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Collaborative relationships between logistics service providers and humanitarian organizations during disaster relief operations

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Abstract

Purpose – The purpose of this paper is to explore barriers and benefits of establishing relationships between humanitarian organizations (HOs) and logistics service providers (LSPs) in order to improve humanitarian disaster relief operations (DROs). The perceptions of a variety of actors are explored to determine key factors which influence collaboration.

Design/methodology/approach – This study comprises of qualitative and quantitative methodological approaches. A comprehensive literature review was undertaken alongside an online survey with a variety of respondents. Descriptive statistics, data visualization and qualitative data analysis were implemented to analyse survey results. A follow-up survey and interviews with LSPs validated the results.

Findings – The research presents the opinions of a variety of actors involved in DROs and reveals barriers which affect HO/LSP collaboration. Explanations for these barriers and possible solutions to mitigate them are disclosed. The findings also uncover gaps between research and practice; providing new insights into behaviour in the humanitarian field.

Practical implications – The authors provide an in-depth understanding of the barriers and challenges faced in this field and suggest a reevaluation of corporate decision making in order to increase trust between LSPs and HOs. The authors identify future research topics including the impact of donors and military organizations on HO decision making, and analysis of variables which may affect the formation of collaborative partnerships.

Originality/value – The authors introduce a unique empirical insight into the perspectives of HOs, LSPs and academics and offers suggestions for mitigating the numerous barriers associated with successful collaborative partnerships between HOs and LSPs.

Keywords Humanitarian logistics, Disaster relief operations,
Supply chain management in disaster relief, Logistics service providers

Paper type Research paper

1. Introduction

Interest in humanitarian logistics (HL) in the academic community has grown during the last decade; in part due to the increase in the number of sudden natural disasters globally. Disasters have dramatically increased in the past 100 years, from an average of 50 disasters around the world in 1960 to 350 in 2010. This research focuses

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on the role of HL during disaster relief operations (DROs), and the ways in which collaborative partnerships between logistics service providers (LSPs) and humanitarian organizations (HOs) could improve the efficiency and effectiveness of these operations.

Increasingly, research has revealed that the role of logistics in DROs is paramount to the success of humanitarian projects and programs (Whiting and Ayala-Öström, 2009; Van Wassenhove, 2006). It is now commonly accepted that up to 80 per cent of the total investment in disaster relief activities involves logistics operations (Trunick, 2005). Furthermore, it is estimated that more than 40 per cent of this spend is wasted; fuelled by factors such as duplication of efforts, and lack of time to carry out effective analysis (Day *et al.*, 2012; Van Wassenhove, 2006).

Despite academic research identifying HL as vital to DROs, HOs have not yet defined logistics as a key strategic function to improve their performance. It is noted that relief agencies in particular do not have an adequate number of logisticians in their relief teams, and that they lack sufficient training to make them effective humanitarian logisticians (Kovács *et al.*, 2012; Thomas and Kopczak, 2005; Van Wassenhove, 2006). Challenges have been identified in supply chain (SC) activities such as planning, procurement, warehousing and transportation (Thomas and Kopczak 2005). Additionally, skills such as management, inter-personal skills, personality traits and problem solving skills have also been identified as lacking across a wide spectrum of organizations (Kovács *et al.*, 2012). These issues undoubtedly affect HO's abilities to help people in the right place, at the right time and with the right products.

This study therefore aims to analyse the interactions between HOs and LSPs in order to identify how the efficiency of relief operations can be improved, and to identify which factors affect the working relationships of LSPs and HOs. Given the increasing number disasters, this research also aims to provide both the humanitarian community, and LSPs, with an overview of the needs, preferences, competencies and capabilities relevant during DROs in order to maximize performance.

Whilst this research will address the challenges associated with HL, it will also offer unique insights, and greater understanding into the perceptions of the actors involved in humanitarian operations. The objectives of this paper are:

- O1: to explore motivations for collaboration between LSPs and Hos;
- O2: to identify barriers which affect the formation of relationships between HOs and LSPs, and to gain insight into perceptions concerning these barriers; and
- O3: to make suggestions based on empirical evidence which address improving collaborative partnerships between LSPs and HOs.

2. Literature review

2.1 HL

HL is defined as the process of strategically managing the planning, acquisition, transportation and warehousing of goods and materials from the point of origin to the point of consumption, to help deliver relief which mirrors the needs of beneficiaries in a cost-effective way (Thomas and Kopczak, 2005). This definition has similarities to commercial logistics, but differs in a few key areas; whilst the commercial sector aims to minimize costs, relief agencies aim to reduce human suffering (Holguin-Veras *et al.*, 2013; Day *et al.*, 2012). Additionally, whilst commercial logistics emphasizes the importance of satisfying demand "in conditions where supply equals or exceeds demands"

(Holguin-Veras *et al.*, 2013, p. 263), HL aims to "distribute a shortage of critical supplies in a manner that leads to the greatest social good" (Holguin-Veras *et al.*, 2013, p. 263).

With increasing importance being placed on the efficient and effective fulfilment of needs, the role of incorporating LSPs in DROs is being realized. Hertz and Alfredsson (2003) define LSPs as external intermediaries who act on behalf of a shipper to plan, coordinate and deliver logistics activities like transportation, warehousing and inventory management. They illustrate how the creation of mutually beneficial relationships with LSPs can improve performance and provide SC knowledge and expertise in managing the flow of products. Additionally, LSPs are committed to customer service satisfaction; playing the role of an intermediary in order to satisfy the demands of their clients and customers.

2.2 Motivations for corporate LSP engagement in DROs

Three key drivers have been identified in relation to corporate engagement in DROs: internal ethical drivers, external stakeholder drivers and internal corporate drivers (Johnson *et al.*, 2010; Rieth, 2009). The ethical drivers associated with LSP involvement in DROs lie in corporate social responsibility (CSR). In terms of CSR, corporations are acutely tuned into the mood of the general public and tend to publicly align themselves with DROs supported by citizens. Short-term relief includes both financial and in-kind donations, whilst long-term initiatives often include financial assistance and collaborative partnerships (Johnson *et al.*, 2010). Although there may not be a direct financial gain, contributions can lead to "indirect yet implicit intangible economic benefits" (Rieth, 2009, p. 303).

In relation to stakeholders, the involvement of corporations in DROs may aid in increasing employee motivation and improve the overall image of a company, which may lead to an increase in customers and higher market shares (Rieth, 2009). Such behaviour also aids some companies to shake off previous associations with unethical business practices to support business credibility (Rieth, 2009). Finally, the involvement of LSPs in DROs gives corporations the opportunity to train employees under extreme circumstances, put operating procedures to the test, and improve relationships with organizations who may have otherwise been involved in discrediting them for poor ethical standards (Rieth, 2009).

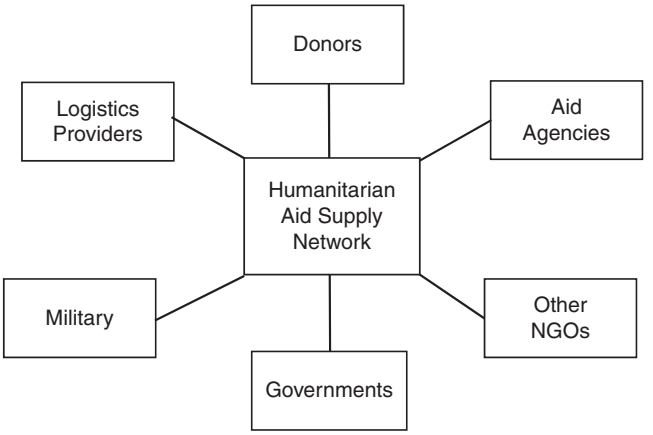
2.3 Challenges and barriers to the formation of effective HO and LSP partnerships

As the number of actors involved in DROs continues to grow, a complex network which often struggles to efficiently coordinate efforts has emerged (Balcik *et al.*, 2010; Bharosa *et al.*, 2010). Kovács and Spens (2007) depict the typical actors involved in DROs in Figure 1.

With increasing pressure from donors for transparency and more strategic uses of resources (Cozzolino *et al.*, 2012), the development of best practices and collaboration between different organizations is becoming essential for HOs.

The collaborative challenges faced by HOs both amongst themselves, and with external partners, represent some of the key reasons why LSPs may be hesitant to form partnerships with HOs; especially for the long-term. One of the principal drivers of contracting LSPs is the quality of their services (Gotzamani *et al.*, 2010); HOs outsource to LSPs because they can effectively manage the physical distribution of products along the SC. The world of HL, however, is perceived to be antiquated (Gonçalves, 2011); representing an environment commercial logisticians may have been familiar with 20 years ago (Blecken, 2010).

Currently, HOs still lack the level of communication and information sharing found in the commercial sector and are behind in terms of resource management (Tatham and



Source: Kovács and Spens (2007)

Figure 1.
Actors in the supply network of humanitarian aid

Spens, 2011). This includes: the ability to share essential information regarding the needs of the affected population; tools to trace and track cargo; or common standards, procedures and processes to manage the flow of information (Tatham and Spens, 2011).

This research recognizes that the impediments to forming collaborative partnerships between HOs and LSPs lie in both inter-agency challenges, i.e. HO-HO relationships, and between LSPs and HOs; these barriers are discussed in the following subsections.

Impediments to inter-agency collaboration between HOs. It is argued that there is a general lack of collaboration, coordination and communication between different actors in disaster relief campaigns which severely affects the formation of relationships between all partners (Akhtar *et al.*, 2012; Schulz and Blecken, 2010). Jahre and Jensen (2010) and Altay and Pal, 2014 propose that some of the challenges associated with coordination and information sharing can mitigated through utilizing the humanitarian cluster approach (CA). The CA disseminates information across a variety of lead agencies involved in key areas of humanitarian relief such as health, water and sanitation, etc. These agencies are "responsible for strengthening technical capacity and ensuring predictable leadership, accountability, and partnership" (Altay and Pal, 2014).

The complexities surrounding these issues have been associated with structural, mandate and behavioural barriers which exist within HOs (Maitland *et al.*, 2009). Structural barriers refer to poor governance, accountability and inadequate resources, whilst mandate barriers arise when organizations are not fully committed to coordination activities (Maitland *et al.*, 2009). Finally, behavioural barriers are associated with a lack of authority, competencies and skills; especially in relation to information sharing and management (Ergun *et al.*, 2014; Maitland *et al.*, 2009). Whilst Maitland *et al.* (2009), argue structural and mandate barriers are the predominant cause of undermined coordination efforts, their research focuses on efforts within the humanitarian sphere and does not consider HO relationships with LSPs, which may be severely affected by behavioural barriers.

Research conducted by Dubey *et al.* (2015), however, proposes that SC adaptability within the humanitarian domain relies on improved understanding of culture, the development of mutual respect and trust amongst SC partners. Addressing the obstacles associated with HO and LSP partnerships is vital, as relief agencies can

benefit from the knowledge gained by private organizations and their SC procedures (Binder and Witte, 2007).

Collaborative and cooperative relationships are impeded by a lack of trust; a challenge common to both HOs and LSPs; whilst the humanitarian community does not necessarily trust the good intentions of private-sector companies, private organizations perceive relief agencies as bureaucratic and antiquated (Christopher and Tatham, 2011). The impact of these shortcomings leads to increases in unsolicited goods, and has been identified as the cause of duplicate inventories in affected country's warehouses (Kovács and Spens, 2007; Argollo *et al.*, 2012). Trust is also impeded by the nature of DROs and the hastily formed networks (HFN) synonymous with the context (Tatham and Kovács, 2010). The notion of "swift trust" has been applied to the humanitarian setting; this concept details "the need to manage the issues of vulnerability, uncertainty, risk and expectations that surface with the formation of a HFN" (Tatham and Kovács, 2010, p. 38). Tatham and Kovács argue that investing in inter-personal and inter-organizational trust will have positive outcomes for collaborative relationships and DROs; we also posit that such initiatives will also positively affect LSP contributions to DROs.

The private sector has a plethora of resources and knowledge that can be adopted by HOs, especially in the areas of storage, transport, and customer satisfaction (Schulz and Heigh, 2009). Drawing on the notion of utilizing LSP expertise, Hingley *et al.* (2011) examine the role of fourth-party logistics management in improving horizontal collaborations amongst grocery retailers, which provides an interesting contribution to this debate. They discuss the notion of relational exchanges which are defined as a type of collaborative relationship in the context of a horizontal SC (Hingley *et al.*, 2011). These exchanges are characterized by sharing, planning and contact with other relevant actors (Hingley *et al.*, 2011); all of which HOs find challenging. Although based in the commercial domain, this research found that where levels of collaboration intensity and distribution complexity increase – features synonymous with humanitarian contexts after sudden natural disasters-relational exchanges become most appropriate (Hingley *et al.*, 2011).

Although such horizontal exchanges are vital, they have remained the focus of research into inter-agency collaboration (Jahre and Jensen, 2010). Logistics coordination, however, has predominantly focused on vertical coordination; defined as the sharing of responsibility, resources and information to serve similar customers (Jahre and Jensen, 2010). This is important to note as there seems to be a division between the focus of coordination efforts amongst HOs, and coordination efforts assigned to logistics.

Interestingly Hingley *et al.*'s (2011) research in the commercial domain found that suppliers and LSPs showed willingness to participate in horizontal collaboration to increase efficiency, customer service and reduce costs, while retailers were reluctant. In terms of DROs one could view HOs at the retail end of the SC. Although they do not sell their goods for profit, they are responsible for providing a product to an end user with an element of customer service. This reluctance to collaborate is identified by Hingley *et al.* (2011) as related to power and control issues.

Parallels can be drawn with humanitarian contexts as HOs often prefer to regulate their own operations, and collaborative partnerships with LSPs are not always guaranteed; LSPs may drop contracts with HOs or even return to the commercial sector. One reason for this instability and lack of vertical integration may be due to

self-interest (Hingley *et al.*, 2011, p. 319); LSPs still need to remain competitive, whilst HOs want to remain in control.

Impediments to collaboration between LSPs and HOs. Not only is trust a salient point with regards to inter-agency partnerships, it also reflects on the nature of LSP relationships. The factors affecting LSP trust, and commitment, in all partnerships has been characterized by a lack of shared critical information, and by decision makers who are not invested in relationship building (Kwon and Suh, 2004). In this context trust may be eroded due to the lack of logistics professionals in the humanitarian field and their inadequate training (Kovács *et al.*, 2012; Kovács and Spens, 2009; Pettit and Beresford, 2009).

In a similar vein, poor performance measurements may also be a concern for LSPs collaborating with HOs in DROs. The performance of relief chains is a growing concern for all organizations involved in relief activities (Beamon and Balcik, 2008). Metrics help eliminate the causes of inefficiencies, highlight lessons learnt from past experiences, develop continuous improvement practices and provide actual data to encourage donors and LSPs to provide resources (Thomas and Kopczak, 2005).

Despite this, performance measures and systems have not been effectively developed in HL and metrics remain ambiguous (Beamon & Balcik, 2008). As a result, DROs suffer from inefficient and ineffective operations; which are further compounded by a lack transparency and accountability, and the uncertain and varying contexts in which disasters occur. Additionally, a vast number of possible performance indicators have been offered in theory and business practice; making it challenging to adopt the most relevant (Schulz and Heigh, 2009). Alongside issues of operational complexity, logistics is still not a particularly powerful arm of HO operations (Abidi *et al.*, 2014) potentially making LSPs collaboration with HOs seem undervalued.

As mentioned above, HL suffers from poor standardization, limited skilled professionals and often overly complicated performance systems and tools which practitioner's cannot use (Schulz and Heigh, 2009); a situation totally at odds with commercial sector practices and procedures. The lack of resources dedicated to this important function is further aggravated by poor coordination amongst HOs which complicates both the consistency of performance measurements, and their effective implementation (Abidi *et al.*, 2014). The difficulties mentioned here may reveal why LSPs may be deterred from commencing long-term collaborative partnerships with HOs.

The lack of standardized packaging and modularization of products sent to disaster contexts (Kovács and Spens, 2011) negatively affects DROs as it denies organizations the possibility to share distribution facilities and vehicles. Physical distribution and warehousing is complex due to the lack of available resources and equipment to accomplish deliveries. It is arguable that HOs add to this complexity with unstandardized packaging, creating bottlenecks in the distribution pipeline (Thomas and Kopczak, 2005).

Packaging issues are further complicated by limited recognition of its strategic value, and its impact on costs (Sohrabpour *et al.*, 2012). Sohrabpour *et al.* (2012) propose that further research in packaging could lead to solutions relating to handling and storing of goods, sustainability and the protection of goods traversing through rough conditions. Stacking capabilities could lead to more efficient storage and transportation, whilst considering the material used, may also lead to protection in the transportation and handling processes. This could lead to a reduction in costs and increased performance; importantly these considerations could also compensate for

countries with weak or damaged infrastructures as the packaging would be able to withstand poor handling from non-professionals and poor transportation and travel conditions (Sohrabpour *et al.*, 2012).

2.4 LSPs as facilitators of efficient DROs

Despite the many challenges there are examples of successful collaborative relationships between LSPs and HOs who have engaged in long-standing relationships. UPS in-kind donations for emergency relief led to 13 tons of UNHCR aid items being transported in the 2012 Mali and South Sudan emergencies over one weekend (Demirovic and Brunet, 2012). Additionally, in 2011, UPS supported a UNHCR study which helped to optimize the locations of UNHCR global warehouses and also collaborated in order to develop a tracking solution (Demirovic and Brunet, 2012). This enabled the scaling up of aid distribution in terms of capturing data and recording the supplies distributed to refugees, and the development of barcoding software customized for UNHCR (Demirovic and Brunet, 2012). It should also be noted that private organizations can benefit from the accumulated experience of organizations which primarily deal with crises, especially in relation to improving the agility levels of their SCs (Cozzolino *et al.*, 2012).

Whilst we are aware of the shortcomings associated with HL, insights into how actors involved in DROs understand the perpetuation of these challenges, is lacking. This research therefore explores the disparities between previous research and practices through the collation of empirical evidence from HO and LSP practitioners and academics within this domain. Examining the literature alongside the perspectives of those involved in HOs, LSPs and HL research, will aid in establishing reasons why collaborative partnerships have not yet flourished, and will inform research and practice.

3. Research design and methodology

This research uses both surveys and interviews in order to elicit a variety of perspectives and adopts a holistic approach to address the complex field of HL. The use of quantitate and qualitative methods provides breadth to our research and allows for in-depth discussions relating to collaboration and organizational decision making in HL partnerships. A mixed method approach helps to provide a greater breadth of information compared to using monomethods (Creswell, 2009; Fowler, 2009) and offsets the weaknesses inherent to using one approach, whilst supporting triangulation of the results.

3.1 Online professional networks

Due to the global nature of DROs, there are numerous active and specialized forums relating to HL online, in which members are interacting and sharing experiences and practices of working in this sector. As a result we decided to utilize this resource and tap into the professional network LinkedIn to obtain different views from professionals, practitioners and academics concerning HOs and LSPs in humanitarian operations.

Using online research methods is increasingly becoming established in academic practice and is a useful vehicle for data collection as it promises: increased sample size, greater sample diversity, ease of access, convenience and lower costs and time investment (Benfield and Szlemko, 2006; Bryman, 2012).

The use of social media in research has been established in psychology and behavioural studies, as it allow participants to explore meanings and perceptions

(Reips, 2006, 2012; Reips and Garaizar, 2011). As exploration is a characteristic deemed useful for this research, LinkedIn as a social media tool was deemed a suitable platform with which to facilitate this. The use of LinkedIn is also supported by Bryman's (2012) theory that sampling should not just focus on populations but rather social relations. As members of professional groups were targeted on LinkedIn, the sampling method aligned with this notion of targeting respondents by specific interests and associations.

3.2 Questionnaire design

An initial approach was made to 15 LinkedIn groups which comprised of: international NGOs, regional response organizations, SC management professionals, HL professionals, academics and community disaster groups. During this phase the aims and objectives of the research were introduced and posted into the 15 groups.

The list of professional groups approached for this study is provided in Appendix 1 and a copy of the survey tool is available in Appendix 2. The research instrument designed for this study was an online, self-completion questionnaire and questions were devised in a way that mirrored the findings from the literature. The questionnaire consisted of 18 questions related to the role of LSPs in HL and consisted of different types of questions including open-ended questions and scales and ranking questions. Whilst most surveys use single data collection method, the use of personal interview surveys which utilize self-administered responses into computers is commonplace (Fowler, 2009).

The questionnaire was developed through analysis of the literature and focuses on relationships between HOs and LSPs including: identifying barriers to sustaining and creating humanitarian SCs (McLachlin and Larson, 2011; Pettit and Beresford, 2009; Kovács and Spens, 2009), and addressing collaboration and coordination difficulties in this sector (Balcik *et al.*, 2010; Bharosa *et al.*, 2010; Akhtar *et al.*, 2012). The questions reflected how HOs, LSPs and academics perceive relationships between HOs and LSPs in HL and DROs, and the expertise which could be capitalized on in order to improve the efficiency of operations. A questionnaire was deemed the most appropriate data collection tool as it can be used to "suggest possible reason for particular relationships between variables" (Saunders *et al.*, 2009, p. 144).

3.3 Sample

A purposive sampling method was used as selections were made based on the subjects having particular characteristics (Patton, 1990); in this case expertise in the field of HL. This method of sampling is particularly salient as it lends itself to extreme cases, namely phenomena and crises (Patton, 1990). Although a survey instrument has been used, when the goal is to develop an understanding of a population, information gathering does not need to heavily rely on statistics (Fowler, 2009). Additionally, Fowler argues that "not every effort to gather information requires a strict probability sample survey" (Fowler, 2009, p. 180).

A single data collection phase was used and respondents were segmented into staff working for HOs, logisticians in LSPs, academics in the area of logistics and SC management and disaster relief volunteers. 15 specialist groups associated with HL, HOs, LSPs and universities were subscribed to on LinkedIn and form the basis of this sample. The researchers interacted with forum members on LinkedIn and subsequently created a database of 169 respondents who had expressed an interest in taking part in the survey. Interested parties were then sent an invitation to answer the e-survey;

a total of 85 participants responded, resulting in a response rate of 50.3 per cent. This response rate may be due to the nature of the target population; those involved in DROs are highly mobile and may not have been able to respond. Additionally, some participants may have felt information regarding this topic was too sensitive and therefore declined to respond. The researchers maintained an online presence during the process in order to ensure any queries could be handled.

Figure 2 depicts the job sectors participants identified with, and portrays a range of organizations aligned to commercial and humanitarian sectors.

3.4 Post analysis validity check

This research stage aimed to ensure the results were not biased towards HOs and employed triangulation to improve the validity of our findings. We summarized the key findings in an online survey which was then distributed in relevant forums to LSPs using social media (LinkedIn and Twitter). Participants were given the option to express other views qualitatively in open questions. They were also asked if they were available to take part in an in-depth interview in order to express their views. Results of the survey were statistically analysed using *t*-test to assess their significance. Subsequently, we interviewed two participants with several years of experience in LSPs and the humanitarian domain. They included the head of the aid and relief services of a global LSP, and a logistics and procurement coordinator of a major HO with several years of experience in private LSPs.

This approach is time effective for both participants and researchers and has the advantage of seeking diverse views from LSPs globally. Alternative techniques for validity checking include focus groups. This could provide more in-depth views, but the limitation would be the lack of enough coverage of LSPs and the time requirements. LSP operations are spread around the world in different time zones and arranging online focus group with a range of LSPs from different regions was deemed impractical.

4. Findings and analysis

4.1 Perceptions of collaborative partnerships

In order to fully explore the barriers facing LSPs and HOs when forming collaborative relationships, this research asked respondents to identify reasons why LSPs may become involved in DROs; shown in Figure 3.

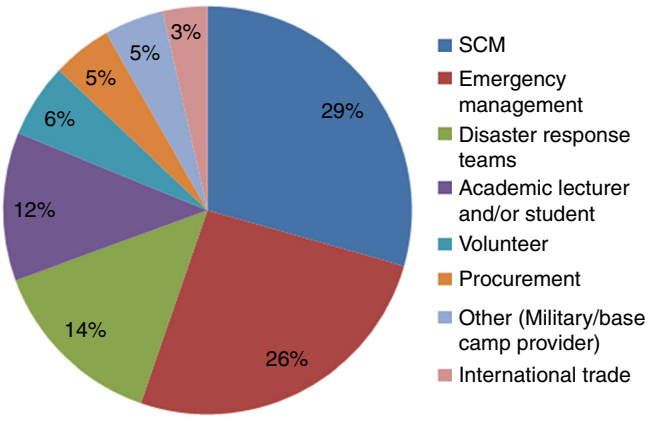


Figure 2.
Classification of job sectors

The three most important factors were "strategic decisions" (29 per cent), "CSR" (26 per cent) and "publicity" (18 per cent). Unexpectedly the commitment to help vulnerable people was stated by a minority of the participants (13 per cent), suggesting that the perceived motivations influencing LSPs are more related to the business environment than the humanitarian environment.

In order to explore this further, participants were asked to indicate how successful they were in establishing collaborative relationships in previous operations, and what they felt the main barriers to establishing relationships were; 58 per cent of participants reported establishing successful relationships, while 42 per cent did not. Figure 4 provides an overview of the five most important barriers respondents believed obstructed collaboration between LSPs and HOs.

The cost of logistics services were identified as the most important factor obstructing the formation of collaborative relationships. DROs are characterized by cost-inducing issues concerning: the management and transportation of resources from dispersed sources, the unpredictability of operations, destroyed infrastructure and impacts on the cost of "last mile" delivery. Requirements were also identified as a barrier to collaboration as HOs do not have specialized processes or clear visibility of their operations and/or resources. This is in contrast to LSPs which adhere to high standards; highlighting that trust is lacking from both sides. Finally, the degree of involvement of LSPs and the preparedness of their staff for a DRO was also deemed

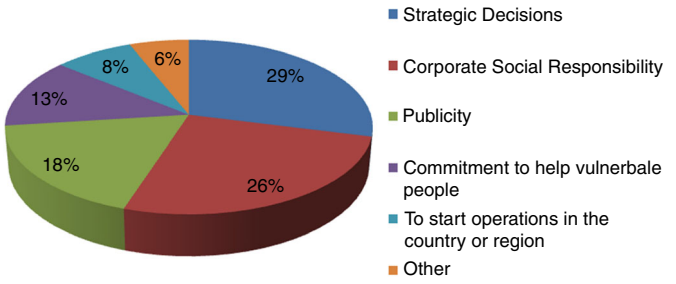


Figure 3.
Perceived motivations for LSP collaboration with HOs

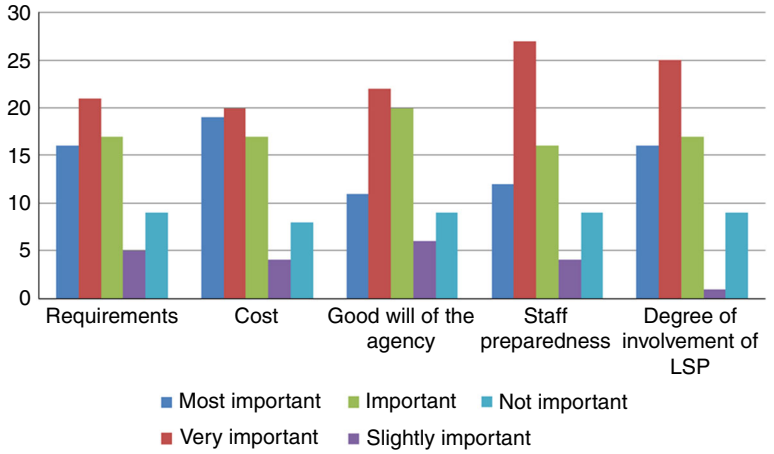


Figure 4.
Barriers to humanitarian collaboration

important. This is due to both LSPs and HOs having concerns regarding the commitment and long-term dependability of their partners.

This research also felt it important to explore the types of relationships which exist between LSPs and HOs prior to a disaster, and to ascertain perceptions regarding the most opportune time to establish collaborative relationships. When asked about sourcing preparation before a disaster, responses indicated a lack of continuity; 41 per cent stated this happens "occasionally" and 21 per cent confirmed it happens "fairly often" (Figure 5).

This is despite the fact predetermined sourcing strategies could facilitate the competitiveness and efficiency of organizations involved in DROs. The lack of prior arrangements with LSPs could be due to HOs preferring to maintain their independence until a disaster strikes, and LSPs needing to remain in a competitive market, making them unable to commit to HOs.

In relation to determining when it may be best to establish relationships between LSPs and HOs, 44 per cent of participants stated partnerships should be established in the preparedness phase, whilst 41 per cent stated that LSP services are needed most during immediate response (Figure 6).

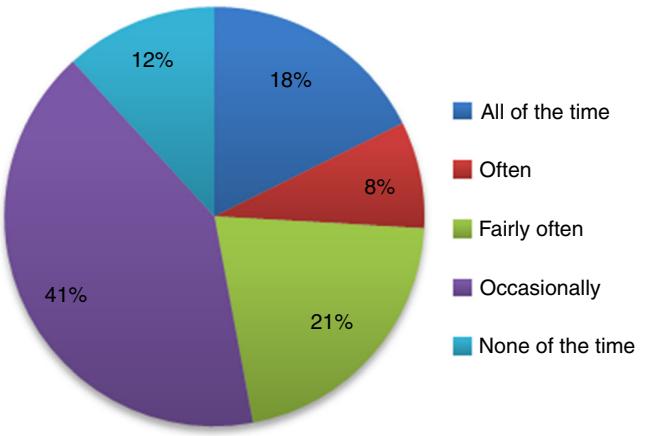


Figure 5.
HO sourcing preparation

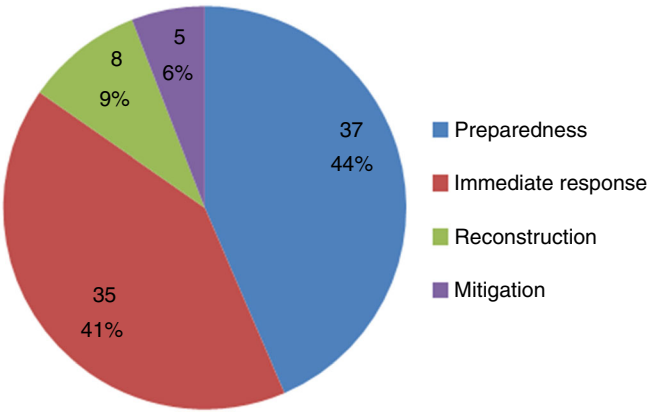


Figure 6.
Appropriate disaster phase for LSP and HO collaboration

The responses highlight disparities between perceptions and practices; as Figure 5 shows, participants rarely seem to form collaborative relationships prior to a disaster, or to source during preparation, despite then perceiving preparedness to be the most appropriate time for LSPs and HOs to form relationships.

When asked to comment on their reasons for identifying the preparedness phase as the most compelling time for LSP support, participants suggested that in this phase the time frame lends itself to opportunities for integrated efforts, pre-positioning of resources and personnel and use of logistical best practices. This is further reflected in the following quotes:

> It is best to have good preparedness so that infrastructure and services are in place ready to go […] this can include training and placement of logistics personnel – pre-positioning of relief goods […] set up of evacuation centres ready for occupation – practice or drills for evacuation for local people and so on. So forewarned is fore-armed – preparedness is key to timely and effective response (Participant 1).

> Collaborating with LSPs in the preparedness phase allows for a few things: Interfacing with LSPs beforehand can better prepare you for the task than trying to figure it out when the emergency is at hand […] If you do not have the relationship with the LSP beforehand, that LSP may be busy helping other agencies and do not have time for you. Or, that LSP may charge really high prices that you could have controlled with an agreement in the preparation stage (Participant 4).

Participants were asked to provide their views on some current and well-known partnerships between LSPs and HOs; some of these views are highlighted below:

> Offer flexibility and easy management when most needed (Participant 49).

> (I think they are well trained and have expertise (Participant 55).

> (From personal experience, I believe they are capable of performing well in disaster relief through their wide and efficient network (Participant 39).

The level of mutual benefit in these relationships depends on the flexibility to adapt and learn from each other. However, theory suggests that HOs tend to be slow and outdated learners (Van Wassenhove, 2006); this is supported by the following quote from one participant:

> The two challenges are for them [LSPs] to learn our context and adapt to it, and on the other hand for the [humanitarian] industry to evolve to better accommodate and interact with their processes, tools, approach & methods. Unfortunately they [LSPs] learn faster than we [HOs] are evolving (Participant 48).

4.2 Perceptions of logistics functions in DROs

In order to further explore barriers to collaboration, respondents were asked to rank different factors which may affect operational efficiency from "most important" to "important". Figure 7 provides an overview of four key areas which respondents identified as strategically important to running successful DROs.

Access to a wide variety of resources was considered the most important justification for collaboration between HOs and LSPs. LSPs have acquired resources such as transportation methods, global storage facilities, technology that supports their operations and staff. These resources are crucial in DROs in order to increase the efficiency of responses. Participants also highlighted that collaboration is beneficial for capitalizing on shared experiences and knowledge in logistics operations; LSPs have

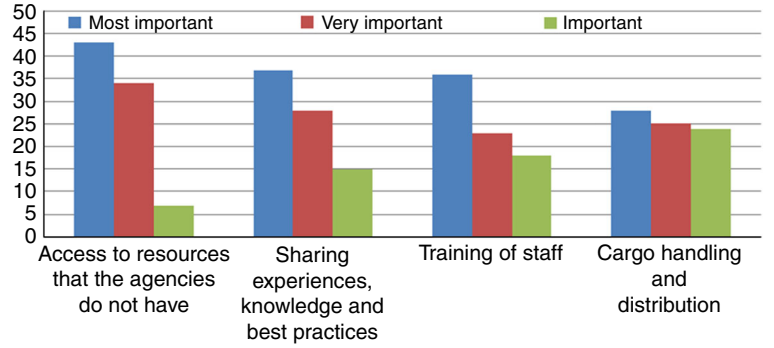


Figure 7.
Factors affecting operational efficiency

gained skills to make their sector more efficient in a competitive market where cost, quality, dependability, flexibility and speed are the primary objectives of their operations.

To further compliment this line of enquiry, participants were asked to identify which services they believed HOs preferred to outsource, and which ones they prefer to do in-house and were also asked to specify these preferences in relation to different services. This was in order to establish current trends and tendencies in relation to HL operations and to analyse perceptions of benefits of collaborative relationships. Figure 8 shows that the majority of respondents believed outsourcing key processes would be preferable in order to mitigate delays.

Participants agreed that freight forwarding and transportation processes must be outsourced to LSPs who can deliver more efficient services. Outsourcing activities enables HOs to concentrate on other functions, share the workload and benefit from a wide variety of services of which LSPs have knowledge and expertise. Additionally, LSPs gain visibility in the early stages of the disaster response; winning media attention and improving their corporate image.

The findings suggested that warehousing and distribution are activities that should remain in-house; potentially because HOs prefer to have control of their physical goods to ensure they are delivered to their beneficiaries. It is, however, feasible to suggest that with accurate information and monitoring, LSPs could deliver aid to distribution points or even directly to beneficiaries, helping to address HOs' issues with last mile delivery.

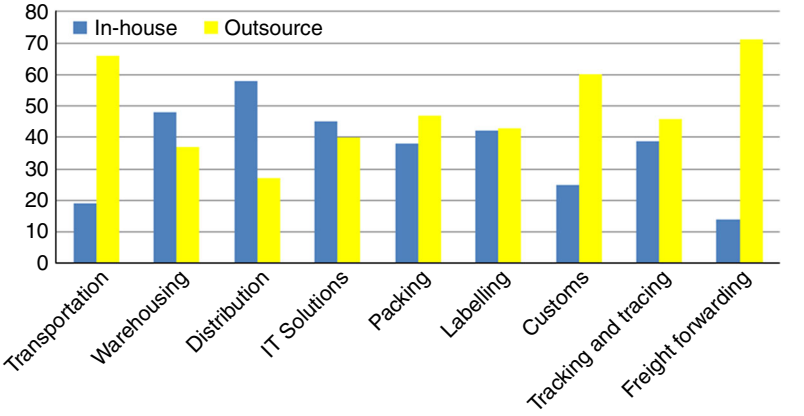


Figure 8.
In-house vs outsourced services

IT solutions were also identified as services which HOs prefer to manage in-house. This may be due to HO skepticism regarding external involvement in DROs due to their sensitive nature or because investment in such services is not regarded a priority (Fritz Institute, 2004). A lack of adequate IT systems leads to poor information sharing, limited collaboration and the duplication of efforts. This suggests that further work may need to be done with HOs to champion the importance of sufficient IT structures. Poor IT infrastructure may also act as a barrier for LSPs to collaborate with HOs as such inadequacies lead to costly mistakes and time inefficiencies.

Preferences related to "labelling" appeared to be marginal; with participants suggesting the function could be outsourced or carried out in-house. This may in fact suggest that labelling has not been identified as a specific and specialized function in its own right. Although labelling showed no significant preference, "packaging", was identified as a function which should be outsourced. This may be due to recognition that a standardized process aids in efficient operations. The variation in preferences, as depicted in Figure 8, draws attention to the fact that HOs do not operate in a unified way. While some organizations outsource their services, others will conduct them in-house, leading to difficulties in sharing services, analysing performances and ultimately, difficulties in establishing meaningful collaborative partnerships.

The literature revealed a number of challenges in relation to poor services in DROs. In order further understand why certain services could be lacking, participants were asked to rank services they perceived could help improve the performance of HOs. Figure 9 shows that the main services identified to improve performance were transport (20 per cent) and warehousing (16 per cent). This was followed by tracking (13 per cent), freight forwarding (13 per cent) and customs (12 per cent).

Interestingly, the survey data also revealed that some of the functions offered by LSPs were perceived to be less important to the performance of HOs. These included services such as labelling (6 per cent), packaging (8 per cent) and IT (10 per cent). This is despite the fact that the findings above suggest the contrary, and that poor standardization in packaging and labelling can lead to the obstruction of aid distribution (Kovács and Spens, 2011). Additionally, it has multiple and diverse functions which can be utilized to fit SC needs (Sohrabpour *et al.*, 2012) and is a function LSPs perform well. They have the knowledge to arrange different types of parcels, and the experience to repack, label and load in different modes of transportation, all of which would improve the efficiency of DROs. The results in Figure 9 also suggest that customs is not considered a priority, despite the fact that this can facilitate the movement of cargo when it arrives to a disaster zone port/airport more easily.

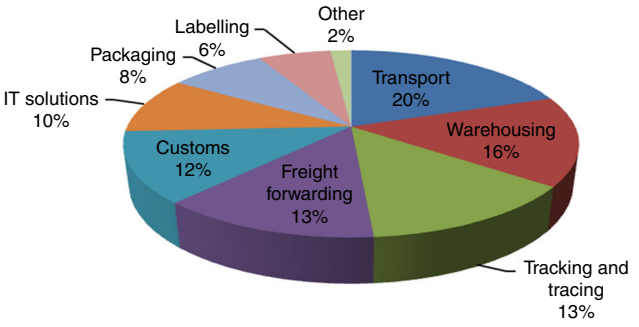


Figure 9.
Services to improve performance of HOs

These findings emphasize the inconsistencies which arise between research and practice. Whilst previous literature clearly demonstrates areas in which collaborative partnerships are needed between HOs and LSPs, the perspectives of these two groups do not correlate. This research provides an insight into which services are still neglected and paves the way for future synchronization of HO and LSP perspectives with previous research into HL and HO/LSP partnerships.In order to explore the issues surrounding performance, respondents were asked if they used any tools to evaluate their processes in DROs. Surprisingly the majority of participants (66 per cent) stated that they do not use any systems to evaluate their responses to these operations. This validates the theory that HOs do not consider the assessment of their processes as a priority, and highlights the need for sophisticated systems and further research. Additionally, the notable absence of performance metrics used by HOs, supports the notion that collaborative relationships will be hindered, as LSPs are likely to be deterred by these practices; or lack thereof. The opportunity was taken to ask participants who are evaluating their activities, to define the strategies they are using to measure their performance in DROs. Participants were quoted as using techniques such as: order lead time, speed of delivery, inventory turnover, number of stock-outs (Participant 8); surveys, feedback and monitoring of delivery times, errors and returns (Participant 30); quality of service and cost-management (Participant 62).

Finally, respondents were asked an open-ended question based on their experiences regarding LSPs involved in DROs. The following example illustrates one of the key points expressed:

> HL has been, and continues to lag behind the corporate and much organized logistics services from the private sector. I believe that the HL partners should open up to the corporate expertise, to overlap and flesh out key best practices and approaches to successful operations. It should simply be seen as a win-win situation (Participant 11).

Analysis of the results surmises that best practices, resources and capabilities seem to be desired by the HL community to improve their performance in DROs, but these do not seem to be consistently or adequately employed.

4.3 Discussion

In the complex and often hectic DRO environment, perceptions of possible collaborators play an important role in determining the formation of partnerships. This research has demonstrated that LSPs are perceived to be focused on business processes, and HOs are perceived to be antiquated and lacking skills; all of which perpetuates the barriers to collaboration.

The cost of logistics services was identified as a key barrier limiting HO and LSP partnerships. This may not just be due to HOs needing to keep their expenditure down, but also due to LSPs needing to focus on their core business functions; essentially both parties need to remain competitive and cost efficient. Additionally, the research found that the list of requirements for HO partnerships with LSPs can complicate the creation of collaborative relationships. This is due to the varying competencies needed in both fields, and competition between HOs and LSPs to benefit their day-to-day operations.

These barriers are further compounded by a lack of preparation during periods of relative calm. By initiating sourcing policies during the preparations phase of a disaster, HOs and LSPs can more effectively work on DRO strategies, and can form trusting and informed relationships before entering the field. Whilst this paper accepts

that the formation of these relationships in the preparation phase could enable HOs and LSPs to exchange experience, knowledge, and a mutual learning relationships, our findings suggested that collaboration with LSPs in the response phase was as significantly important as in the preparation phase.

The general view that HOs are reliant on LSPs for resources was also perceived to affect efficiency of operations especially in areas such as transportation assets, storage facilities, communication systems and trained staff. The outsourcing of some functions to LSPs could enable HOs to provide a customized response, spend more time on administrative functions, and coordinate more effectively amongst themselves in order to reduce waste, optimize the resources and reduce costs. Additionally this may also aid in the transparency of HO operations leading to increased accountability, scope for performance measurement and improved donor-HO relationships.

This research suggests that poor performance metrics hinder organizational and operational learning. The lack of standardization causes each agency to evaluate their performance differently; making global assessment of HOs and DROs impossible. One of the advantages of working with LSPs is continuous performance evaluation which leads to the identification of key factors which HOs could use to improve their logistics operations.

The research has sought a broad range of views but recognizes a focus on using LSP expertise in order to improve performance in DROs. In this way, the research was limited to the evaluation of unique factors relating to the services, practices and knowledge offered by LSPs and could benefit from further insight into the specific skills associated with HOs.

4.4 Validation of results

To validate the results and to ensure they are not biased towards HOs, we sought views of LSPs through an online survey and two interviews. In this process, we summarized the key findings regarding the services and stages in which LSP services are needed by HOs, and where the main barriers to collaboration lie. The questions of the survey are included in Appendix 3. The survey was posted on forums relevant to LSPs on LinkedIn and Twitter during a three week period in April and May 2014. In all, 28 responses were received from participants with current or past experience with LSPs. As shown in Figure 10, participants had extensive experience of working with LSPs, 93 per cent of them had at least one year, 72 per cent more than five years and 47 per cent more than ten years of experience. Some participants expressed that they had experience with both LSPs and HOs in their qualitative responses. Moreover, 57 per cent of participants had experience in relief operations in collaboration with HOs. This composition of participants with considerable experience with LSPs and relief operations provides a reliable base for the validation of results in relation to collaboration between LSPs and HOs.

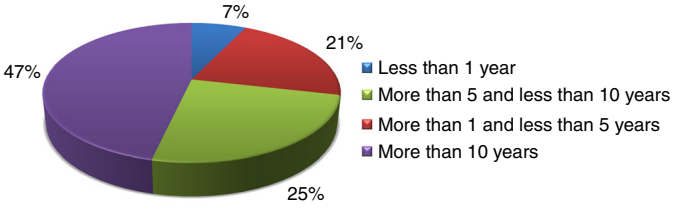


Figure 10.
Work experience of participants in LSPs in the validation survey

Table I presents descriptive statistics in terms of participants' level of agreement with the five following statements from 1 (strongly disagree) to 5 (strongly agree):

S1: the most common services that LSPs provide to HOs are: freight forwarding, transportation and customs;

S2: services such as packaging, labelling and IT in DROs are not commonly outsourced by HOs to LSPs;

S3: LSP services are more needed in the preparedness phase of a disaster (before a disaster) compared to the response phase (immediately after a disaster);

S4: the high cost of LSP services is the main barrier for HOs when seeking collaboration from LSPs; and

S5: the main reasons for LSPs to collaborate with HOs in DROs are: strategic business objectives, CSR, and publicity.

As shown in Table I, views of participants regarding statements S1, S2, S4 and S5 were positive (i.e $\mu > 3$ where μ denotes average scores in the range of 1-5 with 3 representing neutral view). Incidentally, there were two missing inputs in regards to S1 and S2 so the total number of responses for these statements is 27 instead of 28. This does not cause any problems, as statements are treated independently of each other. Regarding statement S3, the average view disagreed with preferring to collaborate with LSPs in the preparedness phase of a disaster opposed to response. This is in line with our earlier conjecture that LSP's services are equally needed in both preparedness and response phases; as expressed in Section 4.2. The question was deliberately designed with a direction to elicit stronger views of LSPs. This view is further confirmed in the qualitative views of participants and follow-up interviews. To assess significance of the results, we conducted one sample one-tailed *t*-test to test the null hypothesis *H0*: $\mu \leqslant 3$ vs *H1*: $\mu > 3$. The results are presented in Table II. As shown in the table, null hypotheses regarding S1, S2, S4 and S5 were rejected at $p = 0.10$ level of significance. This indicates positive views of participants towards the results.

Table I. Descriptive statistics regarding participants' views about the results

	n	Mean	SD
S1	27	3.96	0.898
S2	27	3.56	0.751
S3	28	2.93	1.359
S4	28	3.21	0.833
S5	28	3.64	0.951

Table II. The results of one sample *t*-test

	Test value = 3.0		
	t	df	Sig. (1-tailed)
S1	5.573	26	0.000
S2	3.844	26	0.001
S4	1.362	27	0.092
S5	3.576	27	0.001

Notes: *H0*: $\mu \leqslant 3$; *H1*: $\mu > 3$

Qualitative comments by participants and interviews with managers of two LSPs highlighted some further issues in relation to collaboration with HOs, which could be explored in future research. A continuity issue relating to HO's short-term service and high staff turnover was mentioned as a barrier for collaboration which prevents accumulation of knowledge and the establishment of collaborative partnerships with LSPs. Although participants generally agreed that the cost of LSP services is the main barrier to collaboration with HOs, some felt that the limited budget of HOs could be utilized in a more efficient way if some services were sought from local LSPs in the affected areas, or if local partners were effectively trained in logistics.

Additionally, participants stated that the barrier was not necessarily cost *per se*, but rather the lack of understanding in the humanitarian domain about what LSP costs entail. In similar vein, it was noted that HOs institutionalized focus on free services or cheap options was not a sustainable reality for either LSPs or HOs. Participants also noted the fact that LSPs are first and foremost businesses and therefore cannot consistently keep their prices low for HOs or negate their other commercial contracts in order to have services and personnel on standby for DROs. This was also highlighted as a negative implication for warehousing during the preparation phase as products, staff and facilities are often inactive for long periods of time thus making them expensive, difficult to manage and ineffective.

5. Conclusions and future research directions

This research has highlighted the challenges and barriers faced by HOs and LSPs when forming collaborative partnerships when tackling sudden onset disasters. Greater insights have been gained by exploring the perceptions of actors involved in DROs; we highlight interesting discrepancies between previous theories pertaining to barriers to collaboration, and actual practices in the field. The research demonstrates that bridging the gap between previous literature and perceptions of actors involved in DROs, improves our understanding of the real operational and cultural challenges faced in the humanitarian field.

This research supports theories relating to the importance of collaborative partnerships between HOs and LSPs in DROs. Most importantly we surmise that collaborative partnerships between LSPs and HOs will help save the lives of vulnerable populations post-disaster. Operations will be more efficient and effective and HO capabilities can be bolstered, whilst also improving their transparency and resource allocation. In turn, HOs will be able to satisfy donor needs more clearly, increase their funding and ultimately continue to provide vital projects to those in need. This research also supports studies relating to the direct and indirect economic benefits to LSPs as the result of collaboration in DROs; involvement is often in line with public sentiments and stakeholder expectations which in turn can have positive economic implications.

Our research also reveals important inconsistencies in relation to speculative behaviour about DROs and actual practice. In particular we note conflicting ideals regarding the opportune time for collaboration in the disaster cycle and contradictions regarding the academic importance of packaging process, vs the perceptions of those in the field. Finally, further disputes relating to the perceived importance of outsourcing functions such as IT to LSPs, and the overwhelming reluctance of HOs to actually do it, have also been highlighted. These findings

challenge some of the current theoretical and academic propositions relating to efficiency and effectiveness in DROs and provide a foundation for continued research into the application of proposed theory and best practice.

5.1 Implications for policy and practice

The new empirical evidence produced in this study paves the way for real practical change relating to the ways in which HOs and LSPs approach relationship building. This is facilitated through the findings which introduce an in-depth understanding regarding how organizations perceive the collaborative process. Highlighting the barriers and challenges faced in this field serves to positively impact society through interdisciplinary research and cross-sector partnerships.

This research reveals that commitment to vulnerable populations was not identified as the main motivation for LSPs to contribute in DROs. This finding may aid LSPs to reevaluate the perceived onus put on corporate decision making when dealing with HOs and DROs, and to become mindful of the ways in which they are viewed. Such developments may lead to an increase in trust between HOs and LSPs and may help to bridge the cultural gap thus opening the doors for collaborative relationships.

5.2 Future research

This field of research could be complemented through the formation of a theoretical framework and the subsequent testing of hypotheses relating to collaborative partnerships. In addition, analysing other actors that are part of the Humanitarian SC, including local and regional suppliers, could be of particular interest. LinkedIn could yield potential for future research, as specialized groups interact and communicate with professionals in this particular area of interest, thus illuminating a wealth of resources and information. We also propose that the use of LinkedIn as a data collection technique has two predominant theoretical advantages over the use of online surveys. Online surveys can suffer from poor response rates and an overly homogenous sample (Nulty, 2008). Whilst our research could have benefited from a larger sample, utilizing specialist interest groups in LinkedIn enabled us to boost our response rate through a targeted, multi-method approach. In addition, targeting a variety groups ensured a heterogeneous sample of respondents. Further investigation into the role of donors and their impact on the strategies, operations and decision making structures of HOs would also benefit this research. In addition, future research may wish to address the impact of variables such as size of organization, location and mission on the formation of collaborative partnerships. It is also worth drawing attention to alliances with the military, as they can offer competitive advantage, resources and a structured staff system that could help in relief missions.

In relation to our findings concerning transportations, packaging and labelling, future studies should focus on more environmentally friendly operations and on the creation of more sustainable processes and packages for DROs. The research could also be broadened in order to analyse the impact of slow-onset disasters due to disparities in scale, time, cost, pressure, use of resources and needs variation. In the same vein, and in line with sustainability concerns, research into development programs would also be valuable; looking into how logistics functions could be more cost-effective during long-term operations.

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Appendix 1. List of professional groups dedicated to humanitarian logistics in LinkedIn

- Association of Contingency Planers;
- CDRG: Certified Disaster Restoration Group;
- Coastal Reconstruction Group – Rapid Response;
- Community Emergency Response Team;
- Crisis, Emergency and Disaster Recovery Professionals;
- Disaster and Emergency Management;
- Disaster Recovery Journal;
- Disaster Restoration Professionals;
- Emergency Management in Florida;
- Emergency Management Professionals;
- Humanitarian and Disaster Response Technology Network;
- Humanitarian Communication;
- Humanitarian Logistics Association;
- Professionals in Emergency Management; and
- United Nations – Open Link.

Appendix 2. The main questionnaire

1. What industry are you/were you employed in, or is your main area of activity?
    1. Academic lecturer and/or student
    2. Disaster response teams
    3. Emergency management
    4. International trade
    5. Marketing
    6. Procurement
    7. Supply chain
    8. Volunteer
2. Participant's experiences in humanitarian logistics or humanitarian processes experience.
    1. 1-5 years
    2. 5-10 years
    3. 10 or more
    4. None
3. Do you have an academic background? If so, please select as appropriate.
    1. PhD
    2. MBA

3. MSc
4. Bachelor's Degree
5. Other

4. Which are the services that you think humanitarian organizations can best benefit from logistics service providers (LSPs)?
   1. Transport
   2. Warehousing
   3. IT Solutions
   4. Labelling
   5. Packaging
   6. Customs
   7. Tracking and tracing
   8. Freight forwarding
   9. Other

5. Which processes should humanitarian organizations do in-house and which should they outsource, according to your experience?

	In-house	Outsource
1. Transport		
2. Warehousing		
3. IT Solutions		
4. Labelling		
5. Packaging		
6. Customs		
7. Tracking and tracing		
8. Freight forwarding		
9. Other		

6. In which stage of humanitarian logistics operations do you believe humanitarian organizations should capitalize on the experience, knowledge and services of LSPs?
   1. Mitigation
   2. Preparedness
   3. Immediate response
   4. Reconstruction

7. In each of the following areas: please rate the importance of collaboration between logistics service providers and humanitarian organizations: most important, very important, slightly important, not important.
    1. Access to resources that agencies don't have
    2. Sharing experiences, knowledge and best practices
    3. Training of staff
    4. Cargo handling and distribution
    5. Other
8. In your experience, when humanitarian organizations don't hire logistics service providers, is the in-house function capable of delivering excellent performance in the affected zone?
    1. All of the time
    2. Often
    3. Fairly often
    4. Occasionally
    5. None of the time
9. Have you or your organization organized a cluster or been part of a cluster in order to improve the performance in disaster operations? If so, please explain the experience.
10. Have you or your organization tried to establish a relationship with a LSP? Were you successful? If NO, continue to question 11.
    1. Yes
    2. No
11. What were the reasons your organization failed to establish a relationship with logistics service providers and their level of importance: most important, very important, slightly important, and not important.
    1. Requirements
    2. Cost
    3. Good will of agency
    4. Staff preparedness
    5. Degree of involvement of LSP
    6. Other
12. Currently three large logistics service providers have relationships with international humanitarian organizations (TNT-WFP/UPS-CARE/DHL-UN). Please describe your opinion on their performance in disaster relief.
13. Do you or your organization investigate possible logistics service providers in the preparation stage in vulnerable countries?
    1. All of the time
    2. Often
    3. Fairly often
    4. Occasionally
    5. None of the time

14. Have you used performance metrics to evaluate logistics in disaster relief operations? If yes continue to question 15 if no continue to question 16.
15. Can you please describe how you or your organization evaluates performance in these operations?
16. Regarding recent logistics service providers operations in sudden catastrophes, do you believe that large logistics service providers are able to provide help in any country, regardless of whether they have ongoing operations in that affected country?
    1. Strongly agree
    2. Agree
    3. Undecided
    4. Disagree
    5. Strongly disagree
17. Based on your experience in humanitarian logistics or drawing on your background, what do you think are the motivations for logistics service providers to help in these operations?
    1. Publicity
    2. Strategic decisions
    3. Corporate social responsibility
    4. Start operations in this country or region
    5. Commitment to help vulnerable people
    6. Other
18. Are there any additional comments you wish to make regarding this investigation based on your experience in the field?

Appendix 3. The questionnaire for validity check

Q1. How many years have you worked for logistics service providers (LSPs)? (1: Less than 1 year; 2: More than 1 and less than 5 years; 3: More than 5 and less than 10 years; 4: More than 10 years)

Q2. Do you have personal experience working with humanitarian organizations in any stage of a disaster relief operation? (1: Yes; 2: No)

Opinions about the following statements (1: Strongly disagree; 2: Disagree; 3: Neither agree nor disagree; 4: Agree; 5: Strongly disagree):

Q3 (S1). The most common services that LSPs provide to humanitarian organizations are: freight forwarding, transportation, and customs.

Q4 (S2). Services such as packaging, labelling and IT in disaster relief operations are not commonly outsourced by humanitarian organizations to LSPs.

Q5 (S3). LSP services are more needed in the preparedness phase of a disaster (before a disaster) compared to the response phase (immediately after a disaster)

Q6 (S4). The high cost of LSP services is the main barrier for HOs when seeking collaboration from LSPs.

Q7 (S5). The top reasons for LSPs to collaborate with humanitarian organizations in disaster relief operations are: strategic business objectives, corporate social responsibility, and publicity.

Q8. If there are any other comments you would like make, please provide them here. Also if you would like to discuss any issue further, please provide your contact details so we can approach you at your convenience.

About the authors

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