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Trends and Developments in Humanitarian Logistics – a Gap Analysis

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Abstract

Purpose – The aim of this article is to present current trends and developments in humanitarian logistics practice, research, and education, and analyze the gaps between these. The article serves as an update on previous literature reviews in humanitarian logistics.

Design/methodology/approach – The article is primarily conceptual and develops a framework for analyzing trends and gaps between humanitarian logistics research, education, and practice. Data is compiled through keyword searches, publicly available bibliographies and websites of educational institutions as well as draws on material from practitioner workshops, tutorials, conference presentations and personal communication with practitioners and educators.

Findings – Gaps are revealed in humanitarian logistics practice, research, education, as well as between these. Few education programs to date consider the skill needs of humanitarian logisticians but future trends in practice and research can be used to develop them further. More empirical and practice-near research is called for at the same time as there is a need for comparative analyses, generic models and theory building in humanitarian logistics.

Research limitations/implications – Any attempt to grasp current trends in a field is delimited by a lack of overview of the activities of an abundance of humanitarian organizations and fragmented research communities. The article advocates a broader view and openness across organizations and disciplines.

Practical implications – The gap analysis indicates trends but also gaps in humanitarian logistics practice and highlights the need to consider new societal pressures such as climate change and urbanization.

Social implications – Humanitarian logistics is concerned with serving beneficiaries, thus their welfare is at the core of the discipline.

Originality/value – Several articles have reviewed humanitarian logistics research before, but gaps between practice, research and education have not yet been addressed.

Keywords: humanitarian logistics, logistics education, gap analysis, trends

Classification: research paper

1. Introduction

Humanitarian logistics has come a long way since the outcries about poor logistics management of the 2004 Indian Ocean tsunami. This disaster, and related criticism of its management, is often labeled the turning point of logistics in the humanitarian context. Since then, natural disasters such as the 2010 Haiti Earthquake and Pakistan Floods continue to trigger interest in humanitarian logistics, though Pettit and Beresford (2005) quote high profile events in logistics literature since the 1994/95 Rwanda Genocide. As the genocide illustrates, only about 3% of disasters can be attributed to “natural” causes (van Wassenhove, 2006), more relate to political crises, wars, complex emergencies, pandemics and epidemics. Disregarding wars, statistics of technological and natural disasters attribute droughts to killing most people (over 20,000 of them on average), followed by epidemics (over 7,000) and earthquakes (about 2,200) (EM-DAT, 2010). Trends also show an increase in the number of natural disasters and their impact in terms of number of affected people overall – though at the same time, the number of people killed in a disaster is declining (EM-DAT, 2010). As humanitarian logistics (HL) is primarily concerned with people that have been affected by a disaster, i.e. the beneficiaries, these trends point towards an increased need for humanitarian aid and HL.

Previous review articles have addressed trends in HL research, though e.g. Kovács and Spens (2007) also included a number of practitioner outlets in their analysis due to a scarcity of relevant articles prior to 2005. Whilst Thomas and Mizushima pointed at a lack of dedicated training already in 2005, and INSEAD started to publish relevant teaching cases in 2003 (Tomasini and van Wassenhove, 2009), there is no research to date that would address HL education. Thus we extended our analysis to encompass practice, research, and education (see Figure 1). Hence, this article aims to present current trends and developments in humanitarian logistics practice, research, and education, and analyze the gaps between these.

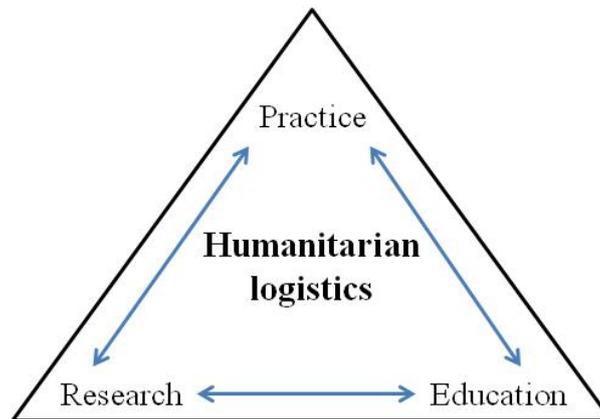


Figure 1: The scope of our analysis

The article is structured as follows: first, the current state and trends in practice are presented, followed by the same in research and education. Next, gaps in each of the areas are analyzed after which gaps between the three cornerstones practice-research-education are presented. Conclusions are drawn for future agendas for HL research and education.

2. Methods used for the update

The literature review on HL research encompasses academic journal articles, book chapters, papers in conference proceedings, but also material from tutorials at academic conferences. The latter is of particular importance for assessing the current trends in research. Three previous literature reviews in journal articles and a book chapter were used as the starting point of this article: Altay and Green (2006), Kovács and Spens (2007), Kovács and Spens (2008) and Natarajarathinam *et al.* (2009). Further sources worth noting include Peter Tatham’s bibliography of HL and current endeavors to comprise an Emerald reading list on the topic. These were rounded off with keyword searches that combined “crisis”, “humanitarian”, “emergency”, “disaster”, “aid” with “logistics”, “supply chain” and “operations” and looked at logistics and supply chain management (SCM) journals as well as journals in disaster management and development studies.

The first review of HL practice includes data from websites of humanitarian organizations, as well as material from workshops and seminars with HL practitioners. The review of HL education is based on information from websites of education programs at different institutions and lists of training institutions that provide HL training and certifications.

Adding on to these, the editorial advisory and review boards (EAB and ERB, including practitioners and academics) of the new *Journal of Humanitarian Logistics and Supply Chain Management* (JHLSCM) were asked to list further courses and programs. They were also asked to point out gaps between HL practice, research, and education (see the list of questions in appendix A).

3. Humanitarian logistics practice

Humanitarianism is often traced back to Henri Dunant's efforts to attend to wounded soldiers in World War I (leading to the establishment of the Red Cross movement), albeit disaster relief efforts have been in place throughout history. HL practice thereby has a long history, even though the term "humanitarian logistics" has not been used even in practice for long. HL has always been at the heart of relief operations although its status was not earlier recognized to the extent it is today. So even though one can argue that logistics has been central for fulfilling missions, it was still in the beginning of the decade stated that the aid sector was old-fashioned and that it regarded logistics as a necessary expense. It also lacked operational knowledge and generally lack of investment in technology and communication as well as latest methods and techniques in e.g. mathematical modeling (Gustavsson, 2003; Beamon and Kotleba, 2006). Furthermore, there was a shortage of logistics experts, supply chain processes were largely manual, there was inadequate assessment and planning, and limited collaboration and coordination (Thomas and Mizushima, 2005). The lack of professionalization of HL also meant that logisticians were rarely included in the planning stages of a humanitarian response. Thus the voice of logisticians was often absent. The cumulative result of all these factors was that the logistics function remained isolated from finance, emergency response, information technology and management, leading to the sub-optimization of operational efficiency and effectiveness (Thomas and Mizushima, 2005).

The UN Humanitarian Reform Programme highlighted further inefficiencies, duplications and overlap. The clear need for inter-agency coordination led to the establishment of topical clusters, one of which (the Logistics Cluster) was to focus on logistics (GHP, 2006). The challenge lay in the old saying that "everybody wants coordination, but nobody wants to be coordinated". The leadership role of cluster leads was not self-evident, and meetings that were designed to be inclusive were in practice only attended by big international non-governmental organizations alongside UN agencies. Roles and responsibilities have

developed with time, and recent cluster deployments show that in the field, the cluster can draw on secondments and thus, resources from many different organizations. The Humanitarian Reform Programme also led to the establishment of a joint global hub system including inter-agency warehousing, pre-positioning, joint training, standards and templates and individual organizations also set up regional hubs and training programs.

Recently, coordination efforts moved on from information sharing platforms to developing inter-agency purchasing consortia (e.g. the Humanitarian Purchasing Group). Coordination across donors includes basket funding schemes. A further project was initiated to harmonize customs procedures. Common HL software (such as HLS for the IFRC¹ or HELIOS, as its light version, for broader use) has been developed that would facilitate pipeline visibility across organizations, though it is yet to be implemented by many. Humanitarian organizations have come to develop specialized systems on the side for tracking and tracing, or fleet management, which they have opened up for use by other organizations. In other words, they have started to act as service providers to each other. Many humanitarian organizations have recognized the need for a professional approach in logistics. HL professionals have therefore founded an association, the HLA. The development and use of common technology is part of their agenda. Humanitarian organizations have not only started to develop new technology, but also services for each other. At the same time, social media applications and the like have entered the scene not just for fundraising but through applications including searching for missing relatives to matching donations with demand (e.g. ALAN's AidMatrix). Similar to donation matching is the trend to develop relationships with suppliers and logistics service providers (LSPs) to actually solicit in-kind donations.

Gaps in practice

Developing common templates and systems are necessary steps to facilitate the interoperability of humanitarian organizations. There is still an abundance of individual templates e.g. in needs assessment, ordering, and tracking items, although much has been done to facilitate the sharing of information online, and 2010 saw the publication of a Logistics Operational Guide (the LOG). However, implementation craves process standardization across organization to facilitate pipeline visibility both within and across different humanitarian organizations. The development of common performance metrics and management would facilitate continuous improvement later. Other associated issues such as

product and packaging standardization and modularization have not been addressed yet, even though they could facilitate shared transportation.

Inter-agency coordination is yet to embrace other dimensions. The mandates of different organizations dictate their diversification in terms of a focus on particular areas (e.g. health care, shelter, food) but also their deployment in different phases of disaster relief. Only recently have humanitarian organizations established alliances (such as the International Alliance Against Hunger comprised by WFP, FAO and IFAD) that could bridge the gap between short-term relief activities and long-term development, even though in many cases, humanitarian and development agencies work side by side in the same region. Harmonizing their activities still remains a challenge.

Beyond questions of the longevity and long-term effects of aid, humanitarian organizations are pressed to develop more sustainable solutions from social, ecological and economical perspectives. The economic dimension asks for respecting local business and to develop local rather than global partnerships with potential suppliers and LSPs (Jahre and Spens, 2007). Social aspects are considered in beneficiary empowerment e.g. through cash components in aid that reinforces decision-making by beneficiaries themselves and reallocates a customer role to them. Another way to consider the social dimension is through community based approaches in supply chain design, i.e. the incorporation of beneficiaries as active members of humanitarian supply chains (HSCs) (Kovács *et al.*, 2010). Humanitarian organizations have started to utilize local sourcing, cash components in aid, as well as community based approaches. A remaining gap, however, is the greening of HSCs, to which there are many barriers (cf. Sarkis *et al.*, 2010). Climate change adaptation has been on the humanitarian agenda for several years, but this agenda is yet to be extended to supply chain design. Climate change and urbanization are the two utmost challenges to disaster relief to date. Already by 2009, 50.5% of the world's population lived in cities (UN DESA, 2010). Urbanization increases the exposure of people to disasters while reduces their mitigation and coping strategies (Suarez, 2010). Preparedness, mitigation, and in particular, pre-positioning needs to take the location and movement of populations into account.

4. Humanitarian logistics research

Humanitarian logistics research cannot look back on the same ample history as practice. Research in the field prior to 1990 was scant (Altay and Green, 2006), and the situation only improved substantially after 2005 (cf. Natarajathinam *et al.*, 2009). Here, the Indian Ocean Tsunami is indeed seen as a watershed, with the number of articles more than doubling from the time period of 2000-2004 to articles published from 2005 onwards. Since 2005, several logistics conferences dedicated conference tracks to HL (incl. POMS, INFORMS, NOFOMA, LRN, EUROMA²), a series of dedicated conferences were organized (under the umbrella of CCHLI, and health and HL conferences at Georgia Tech), and international research groups (the HUMLOG Group in 2006; the POMS college of humanitarian operations and crisis management in 2010) plus a large number of institution-specific research teams were established (Altay and Green, 2006, list disaster management-related research centers in an appendix). A number of related special issues were published in different academic journals, five of which in the *International Journal of Physical Distribution and Logistics Management* alone³. The *Journal of Humanitarian Logistics and Supply Chain Management* was established in 2010 and will publish its first issue in 2011.

The focus and content of HL research varies largely. Kovács and Spens (2007 and 2008) use a phase and actor framework to categorize this research, spotting already a shift from more preparedness-related articles prior to 2005 to a focus on immediate disaster relief since then. Altay and Green (2006) reveal a strong focus on mitigation-related studies. Natarajathinam *et al.* (2009) extend the phase and actor analysis to consider also the source of crisis (risk), scale of the disaster (or more broadly, disruption), and research methods. Although they include all sorts of risks and disruptions in the supply chain, they find that over 60% of articles focus on external risk sources, and hence on natural and man-made disasters (Natarajathinam *et al.*, 2009). Both the actor analysis as well as the scale of the disaster point to HL research employing a regional (disaster) perspective beyond an organizational one. Due to the many phases, actors, and units of analysis, a first important topical area in HL research became that of coordination, with most attention paid to coordination in the field and between different types of actors, e.g. between humanitarian organizations and LSPs, between humanitarian and military actors. Following inter-agency coordination in practice, research investigated the possibilities of the application of different logistical concepts, such

as postponement and speculation (Listou, 2008) and the establishment of (joint) hub systems in which these principles are applied.

Technology development in HL practice translates to better data for research, and the possibility to develop models that are more suitable for practice. This is the mantra of a new movement “doing good with good OR”, or “compassionate operations⁴”. There is a new pragmatism to the operations research side of HL research that embraces the challenge of working with actual empirical constraints, leading to more interesting models at the same time as to applicable solutions. Simultaneously to model development on the operational level, HL research is entering the era of actually looking at HSCs. This development follows the history of logistics and supply chain management in general with a first extension towards suppliers and then a re-discovery of the role of beneficiaries in the HSC. Interesting aspects of this supply chain view include the consideration of dormant (or latent) relationships between humanitarian organizations, their suppliers, and implementation partners in the field. Relationship management in the HSC is, contrary to commercial supply chains, not necessarily built on the basis of frequent economic transactions. Rather, relationships are built “just in case”, and suppliers are needed with a capacity at the time of need (as in inventory pre-positioning, see Whybark, 2007). A combination of dormant supplier relationships with purchasing consortia will be an interesting avenue of future research.

Gaps in research

There are very few common denominators of HL research. Topics vary from performance measurement to customer service, facility location to vehicle routing, agility to the application of lean concepts. In summary, a myriad of logistics concepts have been applied to the field – though research has largely followed practice and rarely set its agenda. Researchers have often struggled to develop an understanding for the context and operational constraints of HL (van Wassenhove, 2010). For example, a false sense of urgency has often led to the overestimation, and use, of air transportation where sea transportation could have been more cost but also more time efficient. An efficiency focus has also led to the frequent oversight of equity considerations in research (cf. Balcik *et al.*, 2010).

HL literature can still be criticized for a focus on a particular phase of disaster relief, a particular organization, or a particular disaster (Altay and Green, 2006). In addition to in-depth single case research, HL research would benefit from longitudinal studies (e.g.

Gatignon *et al.*, 2010) and comparative studies (e.g. Beresford and Pettit, 2010). First examples here include Pettit and Beresford's (2009) review of critical success factors in HL, and Tatham *et al.*'s (2010a) analysis of cost drivers in HL. Investigating what is general vs. specific to disasters and humanitarian organizations will be important as to be able to address more fundamental questions of theoretical and methodological underpinnings of HL research. Furthermore, moving away from a phase view should facilitate the consideration of the long term effects of aid, and the embeddedness of humanitarian in development activities.

Humanitarian operations often take place in countries that are also targeted by development programs. The embeddedness of humanitarian in development activities is an important aspect to ensuring the long-term effects of aid – though unfortunately, this has not yet been addressed in research. Long-term development is only one aspect of sustainability in the humanitarian context. As humanitarian programs are usually set for a finite time, HSC design needs to take a sustainable exit strategy into consideration, i.e. one that achieves the aims of the program and/or ensures its continuation after humanitarians have left. Local sourcing, capacity building, and community based supply chain design could be researched from the perspective of sustainable, long-term development. As in practice, however, another gap in research relates to the greening of the HSC (Sarkis *et al.*, 2010), from discussing transportation emissions to addressing the actual needs for inbound transportation, to the choice of non-degradable materials for humanitarian products etc. Unsolicited supplies have led to the incineration of many donations, but reverse logistics is yet to be researched in the humanitarian context.

5. Humanitarian logistics education

Logistics is one of the most critical components to successful humanitarian assistance. Delivering the right assistance to the right beneficiaries at the right time requires both skill and an understanding of the supply chain. Logisticians must continually add to their knowledge and learn the latest practices in the field.

“I believe that creating specific and standard training modules geared towards humanitarian logistics will greatly enhance the quality of the programs as well as promote a higher perception of a logistician's role in general. This consequently helps us achieve the overall goal of humanitarian aid.” [a senior logistician, quoted in Thomas and Mizushima, 2005]

When Thomas and Mizushima (2005) surveyed current issues in HL for the Fritz Institute in 2004 in conjunction with Erasmus University and APICS, one of the biggest challenges appeared to be a lack of professional humanitarian logisticians. Survey respondents represented a wide variety of humanitarian organizations including: ADRA, American Red Cross, CRS, DFID, ICRC, IFRC, IMC, IRC, MSF (Holland and France), WFP, UNHCR and UNICEF. Over 90% of respondents indicated that they felt training was directly linked to performance on the job and that standardized training would be useful to the field. However, only 73% of respondents had access to any logistics training. For those with access, training was most often provided on the job by co-workers or in-house training staff, and training within organizations tended to be non-standardized. The main result was that, although there were workshops to address specific needs, there was no organization that provided comprehensive, systematic and standardized HL training and the majority of respondents felt that taking training a step further to the certification realm and setting community-wide skills standards would professionalize the field. Suggestions for improving existing training included collaboration with local universities, associations and training institutes. (Thomas and Mizushima, 2005) Training and education indeed followed suit.

Even though sector-specific training was called for in 2004, some initiatives provided HL training already earlier. One of these earlier initiatives, the International Centre for Emergency Preparedness Training (INTER-CEPT) was established in 1998 in Kenya. INTER-CEPT does not solely focus on logistics training as the ultimate objective of the center is to facilitate cross-learning between different humanitarian actors. The center provides training but also maintains a network of organizations and individuals who are involved in emergency preparedness and response. To date, the group has produced a body of work of over 20 research reports, case studies and other pedagogical materials. The group organizes seminars and workshops bringing together professionals from various, disciplines and countries to share insights and practical experience and to encourage a broadening of individual and institutional perspectives. (INTER-CEPT, 2010)

Probably the most known training program in HL is the “Certification in Humanitarian Logistics” (CHL) that was initiated by the Fritz Institute and is currently carried out under the umbrella of CILT UK for the HLA. CHL was launched in September 2006 and is comprised of two courses on a total of 7 compulsory units: HSCs, warehousing and inventory,

procurement, transport, fleet management, import and export, and managing HSC response. A further certification was added in 2008 on HSC management (CHSCM), which emphasizes more strategic elements of supply chain management and is aimed at senior logisticians and logistics managers working at tactical or strategic levels of humanitarian organizations. The latest addition, The Certification in Humanitarian Medical Logistics Practices (MedLog), launched September 1, 2009, focuses on medical items' special supply chain requirements as a non-specialist supply chain may not be able to meet the particular requirements that medical supplies place upon it. (HLA, 2010) One of the issues surrounding training pointed out in Thomas and Mizushima's (2005) study was the lack of funding for such training. Thus the Fritz Institute has introduced a Certification Programme Scholarship for 10 places in each of these courses.

RedR is another CILT-approved provider of HL training. Whilst RedR does not act operationally itself, it provides HL training on all organizational levels. As INTER-CEPT, each RedR organization also maintains a register of experienced personnel from which operational agencies (governmental, non-governmental and international) can obtain the skills they require to improve their disaster relief response. The course is set up as a simulation exercise – as many other training courses as well (e.g. JSI's).

The Logistics Cluster has also set up training courses recently (since 2008). Their aim is to create teams of logisticians from different organizations that can be co-deployed in a disaster. The courses are run under WFP's Training Centre. Here, the Technical Field Operation Training (TFOT) is aimed at WFP logistics staff, while the Interagency Logistics Response Team training (LRT) and the Emergency Response Simulation Training (ERS) are provided to members of the Logistics Cluster and beyond. WFP also established industry cooperation under the Logistics Emergency Teams (LETs) programme in 2008, which, as in the case of INTER-CEPT, RedR or even CANADEM, also maintains a network of individuals and organizations they can call on once a disaster strikes. More innovative training programs are on their way, including ECHO's "Service Mindset Training" that should improve the communication and coordination skills of humanitarian logisticians, and the REDR Disaster Response Support Service that targets humanitarians in Haiti (ECHO, 2010).

A newcomer in the training field is the HUMLOG Institute and its partners. The institute does not per se organize training as it is mainly focused on research. However, as the link to

practitioners has been strong since the institute's establishment, one of its core products has been to organize practitioner seminars with an academic flavor. The main point has been with these seminars to bring academics and practitioners together around topics that have been relevant for practitioners and also scantily researched. For example in 2009 Jönköping International Business School organized a workshop on private and NGO/GO collaboration in emergency situations and development. Also in 2009, the Transport Institute at the University of Manitoba organized a workshop on relationship building in HSCs. In 2010, Hanken School of Economics organized a seminar on sustainability.

Along with the establishment of academic and semi-academic groups such as HELP forum, HUMLOG, CCHLI, the Fritz Institute, INSEAD's and MIT's teams (Kovács and Spens, 2008) came a rise in teaching and educational activities. One of the first initiatives, the Humanitarian Studies Initiative established in 2001, combined the efforts of MIT, the Harvard School of Public Health, and Tufts University's Friedman School of Nutrition and Fletcher School. Further dedicated HL courses are given at Brandon University (Canada), Cranfield University (UK), Georgia Tech (USA), Hanken School of Economics (Finland), Jönköping International Business School (Sweden), Main Maritime Academy (USA), MIT Zaragoza (Spain), SEAS (Spain), Tyndale University (Canada), University of Newcastle (Australia), Washington University (USA), etc. Most of these are on the masters level, though some (e.g. University of Newcastle, Australia and Brandon University, Canada) also target bachelors students, and there have been a number of PhD courses as well, e.g. at Washington University (USA), the Hanken School of Economics (Finland), and the University of Manitoba (Canada). The University of Lugano (Switzerland) has introduced a Masters of Advances Studies in Humanitarian Logistics and Management that started first in 2009, and also organizes a summer school each year for HL practitioners. INSEAD is also running an executive education programme called "Management in the Humanitarian Sector". Other related masters programs that include HL are, e.g. York University's (Canada) MA in Disaster and Emergency Management and Fordham University's (USA) Masters of International Humanitarian Action.

Gaps in training and education

More important than a sheer list of institutions and courses is of course their content. Many of the courses are rather basic logistics courses that consider the humanitarian context, though are organized around logistics functions and focus on operational level problems. In this

regard it is very positive that CILT's certification programs and RedR's courses are based on the actual needs of humanitarian organizations and shaped by these. Our respondents pointed out some of the gaps in current education, however. One of these relates to the relative abundance but operational orientation of HL training. Courses explain basic concepts and contextual elements, but much is left to do on the strategic level related to supply chain design and improvement, and even a broader management training of humanitarian logisticians. Alternatively, training and education programs could focus more on particular commodities rather than general supply chain management. To date, only the CILT MedLog certification is considering the specific problems of health care humanitarian logisticians.

There are few standard tools and techniques taught, and courses tend to focus on the particularities of the field rather than on common denominators. Also, few training courses consider "softer" sides of logistics management such as relationship building, coordination, local sourcing, understanding of local cultures – though all needed in practice. What is taught needs to be matched with skills needs (Tatham *et al.*, 2010b), which in HL also extends from budgeting and financial programme management to security management. A further gap relates to current pressures on HL practice such as climate change adaptation and urbanization, issues not yet addressed in training and education programs.

Existing courses cater primarily to HL practitioners. Others do well in using practitioners as educators – though more of this is wished for, including the use of videoconferencing, site visits etc. More courses could be directed at business and engineering logistics students who could apply their general knowledge to the humanitarian field (as well). This is particularly important as many companies have introduced a humanitarian task force under the umbrella of partnerships with humanitarian organizations. Course material should therefore help students to understand the conditions under which the transfer and adaptation of knowledge from the business world would be helpful.

6. Gaps between practice, research, and education in humanitarian logistics

In addition to the largely literature based overview of gaps existing in each of the presented areas, EAB and ERB members were asked to reflect on the gaps between HL practice, research and education. We received most response in the area concerning gaps between research and practice. Much of it can be summarized in the words of an academic respondent:

“Research is still research. It has not really filtered down into policy, practice and procedures” – which goes to illustrate just how large a gap exists between research and practice. A bit more detailed is the following evaluation:

“Most of what's been done seems to me to be case-study type work and conceptual reviews but not a lot of empirical/analytical. There is a big gap and there doesn't seem to be a strong dialogue between the sector and academia about things that could make a real difference.” (Martijn Blansjaar, Oxfam)

Whilst there is indeed little empirical research in HL, and “researchers tend to shy away from implementation” (Ron McLachlin, University of Manitoba), luckily, more and more academics have started to address this problem. The Norwegian School of Management has even held seminars on how to conduct empirical research in a humanitarian setting. Similarly, quantitative models have been criticized for their lack of applicability, though also here, scholars have started to address this gap. Another gap that is pointed out repeatedly is the lack of considering issues such as relationship building, cultural contexts, and indeed, the human factor of HL in research. But there is also criticism presented towards practice that points towards the non-appreciation of logistics knowledge.

Regarding the gap between practice and education, it was stated that it is still not usual for people managing HL operations to have any formal education in HL. Training, certifications, and education programs aside, there is much left to be done to raise awareness for logistics as a discipline – even though about 80% of costs of humanitarian activities have been attributed to logistics (cf. van Wassenhove, 2006).

Most of the education-practice gaps, however, stem from a mismatch between educational needs and programme offers in areas such as financial management, conflict and security management, cultural awareness etc. What is more, respondents also pointed out a lack of understanding of educators for the actual humanitarian context (nor even the jargon); something that can, however, be bridged through bringing practitioners to the classroom. More project-based teaching could also address the issue and add to the mutual understanding between practitioners and educators.

Gaps between research and education stem from the novelty of both HL research and practice. As in logistics overall, there is no unified HL theory, either, and no established theories and concepts that could be brought into the classroom. At the same time, what has

been established in business logistics yet needs to be adapted to the humanitarian context. The more research advances, the more education can also build upon. Closeness to reality is key to HL and education alike. This requires the consideration of also other domains such as political science in logistics. To date, there is still a lack of empirical research in HL, even though researchers have published series of teaching cases (e.g. Tomasini and van Wassenhove, 2009). Case studies could be conducted for research and education at the same time, including learning from similarities and differences.

7. Concluding discussion

What can be seen is that at the same time as the need for HL is on the rise, the discipline has evolved. Logistics management research has crossed the boundaries of disaster management, with a rising number of humanitarian logistics articles published each year (cf. Kovács and Spens, 2008; Natarajathinam *et al.*, 2009) and a number of special issues dedicated to the topic. In these, concerns raised earlier in literature have been addressed; lack of coordination, abundance of unsolicited supplies that lead to congestion in ports, airports and warehouses, problems with customs clearance. In addition, first certification programs have been established, joint trainings institutionalized and professional associations developed (e.g. the HLA). Executive MBAs in HL were sure to follow, doctoral theses published and a first attempt at developing “HL theory” (cf. Jahre *et al.*, 2009) has been made.

New trends bring new challenges in HL, however, effective logistics is vital for effective relief and training and education will be critical to effective logistics. Clusters, communities of practice, platforms and associations foster the professionalization of the field and have resulted in the development of specialized training and education programs. This has, in turn, shone a spotlight on the skills and attributes required by successful humanitarian logisticians (Tatham *et al.*, 2010b). Generally, further research but also practice is needed to address many of the gaps pointed out in the paper, but future topics in research and practice should also be considered in education programs. HL research to date has largely followed practice; it is time to push beyond this and set the agenda for practice and education instead. Theory-building will be of essence here (Jahre *et al.*, 2009), but also the construction of applicable models (van Wassenhove, 2010).

Notes

¹ Humanitarian organizations are denoted with their acronyms. Here is a list of acronyms used in the paper:

- ADRA – Adventist Development and Relief Agency
- ALAN – American Logistics Aid Network
- CANADEM – Canada’s Civilian Reserve
- CRS – Catholic Relief Services
- DFID – UK Department for International Development
- ECHO – European Commission Humanitarian Aid and Civil Protection
- FAO – Food and Agriculture Organization
- HELP – Humanitarian and Emergency Logistics Professionals
- HLA – Humanitarian Logistics Association
- ICRC – International Committee of the Red Cross
- IFAD – International Fund for Agricultural Development
- IFRC – International Federation of Red Cross and Red Crescent Societies
- IMC – International Medical Corps
- IRC – International Rescue Committee
- JSI – John Snow, Incorporated
- MSF – Médecins Sans Frontières / Doctors Without Borders
- UNHCR – The UN Refugee Agency
- UNICEF – United Nations Children’s Fund
- WFP – World Food Programme

² Acronyms of conferences and research groups are as follows:

- APICS – The Association for Operations Management
- CCHLI – Cardiff-Cranfield Humanitarian Logistic Initiative
- CILT UK – The Chartered Institute of Logistics and Transport, UK division
- EUROMA – European Operations Management Association
- INFORMS – Institute for Operations Research and the Management Sciences
- LRN – Logistics Research Network
- NOFOMA – Nordic Logistics Research Network
- POMS – Production and Operations Management Society

³ The list of special issue extends to

- *Transportation Research Part E* (2007, Vol.43 No.6)
- *International Journal of Services Technology and Management* (2009, Vol.12 No.4)
- *International Journal of Risk Assessment and Management* (2009, Vol.13 No.1)
- *Management Research News* (2009, Vol.32 No.11)
- *International Journal of Physical Distribution and Logistics Management* (2009, Vol.39 No.5/6/7 and 2010, Vol.40 No.8/9)
- *International Journal of Production Economics* (2010, Vol.126 No.1).

Many more dedicated special issues are currently in the publishing process.

⁴ The two topics relate to additional two special issues that are currently under review for *Interfaces* and the *International Journal of Production Economics*.

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Appendix A – questions to EAB and ERB members

1. Which courses are you aware of that include humanitarian logistics and/or is dedicated to the subject?

1a. Which courses are taught at your own institution?

1b. Which others are you aware of (no need to note courses at Hanken).

Please note the institution, level of the course (certification, BSc level, MSc/MA etc. level, MBA, executive MBA, PhD).

2. What have we been teaching vs. what should we be teaching?

3. What are the future training and education needs for practitioners?

4. What are (in your opinion) the current gaps between research and practice?

5. What are (in your opinion) the current gaps between education and practice?

6. What are (in your opinion) the current gaps between education and research?