Collaboration: A critical success factor in the logistics of donations management

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Abstract
Donations Management is an important and relevant aspect in humanitarian operations. This paper presents collaboration as the most critical factor within an efficient donations management, asserting strategies that might improve its relevance in such scenarios, proposing an operations reference model, and simulation as important tools to achieve better results

Keywords: donations management, humanitarian logistics, reference model

INTRODUCTION

Humanitarian logistics is a complex and highly unstable business process, because it involves serious operational challenges such as: the uncertainty of time, personnel training, issues regarding the media coverage, financial support from different entities, lack of information and poor presentation, setting up an information technology infrastructure, among others (Overstreet *et al.,* 2011). Adverse situations where such knowledge can be applied for the relief and recovery of an initial state vary, such as wars, terrorist attacks, forest fires, landslides, flooding, droughts, famine, to name a few.

Humanitarian aid environments have a wide variety of actors, each one with different backgrounds, goals, interests, and skills. These environments commonly need supplies, clothing and food in quantities and times that defy other logistics operations. Such humanitarian logistics processes occur through the humanitarian supply chain. One of the critical factors for the uninterrupted flow of humanitarian logistics operations and the management of relevant supply chains is the donations management, a logistic flow with unique features and characteristics.

Donations management is an imperative and relevant aspect in humanitarian operations. This paper presents collaboration as the most critical factor within an efficient donations management, asserting strategies that might improve its relevance in such scenarios, proposing an operations reference model, and simulation as important tools to achieve better results.

THE HUMANITARIAN SUPPLY CHAIN MANAGEMENT

Humanitarian logistics can contribute immensely to the success of aid and relief operation. Managing such operations and its supply chains is one of the most complex activities in emergency or disaster situations. Not only a disaster damages the current infrastructure in such environments, there are concerns involving people (personnel and victims), the ever-changing scenario that post-disasters can inflict, the unwillingness that some stakeholders capacity to work in some activities, to name a few. Humanitarian Logistics flows as a process involving the various stages of a tragedy, considering from the beginning (problem identification, recognition of region, initial assistance to victims) until the completion of all necessary relief tasks (reconstruction of affected infrastructures, training, demobilizing medical and aid staff), marked by four distinct stages: Mitigation; Preparation; Answer; and Reconstruction (Cozzolino, 2012).

Tomasini and Wassenhove (2009) emphasize that achieving optimal logistics performance requires a comprehensive and mutual relationships between stakeholders in an integrated manner, to coordinate processes efficiently and effectively, eliminating redundancies and maximizing efficiency through its participants. Logistics' usually focused in the object and its travel time, path and destination, while the management of supply chains focuses on the relationships between the actors involved and both are crucial responses linked to disasters.

Humanitarian aid environments have a wide variety of actors, each with different backgrounds, goals, interests, skills and logistics. Simatupang and Snidharan (2002) explain that the lack of coordination between actors in a supply chain increases lead times, inventory costs, repeat business process altogether infers negatively in the victim's quality of service. Kovács and Spens (2007) define as major actors in the humanitarian supply network: PSLs; Donors; Aid Agencies; Military; Governments; and other NGOs (see Figure 1), where they are distinguished within the logistics activities involved in Humanitarian Supply Chain.

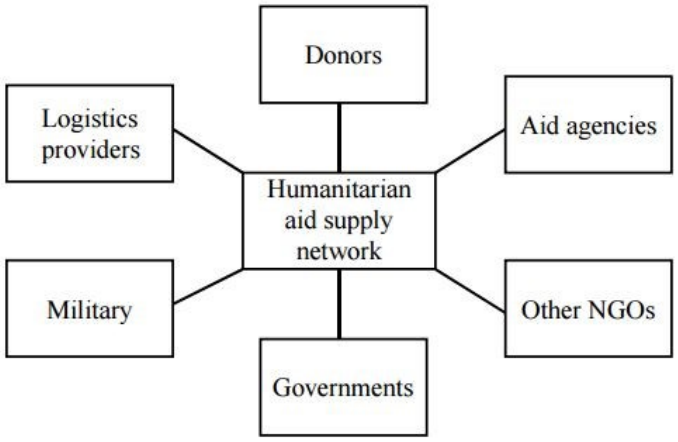

Figure 1: Actors in the supply network of humanitarian aid (source: Kovács and Spens, 2007).

Critical Success Factors in Humanitarian Supply Chains

As seen, managing a Humanitarian Supply Chain is not a simple task. Yadav and Barve (2015) sought to elucidate the critical success factors in the operation and management of these chains,

resulting in an Interpretative Structural Modeling (ISM) and post a *Matrice d'Impacts Croisés Multiplication Appliquée á un Classement* (MICMAC) analysis to emphasize the dependence of forces and power relationships involved in such environment. They are: (1) Government policies and Organizational structure; (2) Strategic planning for emergency relief supply system; (3) Robust information and communication technology; (4) Coordination and collaboration with other relief agencies; (5) Disaster resilient infrastructure and transport facilities; (6) Improved forecasting and early warning system; (7) Procurement and donation management; (8) Inventory management; (9) Risk and need assessment; (10) Capacity building of institutions and people; (11) Continuous improvement in the preparedness and response practices; (12) Agile humanitarian supply chain. The Interpretative Structural Modeling analysis is shown in Figure 2:

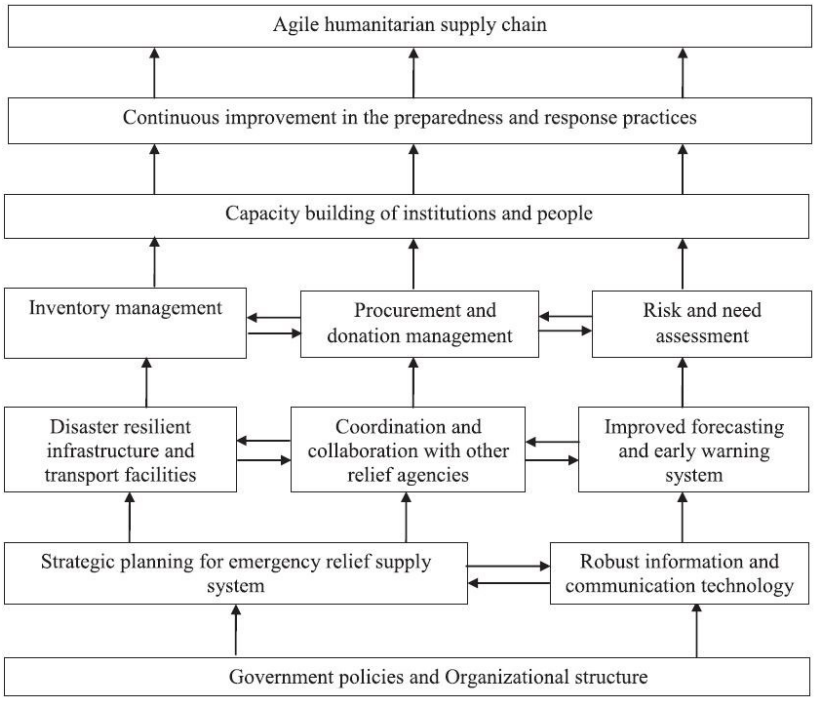

Figure 2 - ISM model of Critical Success Factors in Humanitarian Supply Chains (source: Yadav and Barve, 2015).

Yadav and Barve concluded that there are 12 critical success factors of humanitarian supply chains, carved into seven levels based solely on their driving and dependence power. Government policies and Organizational Structure is the most significant critical success factor of humanitarian supply chain due to its location at the bottom position in the hierarchy. It is also clear that Coordination and Collaboration with other relief agencies directly influences the outcome of activities related to the donations management, which is a key element for the propositions this paper incurs.

DONATIONS MANAGEMENT IN HUMANITARIAN SUPPLY CHAINS

Characteristics of Donations in the Humanitarian Context

The overlooked phenomenon of material convergence (as discussed by Holguín-Veras *et al.*, 2012) refers to the spontaneous flow of supplies and equipment that are sent to a disaster area by donors of all kinds (e.g., individuals, community groups, companies, and government agencies). Donations have a logistical impact in the aid operations since they share the same logistical flows and make use of equipment/personnel that could be directed to other tasks. Holguín-Veras *et al.* (2014) discusses some key findings about logistics and donations management in the humanitarian context:

- Material convergence increases with donors' wealth, and decreases with the distance between donor and disaster.
- How the media portrays the needs has a large influence on the material convergence that is generated.
- The flow of material convergence is comprised of a highly heterogeneous mix of High Priority (HP), Low Priority (LP), and Non-Priority (NP) supplies.
- Non-Priority supplies could exceed 50% of the cargo reaching the site, overwhelming responders when they have other more urgent tasks.
- Low Priority and Non-Priority supplies hamper the flow of High Priority supplies.
- The negative impacts of Low Priority and Non-Priority supplies at end sites are larger than at entry points.

The Critical Success Factors involved in the Donations Management

Based on the Yadav and Barve (2015) work, which provided an Interpretative Structured Model (ISM) for the critical success factors that inflict in the performance of humanitarian operations, we sought to identify the critical success factors linked to the Donations Management by outlining its interactions and characterizing them into decisive, supporting and critical success factors as presented in the Interpretative Structural Model (ISM) developed by Yadav and Barve (2015). The most influencing critical success factors for Donations Management (and labeled as Decisive) are, in hierarchal order: 'Coordination and collaboration with other relief agencies' (4); 'Strategic planning for emergency relief supply system' (2); and 'Government policies and Organizational structure' (1). Supporting critical factors are: 'Inventory Management' (8) and Risk and Need Assessment' (9). Related critical factors are: 'Disaster resilient infrastructure and transport facilities' (5) and 'Improved forecasting and early warning system' (6). The interactions and results can be seen in the Figure 3:

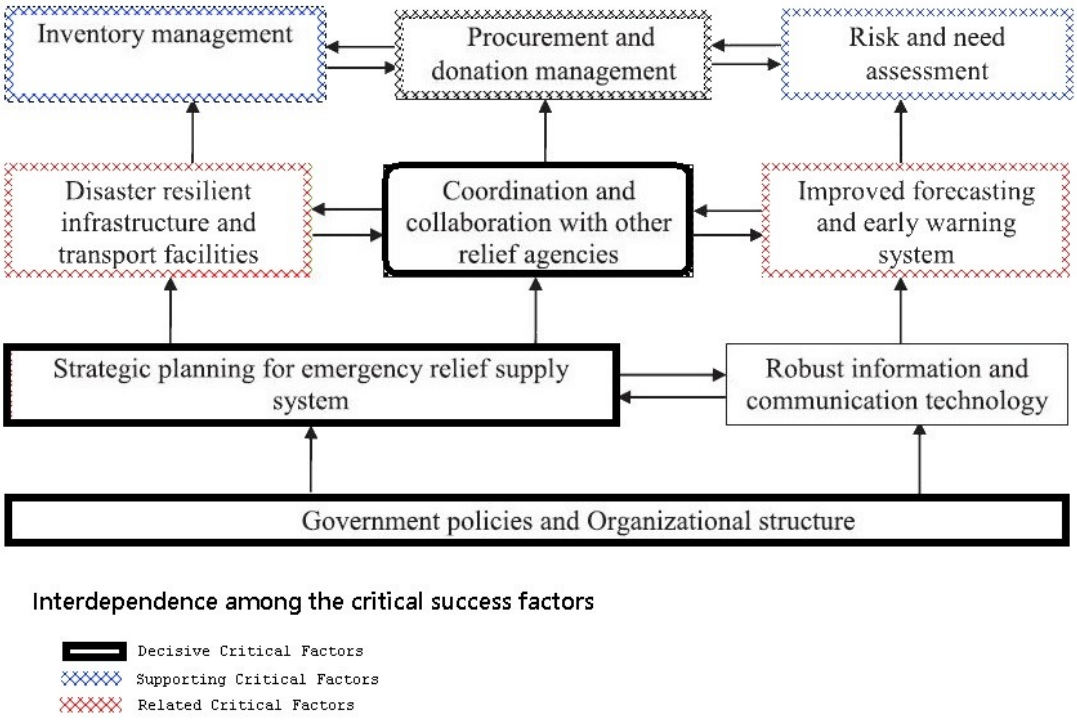

Figure 3 - Decisive, Supporting and Related Critical Success Factors of Donations Management (source: authors - adapted from Yadav and Barve, 2015).

Having identified which factors are more relevant to the management of donations as a humanitarian operation, we can discuss the impacts and propose some research agendas to expand the limited knowledge in this field of study.

DISCUSSION

Coordination and Collaboration have the strongest driving force dependence with Procurement and Donations Management as we can observe in Figure 3, being a level up in the MICMAC analysis – having the most direct and relevant impact to attain success in such operations. Moshtari (2013) defines the difference between these two perspectives: "while the cooperation perspective deals with the agreement on inputs and output of collaboration efforts, the coordination perspective focuses on the means or mechanisms to operationalize the collaborative relationship" (Moshtari, 2013, p. 12). Collaborative strategies, like information and data sharing, integrated usage of resources and staff, context and capacity analysis help limit the impact of environmental turbulence generated by independent actions taken by each active actor on site, making contradictory decisions between parties more often than desirable. The lack of coordination between the involved actors can halt operations in supply chains (Astley and Fombrun, 1983 *apud* Leseure *et al.*, 2010).

Moshtari (2013) supports the statement that there is a growing number of collaborative initiatives within a humanitarian setting - humanitarian organizations are able to conduct their primary or secondary tasks through collaboration, but challenges are defying. Moshtari (2013) presents some factors limiting organizations to appropriately collaborate and achieve the desired

goals of their relationships and the evaluation of collaboration performance in primary and secondary activities. Varella et al. (2014) vouch that collaboration in Humanitarian Logistics operation, for better results, shall contain:

1. Integration: IT-enabled chains; integration in the primary logistics tasks such as warehousing, transportation, planning and management
2. Governance (Trust): Governance issues – clear and detailed assignments for each actor
3. Training & Simulation: Therefore, continuous training – stimulating synergy among actors, providing computing models to simulate scenarios and real simulation operations to keep staff up-to-date are key aspects to support this foundation.

Based on the Varella et al (2014), Yadav and Barve (2015) and Audy *et al.* (2010) paper results, we have defined 3 key proposals where we believe we can improve the knowledge and performance by promoting a better environment for collaboration between stakeholders, each one focused on the three competences – integration, governance and training & simulation:

1 - Integration - PSLs bounded by the adoption of a FOSS platform

Vega and Rousat (2015) discussed four propositions based on the key findings of a research about the possible roles of LSPs in Humanitarian Logistics: (1) LSPs as members of humanitarian supply chains – capable of providing highly performing logistics services where needed; (2) LSPs can play several roles, from providing resources to coordinating the supporting operations; (3) Relief logistics as a business opportunity; (4) LSPs play different roles through the different phases of humanitarian relief. LSPs can act in 3 roles during the humanitarian relief operations as members, tools and as actors (Vega e Roussat, 2015). We identified that, as 'members', LSPs are likely to participate in the humanitarian field mostly through a CSR strategy and in-kind donations such as allocating free logistics capacity to NGOs for any of the different phases, seeking to improve their public image (Vegas e Roussat, 2015); as a 'tool/operator', we expect LSPs to engage within donations management when involved with material handling, last mile distribution in the response and Transportation, Warehousing and Inventory management in the recovery.

We also propose the adoption of Free and open source software (FOSS) solution for coordinating the donations chains in disaster scenarios. There is an increasing usage of FOSS solutions in for disaster management purposes, generally helping the development of response information systems that control humanitarian response resources – exactly what donations need. (Li *et al*., 2012). The usage of a FOSS solution in humanitarian relief operations has been proved to be a success (Li *et al.*, 2012; Audy *et al.,* 2010; Morelli *et al.*, 2010; Tomasini and Wassenhove, 2009).

2 - Governance Principles – The need for a solid reference model for network governance in the Donations Management

One of the biggest challenges faced by Donations Management are the large number of organizations participating in these operations, inflicting in a clash of interests, tasks and capabilities among its partners. Geographical, cultural and organizational policies may influence: a) the donations itself (mostly Non-priority items like unsuited clothing, religious artifacts); and b) the operations (language barriers, gender issues, volunteering). Other important issues to be dealt with are the donor expectations: donors may have desires or responsibilities to be accounted

for when they provide funds or in-kind donations to the relief organizations (e.g. designates assistance areas, place restrictions on the types of relief activities).

The most important element in humanitarian operations, according to Oliveira (2015), are long-term knowledge management, sustaining credible governance structures capable of effectively coordinating multiple supply network players. One example is that stakeholders are commonly mapped and categorized according to organizational functional roles instead of for their inventory knowledge and expertise. Traditional governance models usually are unable to fulfill victims' needs (due to ineffective collaboration within stakeholders, no clear roles among them, non-engagement within actors), unable to forecast fulfilling capacity and needs (insufficient knowledge on management leads to redundancy, unclear processes, limited effort to discover the victims' needs, short-time assignments reduces the confidence between those involved) and are unable to create effective funding flows (mostly due to the chaotic funding and resources availability and the impossibility of monitor the impact of donations). (Oliveira, 2015).

We propose the development of a solid reference model for network governance in Donations Management because of the diversity of actors, the wide variety of achievements and reasoning involved the unpredictability of such flow, the unknown media impact and to close the gap on the lack of standardization this humanitarian operation suffers. Several studies support the importance of governance in Supply Chains (Boström, et al., 2015; Varoutsa and Scapens, 2015; Oliveira, 2015; Schmoltzi and Wallenburg, 2012; Wallenburg and Raue, 2011).

3 – Training and Simulation – Plan before you act

The military usually manages the flow of donations in various humanitarian circumstances such as the Port-au-Prince Earthquake in 2011 and the Brazilian Amazon floods of 2008. Training the population in areas susceptible to natural disasters is essential (Heaslip and Barber, 2014; Costa et al., 2014). At the preparedness phase, collaborative initiatives can focus on sharing their on-site experience, developing the best practices, designing standards and guidelines and promoting training courses (Moshtari, 2013). Holguín-Veras et al. (2014) highlight some aspects that can have impact when before a disaster relief situation ignites, can be discussed with shareholders and stakeholders of humanitarian supply chains: a) Efforts to minimize the flows of Low Priority Non-Priority supplies, ideally at the source of the donations – requiring education and awareness campaigns aimed at the donors that produce those kind of donations; and b) Disaster response agencies must educate the media before a disaster in a particular region so that they are aware of the impacts their reports could have.

Simulations and games are well-know as powerful tools to enhance the learning in operations management because of its variety and capability of developing different types of learning. Simulated emergencies and exercises are exercised by entities such as WFP, UNICEF, IRC, among others. (Gralla et. Al, 2015). The authors outlined that some requirements and aspects of the proposed framework for matching exercise requirements and design in humanitarian supply chains are very high level, which corroborates the findings of Varella *et al.* (2015); Yadav and Barve (2015) and Moshtari (2013).

We propose that a systematic approach to designing training and computational simulations on disaster scenarios that consider the setup of a donations supply chain, through a detailed framework to infer when and how to start and coordinate one flawlessly, being this a research gap

found through the development of this study. Several recent studies support this premise (Gralla *et al.*, 2015; Harke & de Leeuw, 2015; Krejci, 2015; D'Uffizi *et al.*, 2015). Developing and sustaining training and computational simulations is an important preparedness tool to achieve a better-performing supply chain. Such framework should consider the nature of donations and material convergence aspects (Holguín-Veras, 2014) and must be supported by all coordinating actors, heavily dependent on collaboration, integration and governance policies, thus upholding our previous findings.

CONCLUSIONS

Humanitarian Logistics is like walking on a thin line: operations are heavily dependent on the circumstances (geographical location, nature of disaster), the involved personnel (military, relief aid agencies, volunteers) and the victims (gravity, size and needed supplies), to cite a few. Furthermore, donations (in-kind or supplies) flow erratically, increasing the complexity of such operations – but they are also sometimes crucial (when pre-positioned supplies are not enough) and increases the public appeal through media.

We discussed in this paper the importance of the analysis of the crucial success factors in humanitarian supply chains, focusing on the donations management operation. We outlined these success factors as decisive, relative and supporting factors, and proposed three aspects that we understand are crucial on the research agenda to achieve a better performance on donations management operations. Process Integration, Better Governance Policies and Training & Simulation were highlighted as important aspects that, through collaboration efforts, we believe can achieve the prospected goals.

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