible:

> *"Our priority was speed, not cost … Many suppliers offered discounts to help. But to support the local suppliers, we did not ask for discounts … we tried to purchase more if supply existed to satisfy more demand."*

Transporting the procured goods posed another significant challenge.

> *"There are only two main artery roads reaching this region. It was winter. Roads were not cleared up. Everything was delayed. Trucks were scarce. Finding drivers and fuel was a problem."*

Ultimately, the procurement teams relied on their established network to locate trucks, drivers, and fuel, ensuring supplies reached the affected regions.

Even in the chaotic early days after the earthquakes, Needs Map's technology enabled real-time "*tracking and recording each unit of donation to the final location.*" Platforms like these digitalize crisis response, and provide a shared channel through which stakeholders can monitor the humanitarian crisis in real-time. Needs Map exhibited this agile disaster response despite the fact that it was primarily designed as a platform for coordinating donations. Launched in 2015 at the United Nations Development Programme Social Good Summit, Needs Map wanted to use technology to enhance humanitarian operations. Today, its map-based platform matches in-kind donations with needs registered across Türkiye. The platform verifies and lists the needs of both individuals and communities on a visual map, enabling donors to easily match their available resources with those in need, streamlining the fulfillment of fragmented demand. The platform offers societal and environmental benefits by mobilizing local suppliers to support their communities, thereby reducing dependency on distant resources and supporting local economies.

Needs Map's crisis management model therefore underscores the importance of building local capacity, a critical factor for an effective PSM and disaster response which does no harm. As a field specialist explained: *"We don't own a depot in which we preposition stocks. Our strong*

muscle is developing localized solutions. We have the technology. We can do needs assessment well. We have a strong operational capacity. We have a large network, and communication means, all of which are established before the disaster. For example, we had an ongoing relationship with the Chambers of Commerce of the cities, which could be activated immediately after a disaster. Establishing relationships with local organizations is critical. This eventually avoids shipping water from 800 km away by truck."

3.2. Transitioning from emergency response to recovery and development

After the urgency of emergency response, we now turn to the characteristics of the next two quadrants of the Disaster Management Lifecycle (Fig. 1). Developmental aid includes programs like food and nutrition, improving access to health, clean water, and education. Their objectives are to gradually improve the living conditions of target populations over time. By supporting reconstruction and capacity building in post-disaster scenarios and in poverty-stricken regions, they operate within the Recovery and Mitigation phases of the Disaster Management Lifecycle.

Compared to the emergency response, the supply chains for development programs serve demand which is generally more stable and planned. However, requirements may still undergo large unpredictable fluctuations. For example, food needs in a nutrition program may surge during a drought. Development supply chains, therefore, require a longer-term approach, with its own set of challenges and opportunities. With less time pressure, setting up agreements with other actors, including the private sector, suppliers, and logistics providers becomes an option. That said, achieving the set program objectives with these agreements is not always straightforward. For instance, if prosperity is the goal, the long-term impact of the aid programs on the local economy must be carefully considered. Larger HOs often rely on local partners for distribution of imported goods, which can distort markets, and put local suppliers at a disadvantage. Furthermore, the continuity of developmental programs is dependent on funding, which can be uncertain both in quantity and in timing, putting constraints on effective procurement.

3.2.1. The ICRC case

The ICRC is one of the oldest HOs in the sector, providing humanitarian aid to the conflict zones worldwide. With a budget of CHF 2.4 billion in 2022, its procurement teams support diverse programs including food security, forensic science, migrant and refugee protection, social services for detainees, restoring family links, water and habitat, and health. While the material requirements of individual programs vary, they often include food and medical supplies, managed by a team in the Geneva headquarters, with support from regional logistics centers.

Over the years, the ICRC has developed a robust supply base to support its global operations. Like the larger UN organizations, the ICRC maintains strict, standardized processes for supplier selection, contracting, and funding to comply with public procurement standards (Vaillancourt, 2017; Wagner, 2021). This discipline is necessary for passing the strict and frequent audits that are a salient feature of humanitarian funding. Notably, even the smallest NGOs may undergo dozens of audits annually, necessitating detailed records of program activities, transactions, and outcomes. For both headquarters and field staff, the burden of record-keeping adds to the demands of program execution. The pressure from these serial audits often results in information technology systems and organizational cultures focused primarily on donor reporting, with performance management as a secondary concern.

The ICRC effectively engages in all four quadrants of the Disaster Management Lifecycle, with conflict outbreaks as triggering events. To support these different response types, its PSM team has developed differentiated strategies, which we describe in turn.

During the Preparedness phase, the ICRC's federal structure prepares for emergencies by prepositioning buffer stocks of essential items, such as emergency kits. Their global lead buyer for agricultural products explains:

> "*Preparedness … allows you to respond quickly. You cannot be prepared for everything. The idea is that for key items, ICRC has agreements with suppliers and prepositioned stock in blankets and hygiene kits. For food, we don't keep prepositioned stocks. We have a global supply base … [with] suppliers in key strategic areas:* Türkiye*, Dubai, Egypt, Lebanon [and] … in Ukraine before the war. The objective is to have a supply base covering the main areas most prone to disasters and conflict.*"

After the outbreak of a war, the ICRC's national delegations deploy prepositioned stocks as the needs arise. Despite donor-driven administrative demands, the PSM teams demonstrate an agile response to sudden-onset conflicts, evident in their operations in Ukraine and Gaza. Their capabilities include a fast-track option for supplier selection and ad-hoc procurement. For example, following the invasion of Ukraine, the ICRC's established supply base in the country became inaccessible overnight. In response, its procurement team adapted by turning to established suppliers in nearby Türkiye. At the onset of hostilities, needs assessments are virtually impossible and precise material requirements are not defined. Therefore, the emergency supply chain operates in a push mode as their global lead buyer explains.

> *"The push phase is all about 'no regrets' and you don't wait for requests from the field. You don't have any assessments done, so you don't know where the beneficiaries are, and what they need. You start sending goods from prepositioned stock to fill the pipeline. This is happening in Gaza. In Ukraine, we mobilized 6 trucks in the beginning. We had to do some ad-hoc purchasing for this, in places like Romania and Hungary."*

As the most urgent needs subside, the organization transitions into the Recovery and Development phases of response. This involves moving from a strategy of pushing material into the field to a model of demand pull based on needs assessments. As information flows stabilize, requirements become more predictable. This allows their system to adopt more routine planning and distribution processes, shifting the focus more on cost efficiency than speed of response. The ICRC's operations in Ukraine demonstrate the uncertain and protracted nature of these phases: they have been operating with regular replenishment processes since early 2023. At the time of writing, these PSM teams are unable to predict a foreseeable end to the conflict.

4. Research landscape

The examples of Needs Map and the ICRC illustrate how humanitarian PSM is executed both within and across several quadrants of the Disaster Management Lifecycle. In this section, we summarize how humanitarian PSM differs from commercial practices, drawing on existing work that compares humanitarian and commercial supply chains (e.g., Beamon (2004), see Table 1). While this comparative overview is a binary simplification, and does not presume to be comprehensive, the framework is instructive. It highlights how impactful PSM research will need to account for the constraints and complexities of humanitarian settings.

Despite the differences highlighted in Table 1, we also note that the two sectors are converging. For instance, the framework agreements that are more widely implemented in the humanitarian sector are comparable to commercial practices. Recent disruptive events (like pandemic response, or trade wars), have also exposed commercial firms to unprecedented levels of volatility and unpredictability, stimulating "extreme supply chain management" (Sodhi and Tang, 2021), which bears a strong resemblance to disaster response.

In the following, we provide a general overview of the extant literature, to guide a fruitful application of commercial PSM knowledge to the humanitarian context. We thereby specify what would need to be adapted to the needs of the non-profit setting, and flag what remains to be explored. This exchange should continue in both directions. The

Table 1
Comparison and contrast of the key differences between humanitarian vs. commercial purchasing and supply management (adapted from Beamon (2004)).

	Humanitarian context	Commercial context
Demand	Highly uncertain and dynamic, often difficult to define and dependent on the HO's mission	Generally stable and predictable, defined based on customer needs
Supplies	Highly uncertain and volatile supply specifications, dynamic supply network	Relatively consistent supplies and stable supply network
Prices	Prone to volatility, subject to sudden surges	Generally stable with occasional fluctuations
Funds	Uncertain, batched, and subject to donor restrictions, dependent on media attention	More predictable streams, and flexible flows, driven by market dynamics
Lead times	Unpredictable and influenced by various factors	Relatively predictable and well-defined
Supply quality	Variable, subject to various context-dependent challenges	Consistently monitored and maintained to meet standards
Legal considerations	Compliance with regional, international, and humanitarian laws and standards	Adherence to commercial laws and regulations
Performance metrics	Focus on impact metrics and operational efficiency, difficult to define for proliferating stakeholders, and measure because of data quality issues	Emphasis on well-defined financial performance and operational efficiency measures, data is drawn from ERP systems and legal/financial reporting
Coordination and collaboration	Involves coordination with multiple & diverse stakeholders (humanitarian organizations, commercial sector, governments, military)	Collaboration within the business and with suppliers, in rare situations with regulators
Supply risks (e.g., counterfeits, security)	High risks (especially in conflict situations)	Lower risks, more straightforward to address

convergence of commercial and the humanitarian sectors in cases of "extreme supply chain management" (Sodhi and Tang, 2021), suggests that commercial PSM has much to learn from the HOs who routinely cope with uncertain and dynamic environments.

Using the scope of Journal of Purchasing and Supply Management (JPSM, 2024) as a general framework, we look at the humanitarian PSM literature reviewed by Moshtari et al. (2021). Fig. 2 shows an overview of key PSM topics, along with a rough mapping of how intensely they have been studied in the humanitarian literature. At one end of the spectrum are topics that remain "not explored" in the humanitarian literature which have not been discussed in any of the reviewed papers. The literature provides "limited discussion" on some topics, indicating they have been broached but lack deeper or thorough analysis. At the other extreme, certain topics are "significantly discussed", meaning they form the central theme of multiple papers. It is important to note that neither the definitions of topics, nor their placements on the spectrum are absolutely precise. The visualization in Fig. 2 merely provides a general overview of the diverse topics where PSM scholars can potentially contribute in the future.

What this figure suggests is that the humanitarian PSM literature exhibits a strong emphasis on organizational buying behavior, especially when evaluating procurement policies and strategies. A number of papers discuss local vs. global sourcing strategies, and how they combine with the prepositioning of stock. Supplier relationships have been investigated, focusing mostly on supplier selection. Collaboration between organizations in PSM, i.e., group purchasing, has also been investigated in multiple contexts (e.g., fleet, and logistic services). Another area that scholars have examined is the design of contracts for different purposes, such as emergency relief, or vaccine procurement.

On the other hand, there remain interesting PSM topics which, to date, have received limited research attention. A noteworthy example is the management of long-term supplier relationships. Under extreme time and funding constraints, established relationships with suppliers can be crucial in the timely and efficient delivery of aid and services. Similarly, performance evaluation of PSM deserves more attention, given its substantial impact on humanitarian efficiency and effectiveness. Other underserved topics include innovation, the digitalization of purchasing, and the role of technology in forecasting and procurement management. Research appears to lag behind practice as larger HOs are already trying out innovative technologies to improve their performance. Supply networks, and complex supply systems are also notably absent from scholarly discourse. Similarly, we see a lack of attention given to the issues of social, ethical, and environmental supply–topics, which are in close proximity to the missions of humanitarian organizations. The research opportunities are numerous. Even this brief overview should make clear that PSM scholars can make a difference by exploring any one of the above topics within a humanitarian setting. In the following sub-sections, we focus on five selected topics in the specific technical and operational challenges which HOs routinely encounter.

4.1. *Make-or-buy decisions for outsourcing*

Make-or-buy and outsourcing decisions of commercial firms have long been the subject of PSM research. Even though HOs typically do not manufacture the products they distribute or use internally, several aspects of their work intersect with this body of literature. A notable exception is the assembly of different types of kits, such as hygiene or shelter kits, that some HOs prepare themselves prior to distribution. Given their often limited human resources, outsourcing these operations can be a strategic option which should be explored by academics. Other research questions arise from the effects of donations. HOs often receive



Fig. 2. Topics in Procurement and Supply Management covered in the humanitarian literature.

in-kind donations that can reduce their need to purchase goods externally. Humanitarian procurement teams exert little control over the quality or quantities of the donations they receive. As a consequence, this type of "make" supply is never assured, and its sourcing inherently unreliable. And finally, functional outsourcing is a strategic decision that has gained traction in the commercial sector (Brewer et al., 2014) and is applicable to humanitarian contexts. Third party logistics service providers, for instance, can be an outsourcing option for HOs.

4.2. Global or local sourcing?

Tradeoffs between global and local sourcing lead to important questions in both commercial and humanitarian sectors. In for-profit firms, costs (of material, labor, and logistics), are among the most critical factors in decision-making (Dube et al., 2022). Contrary to the economic rationality which drives commercial purchasing, cost reduction is not a primary objective of humanitarian decision-making. In the humanitarian sector, the importance of cost becomes apparent when dealing with budget constraints and is strongly influenced by respective phases in the Disaster Management Lifecycle.

Resilience in increasingly dynamic and uncertain environments is another important factor that influences the choice of global versus local sourcing, a logic that applies to both commercial and humanitarian sectors. In the commercial sector, improved responsiveness to disruptions is considered an advantage of local sourcing, while global sourcing adds complexity and puts the supply chains at higher risk of disruptions (Gunasekaran et al., 2015; Jüttner and Maklan, 2011). In an already complex environment, wherever possible, HOs use a strategy of combining global sourcing with more regional prepositioning to provide aid in regions affected by major disruptions. In some cases, however, high levels of uncertainty combined with donor requirements and regulations can make local sourcing a requirement.

Other specifics of humanitarian operations raise interesting research questions. For instance, for a commercial firm in a stable market, the limits of local resources are relatively easy to assess and anticipate. In contrast, the shortages which arise during a large-scale humanitarian disaster cannot usually be predicted. Research can explore the implications of such differences on local and global supply decisions and in transferring the commercial PSM knowledge to the humanitarian settings.

4.3. Collaboration, alliances, and intermediaries

Collaboration can improve the effectiveness of PSM in both commercial and humanitarian contexts. Vertical collaboration in supplier-buyer relationships is considered key to supply resilience (Kähkönen and Patrucco, 2022). PSM literature has studied how different collaboration strategies can help to predict, prepare for, and react to disruptions in commercial supply chains. The extant research has highlighted the importance of information sharing, visibility, and trust (Kamalahmadi and Parast, 2016). Similarly, framework agreements are recognized as important measures to ensure availability and quick delivery of aid when and where it is needed (Balcik and Ak, 2014). A number of areas remain unexplored in contract design (Moshtari et al., 2021).

Horizontal collaboration between HOs is another important area that is rich in research potential for PSM scholars. For instance, the design of group purchasing agreements under the multitude of constraints that HOs face (like donor restrictions), is far from straightforward. Yet it has the potential to increase both the efficiency and effectiveness of operations. The regional United Nations Humanitarian Response Depots (UNHRD), present a significant opportunity for horizontal collaboration. The special structure of the International Federation of Red Cross and Red Crescent Societies (IFRC), composed of national societies, also presents interesting opportunities for joint procurement. Due to the demand uncertainty of rapid-onset disasters, which are low-probability-high-impact events, their current attempts at collaboration are mostly ad-hoc, or short term. It would therefore be worthwhile to investigate how digital e-procurement platforms could support collaboration under these particular circumstances. The STOCKHOLM platform, developed by the Emergency Supply Prepositioning Strategy (https://esups.org/our-work/stockholm-platform/), and Hulo cooperative (https://hulo.coop/) are notable examples of initiatives that have been established in recent years to support collaboration between HOs in areas like prepositioning and stockpiling.

4.4. Sustainable sourcing, social and ethical issues

In the commercial sector, scholarly interest in sustainable PSM practices is on the rise (Knight et al., 2022). Similarly, the attention paid to measuring and reducing the adverse environmental consequences of humanitarian operations has grown in recent years. The urgency of disaster relief operations often comes with a significant environmental impact. Many distributed items end up in landfills, without proper management policies for reuse and recycling. This includes temporary shelters and containers that are often abandoned during the recovery phase. Implementing strategies to reuse these items has important implications for PSM. The environmental impact of procurement practices such as framework agreements, supplier selection, and collaborative efforts (such as group purchasing) is also particularly relevant to PSM. Vaillancourt (2017) and Shao et al. (2023) have examined how these options impact the costs of delivering aid. However, a sustainability perspective introduces additional dimensions, like how an HO should weigh the trade-offs between global group purchasing, and local procurement. Should they factor in carbon emissions in addition to cost and timeliness?

There can be little doubt that managing emergency response in an environmentally sustainable manner will gain importance in the high-pressure world of humanitarian response. At present, the priority of providing aid to people in need tends to divert attention away from how their activity might negatively impact the environment. The apparent trade-off between "saving lives vs. preserving the environment" leads to both ethical and operational questions with material implications for PSM. Answers could foresee sustainable PSM practices within the Preparedness and Recovery phases of the Disaster Management Lifecycle, during which for example, a circular sourcing approach could be taken. As Fig. 1 illustrates, the execution of these phases generally proceeds with lower urgency. Over time, however, they can have far-reaching consequences for the environment.

4.5. Digitalization

The extant literature recognizes the importance of technology and digital solutions in PSM (Tate et al., 2022). As the Needs Map case and initiatives like the Hulo cooperative show, the humanitarian sector is no exception. E-procurement is considered an important way to increase the efficiency and effectiveness of humanitarian PSM (Moshtari et al., 2021). While especially larger organizations like the ICRC have started digitalizing their procurement, there is potential for further research on this trend. Most digital solutions are being developed for the commercial sector, creating a need to adapt these systems to specific humanitarian requirements. The burden of implementing their tools in organizations which have little to no budget for overhead must thereby be considered. For instance, while UN organizations actively incorporate different e-procurement systems (United Nations Global Marketplace), smaller HOs may lack the capacity and funding required to make these solutions work. This is further exacerbated by donor restrictions which typically value immediate spend over investments in future capabilities (Parsa et al., 2022). This has knock-on effects on the potential for collaboration between HOs. While digitalization allows easier access to data, and better information sharing, a lack of interoperability of the digital tools in current use can become a barrier to realizing their benefits.

5. Conclusion

Our discussion should make clear that Purchasing and Supply Management comprises a strategically significant part of humanitarian operations, influencing everything from how limited resources are used, to market-making, community-building, and environmental sustainability. PSM enables the delivery of every HO's defined mission, yet it has not received the research attention that its wide-ranging impact implies. In commercial contexts, purchasing often remains caught in the perception of price take-down, supplier squeeze, and transactional buying. This reductive view of a strategic function may have carried over to the procurement of relief items in the humanitarian sector, to the detriment of operational performance.

The brief case studies in this paper illustrate that humanitarian PSM operates under dramatically different conditions than its civilian, for-profit counterpart. We have highlighted some of the main characteristics and challenges that are specific to this context. These unique requirements imply that the knowledge base and best practices developed by commercial, for-profit PSM will not be directly applicable to humanitarian settings. The question is how best to translate and transfer this knowledge, then make it productive.

At the same time, recent global crises like the COVID-19 pandemic and geopolitical tensions demonstrated that emergency preparedness and response, or "extreme supply chain management" (Sodhi and Tang, 2021), are capabilities that civilian and commercial organizations will need to develop and execute more routinely. Despite their differences, in a future of heightened geopolitical, environmental, and economic uncertainty, the humanitarian and commercial worlds are converging.

Certain fundamentals of the extant supply chain literature have the potential to address the humanitarian challenges listed here. Twenty years ago, a seminal publication asserted that world-class performance would require the creation of a so-called "triple-A" supply chain: one which was Agile (its operations are responsive to variability in supply and demand), Adaptable (rapidly reconfiguring its architecture to meet changes in the larger environment), and Aligned to the interests of its most important stakeholders (Lee, 2004). The literature, together with the cases presented here, confirm that the PSM specialists within humanitarian supply chains must routinely apply the triple-A approach in their daily "business". In response to the call to revisit the importance of Agility, Adaptability, and Alignment (Lee, 2021), more in-depth study of humanitarian PSM can be framed as "extreme", but generalizable, cases of business fundamentals. This paper has summarized five topics which deserve more scholarly attention. Further research will surely inform both commercial and humanitarian PSM, to better respond to the disruptions yet to come.

CRediT authorship contribution statement

Bublu Thakur-Weigold: Writing – review & editing, Writing – original draft, Conceptualization, Project administration, Investigation. **Iman Parsa:** Writing – review & editing, Writing – original draft, Conceptualization, Project administration. **Burcu Balcik:** Writing – review & editing, Writing – original draft, Conceptualization, Investigation. **Luk N. Van Wassenhove:** Writing – review & editing, Writing – original draft, Conceptualization, Supervision.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data availability

No data was used for the research described in the article.

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