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## Editorial

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**Biographical notes:** Gyöngyi Kovács is an Assistant Professor in Supply Chain Management and Corporate Geography at the Swedish School of Economics and Business Administration (Hanken) in Helsinki, Finland, where she also earned her PhD. She is the Coordinator of the HUMLOG Group, a research network in humanitarian logistics. Her other research interests include sustainable supply chain management, supply chain collaboration, the abductive research approach, and reverse logistics. Amongst others, her publications have appeared in the *International Journal of Physical Distribution and Logistics Management* and the *Journal of Transport Geography*. She is currently the European Co-Editor of the *International Journal of Physical Distribution and Logistics Management*.

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Both editors are also founding members of the HUMLOG group, the aim of which is 'To research the area of humanitarian logistics in disaster preparedness, response and recovery with the intention of influencing future activities in a way that will provide measurable benefit to persons requiring assistance.'

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## 1 Introduction

The application of risk management in a supply chain context has been gaining interest during the past few years. Originally, significant incidents such as 11 September, SARS and the Indian Ocean tsunami, as well as other man-made and natural disasters, have triggered organisations to pay attention to supply chain risk management (SCRM). Regardless of the risks and problems that organisations and their supply chains face, customers expect no compromise to their product or service delivery. When it comes to

disasters, compromising deliveries is not an option, as the failure of humanitarian supply chains is measured in a loss of lives. However, risk management is not as well understood within supply chains as in individual organisations. What is more, while much of SCRM literature has focused on the management of operational risks and vulnerabilities in the supply chain, little attention had been paid to the management of large-scale risks such as disasters. To fill this gap, this special issue focuses on assessing, measuring and managing supply chain risks in disasters. Disasters are defined as disruptions that physically affect a system as a whole and threaten its priorities and goals. Disaster relief is a substantial global industry that is predicted to continue to expand, as it is forecast that over the next 50 years, both natural and man-made disasters will increase five-fold. The focus of the special issue is on managing supply chain risks in natural and man-made hazards and disasters, where a supply chain is understood to consist of a direct supply chain (a minimum of three independent actors).

The special issue called for research that contributes to the understanding of supply chain risk management in natural disasters. Contributors were encouraged to submit original manuscripts that are conceptual, or empirically based, in particular using techniques such as scenario-building, simulation, modelling, and geographic information systems, focusing on the following or related areas:

- supply chain management in disaster relief
- strategic risk management in supply chains
- assessing and managing supply chain vulnerability
- measuring supply chain risk
- supply chain risk mitigation and reduction
- risk prioritisation in supply chains
- measuring performance in humanitarian supply chains
- decision-making in humanitarian supply chains
- principles and theory of supply chain risk management.

The four articles that have been accepted after a double-blind review process show a variety of research carried out in the emerging field of humanitarian logistics. This variety exists in several dimensions, in terms of the topics addressed, the applied methodology, and the countries in which the research has been carried out. They touch upon the research areas of risk mitigation and reduction, performance measurement and decision-making in humanitarian supply chains and thereby cover some of the areas that the initial call for papers focused on. The articles could hardly be more diverse; they range from a paper evaluating the aftermath of the 2004 Indian Ocean tsunami, to the assessment of the necessary conditions of performance measurement in emergency relief, to the security of seaports in order to prevent terrorism, and finally to the use of unmanned aerial vehicle systems in the needs assessment process in the immediate response to a disaster.

## 2 The articles selected for this special issue

Beresford and Pettit in their article ‘Emergency logistics and risk mitigation in Thailand following the Asian tsunami’ focus on the December 2004 tsunami disaster. This was the disaster that arguably triggered the recent interest in humanitarian logistics in both practice and research. This disaster, which was unprecedented in its scale and reach, offers an opportunity to examine the workings of aid logistics in extreme conditions. Disaster responses have usually been modelled into, three stages: preparedness, response and recovery. In the case of the tsunami, one of the principal weaknesses was the absence of such events from existing government response plans. The most obvious feature of the response sequence is the lack of preparedness which existed at the time. Subsequently, the Thai Government re-evaluated the tsunami risk, which had until then been entirely overlooked. From this emerged a fresh ‘masterplan’, which was specifically developed as a contingency for possible future tsunami events. It is interesting to observe that within the response mechanisms reported on the ground, and as formalised in the masterplan, relatively little emphasis is placed on transport or logistics. Although logistics implementation is often vital in large scale natural emergencies, in the case of tsunamis targeting effort at risk assessment, preparation at a local level and communication networks is likely to be more effective. This paper highlights the fact that disaster preparedness is shown to be less appropriate than the ‘soft approach’ taken by the Thai Government post tsunami, whereby emphasis is on well organised local communication networks, early warning systems and danger mitigation rather than accumulation and management of large scale emergency stocks.

Van der Laan, De Brito and Vergunst, in ‘Performance measurement in humanitarian supply chains’, point out that recent humanitarian disasters, such as the Asian tsunami and Katrina, have emphasised the importance of supply chain management in dealing with the complex emergency situations and risks that humanitarian organisations are faced with. Although performance measurement is known to be crucial for performance improvement, little insight exists in how effective performance indicators can be selected in the humanitarian context. This paper adds to this insight through the use of an extensive literature review to identify necessary conditions for an effective performance measurement system. Subsequently, a case study at the Dutch filial of *Médécins Sans Frontières* (MSF) was conducted to investigate whether these conditions are met or not. The case study indicates that the biggest challenges lie in data accuracy and the fact that the current set of performance indicators is not geared towards future improvement. As MSF is known for its emergency logistics performance, it is not unthinkable that other humanitarian supply chains struggle with the same issues.

Talas and Menachof’s conceptual model in their article ‘The efficient trade-off between security and cost for sea ports: a conceptual model’ describes the process that ports and port terminals can follow to ensure that efficient security investment decisions are made to reduce the exposure to terrorist and other unlawful activities using the Markowitz theory of portfolio selection. Sea ports around the world have had to introduce new security measures in the wake of the introduction of the International Maritime Organisation’s ISPS Code but may have been unable to establish the efficient trade off between cost and security. The conceptual model shows how a port or port terminal can identify whether the security measures it has deployed are efficient given the port’s potential security threats, its security expenditure and the measured performance of the

security components. The knowledge and experience of marine war and terrorism risk underwriters as experienced risk assessors and port facility security officers who run regular drills to test the defences of their facilities provide the data which makes the analysis not only possible but credible. The conceptual model complements the use of DEA and other types of efficiency measure of port operations and can be applied to ports in isolation or to a series of ports in a multiple case study. Future analysis of actual port security investment will be able to measure the gap between a port's current position and the risk-investment efficient frontier. It is also envisioned that a port wishing to put in place additional port security investment can use the model to examine that investment's impact on the effect of port security risk.

Tatham, in his article 'An investigation into the suitability of the use of unmanned aerial vehicle systems to support the initial needs assessment process in rapid onset humanitarian disasters', states that in the aftermath of any disaster situation, achieving an accurate and timely needs assessment is key to the efficiency and effectiveness of the subsequent logistic response. In the light of the inevitable disruption to both the physical and information infrastructure of the affected area, this paper presents the results of an initial theoretical investigation into the use of an unmanned aerial vehicle system (UAVS) as a means of complementing existing satellite, manned aircraft and pedestrian data-gathering techniques. Using a case study based on the 2005 Pakistan earthquake, the paper investigates how UAVS might be employed, the information that could be obtained, and the consequential benefits. It concludes that a UAVS does, indeed, have potential to support the overall needs assessment process, and a first estimate of the required conditions for success is offered, together with recommendations for the further practical research that it is considered necessary in order to operationalise the concept.

These papers hopefully provide the readers with some new ideas and insight in managing supply chain risks in times of disaster. The papers presented contribute to a new and emerging field, which unfortunately, as can be seen only seems to be growing in importance due to the increasing amount of disasters.

### **3 Conclusions and further research**

Humanitarian logistics is an emerging field of research; therefore special issues in this field are particularly important, and to the point. This special issue gives a glimpse into this e-field, highlighting the variety of research that is conducted in it. Having said so, much remains to be done, not only in the subjects that are presented, but in a variety of other topics as well.

Thus far, humanitarian logistics research has been focusing on general frameworks, agility and responsiveness in humanitarian supply chains and different types of (primarily simulation) models for disaster response. More research would, however, be needed on logistics performance measurement in humanitarian aid, the facilitation of the needs assessment process, the interaction of financial, information and material flows in humanitarian supply chains, as well as on the coordination of relief efforts – in the supply chain, as well as among a variety of organisations on site. The complexity of the actor structure in humanitarian logistics bears yet other sources of risks. Further research would be needed in particular on public-private partnerships in the area of humanitarian logistics. Unexplored are not only the risks of the currently emerging partnerships between humanitarian organisations and third party logistics providers, but also the

interface between humanitarian and military actors that meet in complex emergencies. Civil-military coordination is an emergent research topic also in military supply chains. But even though there is a constant call for more coordination of different types of actors related to humanitarian efforts, these actors do at the same time compete for resources, media attention etc. Thus, the concept of cooptation, the simultaneous existence of cooperation and competition, merits more research attention also in humanitarian supply chains.

The myriad of actors involved in humanitarian supply chains offers a vast cross-learning potential – yet the similarities and differences in their business models are not yet fully understood. Research to date has primarily focused on particular disasters, and particular organisations only, but not on the cross-learning between organisations, and from one disaster to the next. Different kinds of logistics information systems have been developed for the purposes of humanitarian logistics, ranging from fleet management to joint cargo tracking – but there has insofar been a lack of development in the area of knowledge management, and organisational learning.

As for a focus on particular disasters, insofar, rapid-onset natural disasters such as earthquakes and tsunamis, or cyclical disasters such as hurricanes have been in the spotlight of academic research. Yet, more research is needed that would focus on humanitarian supply chains in man-made disasters and complex emergencies – which make the majority of disasters to date. Apart from the element of warfare, the difference between man-made and natural slow-onset disasters has become blurry at best, ranging from deforestation leading to soil erosion to the effects of (arguably man-made) climate change. These are long-term risks that need to be evaluated from a supply chain perspective on a larger scale, as they impact on the location of not only resources and people, but also potential suppliers and customers. Long-term risks are also at the core of evaluating the effects of local vs. global sourcing in humanitarian logistics. Here the question is one of risking the aid dependency of a population, or, from a different perspective, the sustainability of aid. The potential societal implications of global sourcing in relief supply chains are not well understood and deserve more attention of academic research.

From the perspective of applications, more research is also needed in humanitarian logistics in the healthcare sector, food security in the supply chain, rescue services in emergencies, as well as security and safety in traffic and transport.

In summary, this special issue is a great start in paying attention to risk management in disaster relief, but there is still a long way to go in conducting research in this area. We therefore hope that the special issue sparks off more interest in this field, and will serve as a reference point for the variety of topics it deals with.

### **Acknowledgements**

We could not have done this by ourselves and we totally appreciate the efforts and support of all who were involved in making this special issue possible. We gratefully acknowledge the assistance provided by the staff of Inderscience, and the referees who reviewed the manuscripts for this special issue. Particular thanks go to Dr. Mohammed Dorgham, Editor-in-Chief of Inderscience, who initiated this special issue, and to the HUMLOG Group, which keeps the debate about humanitarian logistics ongoing, while supporting all our efforts in these special issues.