Understanding the Drivers and Barriers of Coordination Among Humanitarian Organizations

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Abstract :

The study seeks to understand the drivers and barriers for horizontal coordination among humanitarian organizations from both practitioners and academics sources. It identifies four categories of factors - environmental factors, factors associated with donors' role, inter-organizational factors and organizational factors - influencing coordination effort among humanitarian organizations.

Key Words:
Horizontal Coordination, Conceptual Model, Humanitarian Operations.

Introduction

The impact of disasters is growing over time. The number of natural disasters has increased in the last decades and is expected "to increase by a further multiple of five over the next 50 years" (Thomas and Kopczak 2007). The severity of disasters leads to involvement of a large number of established organizations and newly born organizations after the disaster strikes in humanitarian operations. For example, following the 2004 Asian Tsunami more than 40 countries and 700 nongovernmental organizations (NGOs) were present in the affected area (Chia 2007), or after Haiti earthquake 3,000 to 10,000 NGOs are estimated operating in Haiti (Kristoff, Panarelli et al. 2010).

To deal with the growing number and complexity of disasters (Van Wassenhove 2006), and to handle the growing need for more sustainable humanitarian operations (Shayoh, Udeaja et al. 2002; Kennedy, Ashmore et al. 2008; Zuo, Potangaroa et al. 2009; Chang, Wilkinson et al. 2010), HOs are motivated to coordinate with each other. For instance, Van Wassenhove (2006) points out that even when organizations are well prepared to respond

during disasters, they may be less effective when they operate individually within a large-scale disaster. Van Brabant (1999) suggests that "similar standards of quality, cost-effective use of resources, rational allocation of tasks, and working towards agreed priorities" are all characteristics that promote coordination among HOs. (Gazley and Brudney 2007) suggest that coordination can yield many benefits such as "economic efficiencies, greater service quality, organizational learning, access to new skills, diffusion of risk, improved public accountability, ability to buffer external uncertainties, and conflict avoidance." The significant amount of uncertainty (e.g. number of beneficiaries, availability of supply, conditions of supply networks, availability of human resources, etc.) faced by HOs when responding to disasters (Thévenaz and Resodihardjo, 2010) can amplify the benefits of coordination. However, high levels of uncertainty also create additional barriers to coordination.

While (Samii and Van Wassenhove 2003) report increased levels of coordination among HOs (through sharing equipment, assets, and resources), the humanitarian operations literature provides numerous examples of the scarcity of inter-organizational humanitarian coordination. (Van Wassenhove 2006) documents such coordination failures for the 2004 Indian Ocean Tsunami; (Farazmand 2007) provides examples for the 2005 hurricane Katrina; and Cordoba (2010) for the 2010 Haiti earthquake.

In summary, Thévenaz and Resodihardjo (2010) observes that "efforts are duplicated, resources are used in an unproductive and ineffective way or are wasted, relief efforts are slow, impeded, or obstructed." The lack of coordination results in ineffective aid distribution particularly in the last mile (Murray, 2005); causes congestion at local airports and roads (Fritz 2005); can lead to injury or death of aid recipients struggling to attain services (Moore et al., 2003); leads to competition among HOs over limited available resources (Steinberg 2007), raising costs and increasing delays for services (Chang, Wilkinson et al. 2010). In contrast, coordination through joint plans could help HOs to efficiently use the available resources, or coordination through joint procurement of resources from abroad could lead to higher negotiation power and lower costs which eventually could decrease the level of competition and improve service to beneficiaries.

Despite the dramatic importance of inter-organizational coordination in humanitarian operations in recent years, few systematic studies of horizontal coordination have been completed (Balcik, Beamon et al. 2010; Schulz and Blecken 2010). In fact, this topic has received only limited exposure in operations management (Cruijssen, Cools et al. 2007). Accordingly, this work represents an early attempt to frame theoretically the horizontal coordination concept in humanitarian operations research. Furthermore, this study sheds light on the drivers and barriers of coordination effort among HOs. It focuses on horizontal coordination among HOs, and identifies four categories of factors environmental factors, factors associated with donors' role, inter-organizational factors, and organizational factors influencing coordination performance among HOs.

This paper is organized as follows: we begin by defining and characterizing the types of horizontal coordination. Next, we review the literature on horizontal coordination in humanitarian operations and finally identify four categories of factors - environmental factors, factors associated with donors' role, inter-organizational factors and organizational factors- influencing coordination effort among humanitarian organizations.

Horizontal Coordination Defined

Coordination, collaboration, alliances, or integration are often used interchangeably to qualify inter-organizational partnerships. However, to develop and validate our theory of horizontal coordination, we must first provide a clear and unambiguous definition. (Ergun, Gui et al. 2011) define coordination as "the management of parallel actions in ways that increase

effectiveness" which may include conducting identical or different activities or projects by different organizations. The operations management literature distinguishes between two forms of potential supply chain coordination: horizontal and vertical. Vertical coordination includes parallel actions with suppliers, customers, or across departments of the same organization. Horizontal coordination includes coordination with competitors or non-competitors providing similar services, or internal departments with similar functions (Simatupang and Sridharan 2002).

Vertical coordination across supply chain echelons has been well-examined in supply chain management literature (Johnston, McCutcheon et al. 2004; Benton and Maloni 2005; Griffith, Harvey et al. 2006; Cruijssen, Cools et al. 2007; Johnston and Kristal 2008; Paulraj, Lado et al. 2008; Van Der Vaart and Van Donk 2008). Power distribution, trust, planning difficulty, and communication are among the factors that influence both vertical coordination among companies and their performance (Goffin, Lemke et al. 2006; Van Der Vaart and Van Donk 2008; Bendoly, Perry-Smith et al. 2009; de Leeuw and Fransoo 2009; Fawcett, Magnan et al. 2010). Synthesizing the literature and distinguishing between integration and collaboration, Cao and Zhang (2011) identify seven areas for supply chain collaboration: "information sharing, goal congruence, decision synchronization, incentive alignment, resources sharing, collaborative communication, and joint knowledge creation". Furthermore, Cao and Zhang (2011) conceptualize collaborative advantage or benefits through the following five components: "process efficiency, offering flexibility, business synergy, quality, and innovation."

The academic research addressing horizontal coordination in supply chain management is limited (Cruijssen, Cools et al. 2007). A few studies examine factors influencing coordination (Chen and Roma ; Oh and Rhee 2008; Verstrepen, Cools et al. 2009; Gazley 2010; Muhwezi 2010; Schotanus, Telgen et al. 2010). (Verstrepen, Cools et al. 2009) characterize horizontal coordination objectives as including "cost reduction, growth, innovation, information, quick response, and social relevance".

Focusing on horizontal coordination efforts, (Lambert, Emmelhainz et al. 1999) characterizes three types (see Figure 1), depending on their level of integration. In one extreme of the spectrum, Lambert et al. (1999) place arm's length cooperation. In Arm's length cooperation, organizations maintain only a limited number of exchanges and have no significant joint operations. In the polar extreme, the authors identify horizontal integration. Under horizontal integration partners can integrate or combine assets and operations under sole ownership, either through a merger among equal partners or an acquisition among unequal partners (Yin and Shanley 2008).

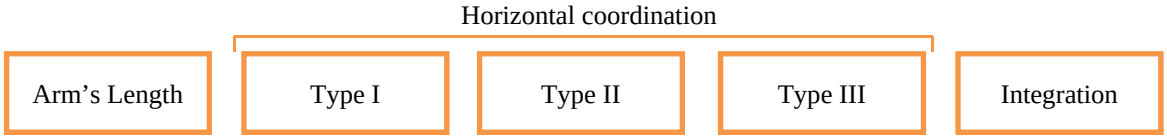

Figure 1. Horizontal coordination types (based on Lambert et al. 1999)

In type I, partners coordinate on a single task or to a limited extent over a short-term period. In the humanitarian context, type I coordination among HOs includes sharing information about "the disaster situation, the affected population or the availability of resources" (Zhang et al., 2002). In addition, HOs coordinating with type I initiatives jointly develop and pursue immediate solutions for common problems (McLachlin and Larson 2011). In type II coordination, partners jointly execute a number of tasks, or several departments of each organization collaborate over a medium-term period. Type II coordination in humanitarian context is often disaster (or event) oriented, focusing on joint

planning, joint context and capacity analysis, or joint identification of critical issues (e.g., locations of supply chain disruptions or bottlenecks).

Balcik et al. (2010) and Van Brabant (1999) suggest that HOs can coordinate in terms of the prioritization of target groups, regional division of tasks or joint projects. The purpose of type II coordination efforts in the humanitarian context are to close gaps, avoid unnecessary duplication of efforts, efficient use of available resources, and performance evaluation (Van Brabant 1999). In type II coordination, the sharing of the knowledge among partners includes "the availability of supplies, schedules of aid deliveries and their routing" (Kovacs and Spens, 2010). In type III, known as "strategic alliance", the organizations combine or integrate their operations to a significant degree. Partners have a long term scope on their relationship and consider others as the extension of themselves. This type of coordination involves long-term joint planning and more integrated supply chain processes, across functions and organizations. Arranging a formal contract among partners becomes more necessary as the coordination intensity increases, moving from type I to type III. In the humanitarian context there are emerging initiatives for applying type III coordination, such as the Sphere Project or the International Alliance against Hunger. The importance of organizations' coordination in humanitarian operations and the challenges of designing and employing the coordination initiatives initiated a considerable number of studies from scholars and practitioners' perspectives. The following section review the conceptual and methodological orientation of academic studies.

Review of papers and reports considering horizontal coordination among HOs

The search procedure began by using the following key words "coordination", "collaboration", or "Inter-organizational relationships" combined with "Humanitarian aid/relief organizations". Papers and reports which consider coordination among NGOs (not including military or private sector) were chosen for further studies. Focusing only on supply chain management or operations management journals provides us a limited number of studies (McLachlin and Larson 2011), so we extended our search to all academic and practitioner outlets. For this reason, we used Google scholar which in addition to published papers gives access to working papers or practitioners' reports. Additionally, we checked the studies which cited seminal papers (e.g. Van Wassenhove, 2006). These steps eventually gave access to 37 relevant papers published in various categories of Journals (Table 1), and 16 relevant practitioner reports.

Table 1. The categories of Journals examining the coordination among HOs

Operations Management	18
Public Management	9
Disaster Management	7
Others (Information Systems & Computer Science)	3
Practitioner report	16

Our review of published research on coordination among HOs allowed us to identify common themes. First, several studies emphasize the current low levels of coordination among HOs; they also stress the importance of coordination to improve the level of humanitarian relief services (Van Wassenhove 2006; Kovács and Spens 2007; Perry 2007; Kovács and Spens 2009; Maon, Lindgreen et al. 2009; Pettit and Beresford 2009; Kapucu, Arslan et al. 2010; Kovács and Spens 2011). Some studies consider one or more aspects of coordination, such as motivation (Ngamassi, Zhao et al. 2010), the structure of inter-organizational relations (Moore, Eng et al. 2003; Stephenson Jr and Schnitzer 2006; Battini 2007), leadership (Waugh and Streib 2006), permanent and temporary networks (Jahre,

Jensen et al. 2009), and trust (Tatham and Kovács 2010). Still others consider the evaluation of current coordinating agents or practiced coordination initiatives (Van Brabant 1999; Lee and Low 2006; Battini 2007; Perry 2007; Simo and Bies 2007; Simo 2009; Balcik, Beamon et al. 2010; Jahre and Jensen 2010). Finally some studies have shed light on the drivers or impediments of coordination and proposed solutions for dealing with them (Van Brabant 1999; Cooley and Ron 2002; McEntire 2002; Campbell and Hartnett 2005; Zoraster 2006; Parmar, Lobb et al. 2007; Balcik, Beamon et al. 2010; Schulz and Blecken 2010; Thévenaz and Resodihardjo 2010; Dolinskaya, Shi et al. 2011; McLachlin and Larson 2011).

Methodologically, studies on humanitarian coordination follow similar approaches. A literature review of previous studies on humanitarian coordination in academic and practitioner journals is common. This is frequently followed by proposing methods for the promotion of coordination among HOs (Van Brabant 1999; Minear 2004; Barnett 2005; Campbell and Hartnett 2005; Stephenson Jr and Schnitzer 2006; Battini 2007; Kovács and Spens 2007; Pettit and Beresford 2009; Kapucu, Arslan et al. 2010; Kovács and Spens 2011). Some of this type of studies elaborate the learning of business organizations in established academic fields and argue towards adapting those models or methods in humanitarian context (Van Wassenhove 2006; Maon, Lindgreen et al. 2009; Balcik, Beamon et al. 2010; Kovacs and Spens 2010; Tatham and Kovács 2010; Tatham and Houghton 2011). Additionally, there are few papers which used field study to investigate the coordination among HOs (McEntire 2002; Lee and Low 2006; Zoraster 2006; Coles, Zhuang et al. 2012). A few studies used more advanced quantitative methods such as social network analysis (Moore, Eng et al. 2003; Ngamassi, Zhao et al. 2010) or simulation (Zhao, Yen et al. 2009; Zhao, Yen et al. 2012).

In respect to data collection methods various methods have been used such as survey (Parmar, Lobb et al. 2007; Ngamassi, Zhao et al. 2010), interviews (Perry 2007; Dolinskaya, Shi et al. 2011), workshop presentations (Kovács and Spens 2009; McLachlin and Larson 2011). Another observation is that many of studies collected data based on the event level such as South-East Asian Tsunami or Katrina (Waugh and Streib 2006; Simo and Bies 2007; Thévenaz and Resodihardjo 2010), and a few studies investigate the coordination at organizational level within dyad, triad or other type of organizational relationships, such as International Federation of Red Cross and Red Crescent Societies (IFRC), United Nation Humanitarian Response Depots, ECHO humanitarian procurement centers (HPC) (Jahre, Jensen et al. 2009; Schulz and Blecken 2010).

Review of papers and reports considering drivers and inhibitors of horizontal coordination among HOs

Our literature review presents a number of factors influencing the coordination efforts among HOs. Figure 3 and Table 2 exhibit these factors in four categories: environmental factors, factors associated with donors' role, organizational factors, and inter-organizational factors.

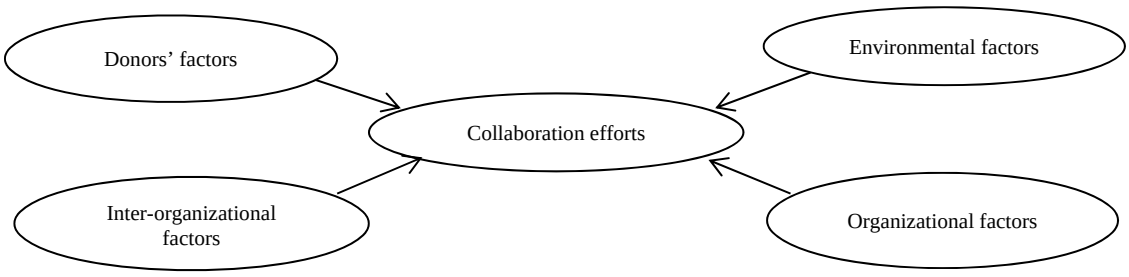

Figure 3. Conceptual model of drivers and inhibitors of horizontal coordination among HOs

Environmental factors point to the unpredictability or uncertainty of the demand and infrastructure in the affected region as well as the available local and international resources. In some situations, after disaster hits, we witness changes in the political environment or military situation on the field, which influence the involvement of HOs in collaborative initiatives. Additionally, there is rarely access to reliable, adequate and timely exchange of information (Day, Junglas et al. 2009; Schulz and Blecken 2010) about the disaster location, its intensity, the extent of damage in regional infrastructure (i.e. communication, transportation), the amount of population affected, or beneficiaries' needs. However, in some cases, access to too much (and often incomplete or inaccurate) information delays data processing. Furthermore, the presence of new or inexperienced HOs adds more challenges to the humanitarian environment. The high number of HOs and the lack of transparency in their resources and capabilities to deliver humanitarian relief increase uncertainty and the likelihood of competition among them for available resources. Finally, beneficiaries' demands require quick response, which provides less time for coordination.

Table 2 : Factors Influencing the Coordination Effort among Humanitarian Organizations

Category	Evidences	References
Environmental factors		
Unpredictable situation	Changes in the political environment Changes in the military The location and timing of disasters Availability of adequate and reliable information	(Sommers 2000; McEntire 2002; Balcik, Beamon et al. 2010)
Demand	Characteristics and requirements of the affected population Urgency of relief response	(Balcik, Beamon et al. 2010; Dolinskaya, Shi et al. 2011; Tchouakeu, Maldonado et al. 2011)
Supply	Intensity of damage to local infrastructure (i.e. communications, transportation) Available local and international resources The presences of a considerable number of HOs (mostly new and inexperienced actors)	(Cooley and Ron 2002; Van Wassenhove 2006; Balcik, Beamon et al. 2010)
Donors' factors		
Limitations on the usage of resources	Usually available after the disaster Spending the provided resources in a short period of time Spending the provided resources on specific types of relief projects	(Stephenson 2006; Balcik, Beamon et al. 2010)
Incentives mechanisms	The use of renewable and short term contracting Inducing competition among HOs over scarce resources Threatening humanitarian principles	(Cooley and Ron 2002; Cairns 2012; Taylor, Stoddard et al. 2012)
Inter-Organizational Factors		
Strategic compatibility	The differences among organizational objectives, missions or mandates The level of trust among organizations Cultural differences among organizations Communications barriers (i.e. language) The strength sense of mutuality	(Van Brabant 1999; Campbell and Hartnett 2005; Van Wassenhove 2006; Zoraster 2006; Balcik, Beamon et al. 2010; Schulz and Blecken 2010; Thévenaz and Resodihardjo 2010; Dolinskaya, Shi et al. 2011; Houghton 2011; Knudsen 2011; McLachlin and Larson 2011; Tchouakeu, Maldonado et al. 2011; Akhtar, Marr et al. 2012)
Operational compatibility	Differences among organizations' organizational structure, operational or internal policies, programming approaches, standards and techniques, or timeframes	(Campbell and Hartnett 2005; Steets, Grünewald et al. 2010; Dolinskaya, Shi et al. 2011; McLachlin and Larson 2011; Tchouakeu, Maldonado et al.

Category	Evidences	References
		2011; Akhtar, Marr et al. 2012)
Competition	Competition for funds Competition for visibility and media coverage	(Van Brabant 1999; Stephenson Jr and Schnitzer 2006; Dolinskaya, Shi et al. 2011)
Power	The extent of disparity in organizations' power and resources Political imperatives and jockeying for power Symmetry between the parties (i.e. size)	(Campbell and Hartnett 2005; Knudsen 2011; McLachlin and Larson 2011; Tchouakeu, Maldonado et al. 2011)
Coordination process	Mechanisms to allocate joint costs, benefits or risks Accountability over the performance Clarified roles and responsibilities Lack of tools or technical skills for coordination Availability and use of technology (e.g. cell phones, radios, ..) The principles of transparency and responsibility	(McEntire 2002; Thévenaz and Resodihardjo 2010; Dolinskaya, Shi et al. 2011; Knudsen 2011; Tchouakeu, Maldonado et al. 2011)
Organizational Factors		
Concerns associated with collaboration	Lack of transparency regarding existing and potential benefits Increasing bureaucracy & decreasing flexibility Threatening timely response Accountability complications Threatening the value of being independent from other agencies or being a sovereign entity Threatening impartial and neutral humanitarian action Threatening the value of strengthening their humanitarian identity The possibility of losing competition after sharing their own competencies with other agancies	(Van Brabant 1999; Campbell and Hartnett 2005; Balcik, Beamon et al. 2010; Schulz and Blecken 2010; Houghton 2011; Tchouakeu, Maldonado et al. 2011; Akhtar, Marr et al. 2012; Cairns 2012)
Resources	Limited resources (personnel, money (i.e. staff salary or travels) dedicated to collaboration efforts Short-term volunteers or temporary employees Frequent changes in team leaders and point persons The presentence of organizations' junior staff at the coordination meetings (having little leadership/ decision making capacity)	(Van Brabant 1999; Rawal, Fautin et al. 2005; Balcik, Beamon et al. 2010; Dolinskaya, Shi et al. 2011; Tchouakeu, Maldonado et al. 2011; Akhtar, Marr et al. 2012)
Collaborative capabilities	Propensity towards command and control mentality Management capacity and leadership style (i.e. collaborative leadership) Capabilities of staff carrying out the coordinating efforts (i.e. skills, attitude, knowledge, experience) Lack of incentives towards collaborative efforts	(McEntire 2002; Rawal, Fautin et al. 2005; Stoddard, Harmer et al. 2007; Thévenaz and Resodihardjo 2010; Tchouakeu, Maldonado et al. 2011; Akhtar, Marr et al. 2012)

Donors' factors are those associated with donors' role in promoting the coordination efforts among HOs. In order to deliver sustainable and efficient services to the beneficiaries, some donors have initiated programs to promote collaboration among HOs. However, there are some concerns which influence HOs' propensity to engage in the plans or follow the donors' proposed guidelines. For example, funds are sometimes available in special situations that might be considered to threaten humanitarian principles, such as violation from neutral or impartial humanitarian action (Cairns 2012). In addition, coordination demands resources, so it is worth it to establish coordination relationships before disasters hit. However, the funds are mostly available after the disasters hit. In addition, HOs are under pressure to use the provided funds on specific projects over a short-term period, so they cannot use them to strengthen their collaborative relationships.

Due to the challenges in assigning donations to HOs, such as the rising number of HOs or the increasing concern of donors on the efficient use of the available resources, donors have arranged competitive contracts and employed incentive mechanisms (Cooley and Ron 2002, Huxham , 1993, Barnett 2005) designed upon short-term objectives or quick results, which subsequently motivate HOs to keep a short-term view of operations and decisions. Therefore, within this kind of environment, HOs are concerned with their own survival and self-preservation, so they have low tendency to collaborate with others (Huxham 1993; Cooley and Ron 2002; Barnett 2005; Balcik, Beamon et al. 2010; Kovacs and Spens 2010).
The third category includes factors associated with inter-organizational characteristics or status. The diversity or conflict among HOs' mandates or goals (strategic level) and the different internal policies, standards, operational approaches and timeframe in humanitarian operations (operational level) lead to low coordination. Another aspect of incompatibility among HOs initiates from their various values and organizational cultures, which could lead to misunderstanding, conflicts, or mistrust among organizations and eventually decreases their sense of mutuality and engagement in collaborative efforts. Scarcity of resources, particularly during peak seasons, leads to intense competition over limited resources, publicity, or media attention. The last factor which influences inter-organizational relationships is the extent of disparity or asymmetry among the partners. Organizations in weak positions of power or resources are less engaged in collaborative efforts, because of their organizational value or policy which is not to be coordinated with powerful organizations.
The last group includes drivers or inhibitors associated within organizations. The existing or potential benefits of coordination with other organizations are not clear in humanitarian settings. Scholars and practitioners note several benefits of collaboration among HOs, such as improving on-time delivery of products/services, reducing humanitarian operations' costs, or having access to more resources (e.g. financial, equipment, skills, or information). However, HO managers have some concerns about the costs of coordination which discourage them to initiate or join collaborative efforts. For example, there is a belief that collaboration increases bureaucracy, which decreases organizational flexibility and timely response to the beneficiaries' needs. Additionally, some HOs consider themselves as sovereign entities, so coordination could endanger their competencies or capabilities. Moreover, coordination complicates accountability for performance or raises the possibility of loss of control over operations (Huxham 1993). Another factor is related to the organization's independency, which is prized in the humanitarian context. Each HO looks for approaches which strengthen its identity and distinguish it from other organizations. The current belief is that engaging in collaborative efforts could put their identity or independency at risk. Furthermore, some HOs' managers believe that engaging in collaborative efforts could threaten their non-politically driven mission (Minear 2004) or could lead to violation of humanitarian principles such as impartial action (Cairns 2012).
The other factors include those related to the resources (i.e. money, staff) necessary to have successful collaboration initiatives. HO's managers have limited time, so they usually delegate arranging collaborative efforts to junior or temporary colleagues who do lack the proper leadership or decision making skills. Additionally, the turnover of human resources in the humanitarian setting is high, which results in frequent changes in leaders or persons in charge of collaborative efforts. This endangers the continuity of coordination or limits the HO's capacity to learn from previous endeavors.
The last factors are associated with HO's capabilities for engaging in collaborative efforts. Because of temporary or high turnover of human resources in HOs, they do not have enough knowledge or experiences in efficient humanitarian operations. Additionally, a number of scholars argue that the skills and attitudes of HO human resources do not fit the

needs of partners interested in maintaining efficient collaborative relationships or carrying out joint projects with other organizations such as propensity towards collaborative leadership and avoiding command and control mentality, skills in well communicating with other partners and building group identity, capabilities in joint decision making, planning, assigning roles and accountability, and eventually joint implementation or performance assessment of projects. Finally having access to tools and technologies facilitates information sharing and communication among HOs to strengthen overall collaboration among partners.

Limitations and Potential Areas For Further Research

This study contains some limitations. First, employing empirical research methods has recently been emphasized by scholars for strengthening the empirical base of operations management (Gupta, Verma et al. 2006; Fisher 2007; Craighead and Meredith 2008). However, few studies in humanitarian operations have used empirical methods (e.g. well-structured single or multiple case studies, field study, or lab experiment) to explore the coordination among HOs. In respect to the proposed model, there are opportunities to conduct empirical research, through single or multiple methods (Boyer and Swink 2008), focusing on factors within one or multiple categories of the model. Additionally, empirical studies with samples of different type of HOs (e.g. local, international, or private) presenting in various regions of the world can examine factors within our proposed model. For example, as a popular method in analyzing the inter-organizational relationships, social network analysis can give insights on the validity of our proposed model or explain why HOs' networks are "formed, disintegrate, and succeed or fail" (Borgatti and Li 2009).

Second, in developing the model we relied on secondary data from literature review and practitioners reports, but further studies should use primary data through field research to revise and test the model. For example through field research (using methods such as action research, case study, content analysis, ethnography, or experiments), researchers can observe and investigate the actual behavior of HOs' managers while treating with problems in coordination practices as well as the practical validity of conceptual model. The results can "challenge, support, and/or extend existing theory, identify a lack of theory to explain observed phenomena, or be exploratory and thus theory building" (DeHoratius and Rabinovich 2010).

Finally, after using field research and using approaches within behavioral operations management, the knowledge relevant to the actual behavior of HOs' managers while dealing with coordination problems emerge. In next steps, scholars can investigate managerial interventions that counteract or leverage these behavioral deviations through behavioral mechanism design approach (Katok and Loch 2010).

Conclusion

As we look to the future of research in horizontal coordination among HOs, we believe that there is a considerable amount of work needed to fully explore the phenomenon. Our research provides insights into the drivers and barriers of horizontal coordination among HOs. Specifically, the study highlights the factors which have effect on the coordination effort, and guides the HOs managers in developing strategies for increasing the horizontal coordination performance. We hope that our study prompts future studies that will look in more detail theoretically and empirically at the proposed model in order to make it more insightful and valuable in understanding inter-organizational relationships among HOs and designing strategies for its improvement.

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