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What Skills and Attributes are Needed by Humanitarian Logisticians - a Perspective Drawn from International Disaster Relief Agencies

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Abstract
Prior research has developed and tested a theoretical framework that links the skills and attributes of individual logisticians to logistics performance in the humanitarian, military and commercial fields. Using this framework, this paper analyses the job advertisements for humanitarian logisticians working in the "last mile" (as distinct from those based in regional headquarters) in order to assess the extent to which the framework reflects the reality of the requirements of hiring organizations. The paper demonstrates that, although there is broad agreement between the attributes deemed to be important from a theoretical perspective and those sought by practitioners, a number of unanticipated additional roles were exposed that are considered to be part of the humanitarian logistician's job specification. The implication of the research is that those engaged in education and training of humanitarian logisticians may need to expand their curriculum to reflect the demands of hiring organizations more accurately.

Keywords: humanitarian logistics; logistics skills; logistics performance; logistics job specification

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Introduction

In the aftermath of a disaster, be it natural or man-made, logistics is a cornerstone of the response with some commentators suggesting that some 60% (Blansjaar, 2009) to 80% (van Wassenhove, 2006) of the expenditure of a non-governmental organisation (NGO) can be classified under this broad heading. Thus, it can be argued that a humanitarian organisation is, in effect, a logistics organisation – albeit one with, typically, a specific mandate and target set of beneficiaries. In parallel, and against the background of an increase in the number and magnitude of the disasters themselves (EM-DAT, 2008), there is clear pressure to improve the logistics response and, hence, meet the needs of the end beneficiaries more effectively and efficiently (Kovács and Tatham, 2009).

In order to achieve such an improvement in pre-disaster preparation and post-disaster response, one area of focus has been that of the training and education needs of humanitarian logisticians. However, the development of such programmes must clearly be grounded in a good understanding of the skills and attributes needed by humanitarian logisticians. Logistics skills can be described in terms of a "T-shaped model" that combines the breadth of general management skills, problem-solving and people management skills with the depth of "functional" logistics skills (Mangan and Christopher, 2005; Mangan *et al*., 2009). In other words, the modern logistician requires a combination of both hard technical and operational knowledge and rather softer business skills (van Hoek *et al.*, 2002; Vereecke *et al.*, 2008).

Having tested the applicability of this T-shaped model in a comparative analysis between business, military and indeed, humanitarian logisticians, Tatham and Kovács (2009) came to the conclusion that there are inherent differences between the skill sets that are emphasised in these different contexts. This prompted the question of the extent to which such differences were actually a reflection of the hiring practices and the definitions of "logistics" that are used in these settings. This paper aims, therefore, to further the understanding of the

skills needed by the humanitarian logistician. To achieve this, a content analysis of job advertisements for humanitarian logisticians was undertaken, and this paper presents our underpinning work to develop a categorisation scheme for the content analysis, and the findings from an initial analysis of 3 months worth of humanitarian logistic job advertisements. The paper begins by presenting a summary of previous work on logistics skills before further developing a categorisation scheme for the content analysis and it ends with a summary of our findings and conclusions.

The T-shaped Model of Logistics Skills

Understanding the skill set needed in logistics, operations management and supply chain management is important not only for the development of training and education programmes (Mangan *et al.*, 2001; Hannon, 2004) but also for the career development of people in these fields (Murphy and Poist, 2007; Keller and Ozment, 2009). Arguably, these fields are related (or even the same), though different definitions and perspectives on their interrelation have been distinguished (e.g. Larson *et al.*, 2007). Distinctions can also be made between the skill sets required for logisticians when compared to supply chain managers (Gammelgaard and Larson, 2001, van Hoek *et al.*, 2002; Dischinger *et al.*, 2006). However, and notwithstanding the discussion of different fields and definitions, there seems to be a common understanding that a combination of managerial "soft" skills and technical-operational "hard" skills are needed in all these areas of expertise. Unsurprisingly, such combinations have also been suggested in other, primarily engineering-related, fields (Iansiti, 1993; Sohal and D'Netto, 2004; EP, 2005; Weiss, 2005).

In summary, logistics skills have been described in terms of a T-shaped model that combines the soft skills of management with functional logistics skills (Mangan and Christopher, 2005). Within this, four groups of skills can be distinguished: general

management skills, problem-solving skills, interpersonal (people management) skills, and functional logistics skills. Figure 1 summarises the skills in each group.

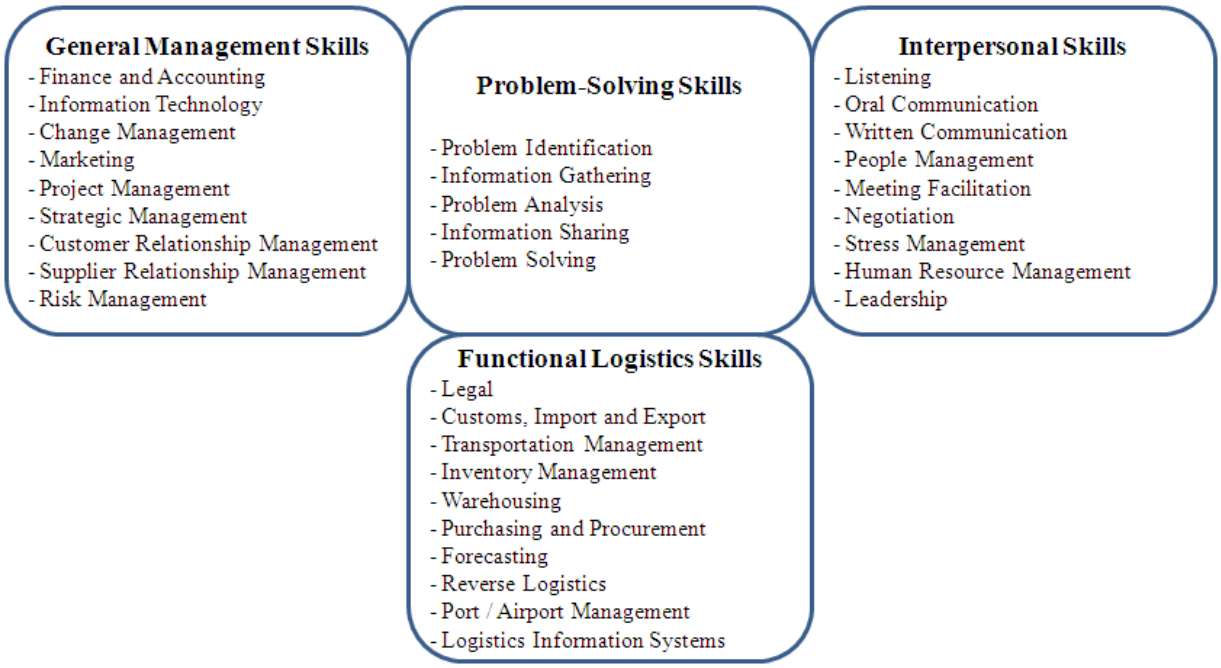

Figure 1. The T-shaped model of logistics skills (modified from Mangan and Christopher 2005, p.181, Tatham and Kovács, 2009)

In addition to issues relating to career development and the development of educational programmes, Wouters and Wilderom (2008) have also shown a positive link between different skill sets and the logistics performance of an organisation. Understanding the skill sets needed for humanitarian logisticians may, therefore, ultimately contribute to an improved logistics performance for humanitarian organisations.

In parallel, the whole issue of the measurement and management of logistics performance has recently been featured in the "not for profit" literature (e.g. Buckmaster, 1999; Hofmann *et al.*, 2004; Davidson, 2006; de Brito *et al.*, 2007; Moxham and Boaden, 2007; Schulz and Heigh, 2007; Beamon and Balcik, 2008; and Westveer, 2008) with comprehensive literature reviews provided in the articles of Micheli and Kennedy (2005) and

Moxham (2009). Importantly, these latter authors emphasise the complexities of performance measurement in the non-profit sector and the challenges in developing and applying a suitable measurement framework, although Moxham (2009) argues that the underpinning tenets of such a framework (relevant, balanced, strategic and improvement-orientated) apply equally in both domains. However, the literature related to both the "for profit" and "not for profit" sectors is remarkable for the absence of any substantive discussion of the linkage between the skills and attributes of the logistician, and logistics performance.

When testing for relevant skills in different contexts (business, military and humanitarian), Tatham and Kovács (2009) found that humanitarian logisticians valued the set of functional logistics skills significantly higher than the general group. However, skills related to reverse logistics and logistics information systems were not significant in the humanitarian context (or, at least, not in terms of contributing to logistics performance). Nevertheless, the emphasis on functional logistics skills could be attributed to a more traditional or more technical view of logistics in the humanitarian context. By the same token, the humanitarian cohort valued change management significantly less than their colleagues from parallel fields – a surprising result given the dynamics of the sector both in terms of responding to disasters and in terms of employee turnover.

Finally, in all bar one of the sub-sets of problem solving and interpersonal skills, the humanitarian cohort considered these areas to be more important than the respondents from the other areas. One possible interpretation is that these skills are, indeed, more relevant to humanitarian logistics and, therefore, impact higher on logistics performance. An alternative explanation is that respondents from the humanitarian cohort are more polarised in their evaluations than their counterparts from academic, business or military logistics. (Tatham and Kovács, 2009).

Given the differences that Tatham and Kovács (2009) found between the humanitarian context and other groups of logisticians and the different possible explanations for these differences, it was clear that further research is needed. As a first step in this process, an analysis of the contents of job advertisements has been undertaken as a means of understanding what skills and attributes are perceived to be important from the perspective of the hiring agencies that were, in the main, international disaster relief agencies.

A Content Analysis of Skills for Humanitarian Logistics

The basic premise of this research was that the current needs of "the job" are to be found in the skills that vacancy notices, or job advertisements, call for. In essence, such job advertisements reflect the view of recruiters, (which, in the case of this study, is the view of international disaster relief agencies) on what they perceive to be the skills/attributed required by the logistician. Recruiters, in turn, shape the profile of logisticians in the industry (here the humanitarian context) – although, interestingly, prior research has found differences between the view of recruiters and the view of logistics students (and educators) on the importance of different skills in logistics (Gammelgaard and Larson, 2001; Keller and Ozment, 2009). To understand the requirements of humanitarian logisticians on the job, this study therefore chose to analyse the recruitment perspective.

Although such an analysis of humanitarian logistics job vacancies has been conducted previously (CILT, 2008), this merely reports the outcomes (see Appendix 1) and does not contain any details of the methodology nor the underlying framework that was employed. In the absence of such detail, this paper presents the findings of a content analysis of skills. Content analysis, however, requires clear sampling strategies and the development of a categorisation scheme. The particular analysis technique was chosen as it offers the possibility

of deducing implicit assumptions (latent content) as well as explicit statements (manifest content) (Krippendorff, 1980; Guthrie *et al.*, 2004; Spens and Kovács, 2006).

Although international disaster relief agencies use their own websites, mailing lists as well as common websites for announcing vacancies, a common site for such vacancy notices is ReliefWeb. The website is administered by the UN Office for the Coordination of Humanitarian Affairs (OCHA) and is intended to be a "gateway to information (documents and maps) on humanitarian emergencies and disasters". Apart from such information, the website also includes a "professional resources" page with training possibilities as well as job advertisements, with over 1,000 jobs across all specialisations and fields being advertised each month (for example, the figures for October, November and December 2009 were 1010, 1087 and 1172). ReliefWeb is used by humanitarian agencies and non-governmental organisations alike, and as such, reflects a broad spectrum of international disaster relief agencies. It was, therefore, deemed to be a good source of job advertisements for this study.

In order to sample job advertisements related to logistics and supply chain management, the text filters of "logistic", "logistics", "logistician", "logisticians", "logisticien" and "logista" were used to limit the search to relevant jobs (with the last two variants designed to capture appropriate adverts written in the French and Spanish languages). This returned a total of 62 vacancy notices (VNs) published during the three month period 1 Oct – 31 Dec 2009, and this was considered to be an appropriately large sample for this initial analysis. In addition, a search was made using the textual string "supply" in order to capture any jobs advertised for supply chain managers. Interestingly, and somewhat surprisingly, this only provided a total of 4 hits compared with the 62 that sought logisticians.

The T-shaped model (Figure 1) formed the basis of the analysis and, in order to develop a robust coding scheme, a pilot study was undertaken in which the three independent coders coded the same five job advertisements. However, even though the overarching rule

adopted was to use manifest content as the basis for classification, the list of skills in the T-shaped model was not always mutually exclusive and, as a result, it was necessary to include further categorisations and/or amendments to existent ones.

Once agreement had been reached on the indicators and rules for their categorisation in the coding scheme, further five job ads were coded in a second pilot round with an additional group of indicators being added on the basis of the frequency of occurrence of these skills in the job ads. However, reflecting the importance of a theory-based rigid coding scheme for content analysis, the basic rule of a reductionist and inclusive approach was also applied to the addition of indicators. In addition, the pilot allowed clarification of some indicators, e.g. "budgeting" skills were deemed to be part of the general management skill of "finance and accounting", and similarly "line management" was placed under "people management" and "asset management" under "inventory *and asset* management". In summary, the two rounds led to a revised coding scheme as illustrated in Table 1. For each indicator (skill) the coding categories of "R" (explicitly required as a minimum expectation), "D" (additionally desirable/preferred qualifications listed in the job ad) and blank (for not mentioned) were used. As the coding categories show, the content analysis was focusing on the explicit content of the job ads.

Nonetheless, some indicators were still ambivalent. Particularly problematic for the coding was the differentiation between "information systems literacy", "logistics information systems" and "information technology management". These three skills represent different hierarchical levels of IT management and, arguably, information technology management should include (latently) the skill of information systems literacy. Problem-solving skills represented a similar hierarchy, where problem solving would, arguably, include the skills of problem analysis and problem identification. Yet to adhere to the T-shaped model (and thus

improve the objectivity and transparency of the content analysis (cf. Spens and Kovács, 2006), indicators related to it were maintained in the analysis.

Table 1. Final skill set framework following second pilot coding round (changes in italics)

General Management Skills	**Functional Logistics Skills**	**Problem Solving Skills**	**Interpersonal Skills**	***Additional Skills***
Finance & Accounting *(inc Budget Mgmt)*	Legal	Problem Identification	Listening	*Reporting*
Management of Information Technology	Customs, Import and Export	Information Gathering	Oral Communication	*Emergency Preparedness*
Change Management	Transport Management	Problem Analysis	Written Communication	*Training of Others*
Marketing	Inventory *& Asset* Management	Information Sharing	People *(& Line)* Management	*Fleet Management*
Project Management	Warehousing	Problem Solving	Meeting Facilitation	*Liaison with Others*
Strategic Management	Purchasing & Procurement		Negotiation	*Design and Implementation of policies, procedures and standards*
Customer Relationship Management	Forecasting		*Personal* Stress Management	*Security management*
Supplier Relationship Management	Reverse Logistics		Human Resource Management *(e.g. Recruiting)*	*Mechanics and maintenance*
Risk Management	Port/Airport Management		Leadership	*Team player*
	Logistics Information Systems			*Ability to work independently*
				IS literacy
				Premises Management
				Working Under Pressure/In a Harsh Environment
				Knowledge of Donor Regulations
				Ethical Conduct

Multiple coders were used throughout the content analysis as to increase the reliability of the analysis, and the first inter-coder reliabilities were determined after the second pilot round

(with 10 job ads and three coders). They varied between skill groups, with relatively good (>0.80) values for general management skills (0.80), functional logistics skills (0.81), and inter-personal skills (0.82). Not surprisingly in view of the discussion outline above, there was less agreement in the areas of problem-solving skills (0.72) and the additional skills (0.76), nevertheless, the overall inter-coder reliability resulted in 0.79. However, this falls short of the recommendation of > 0.85 coefficient of agreements as recommended by Kassarjian (1977) and Ellinger *et al.* (2003). As a result, a further discussion between the members of the coding group was used to resolve some of the disagreements that had surfaced.

Once the remainder of the 62 job ads had been coded, the inter-coder reliability was tested again on a random sample of 6 job ads (representing thus 9.68% of the ads). Again, high inter-coder reliability was demonstrated for general management skills (0.87) and functional logistics skills (0.83), but problem-solving (0.77) and interpersonal skills (0.72) were low, as was the group of additional indicators (0.66), with an overall inter-coder reliability of 0.76. Apart from the hierarchical skill sets discussed above, subsequent discussions pinpointed a particular coding problem whereby, firstly, "oral communication" and "written communication" were often coded as a latent understanding of language requirements. Similarly, whilst many ads asked for skills related to "mechanics and maintenance" some coders checked this only if the job required the logistician to personally be able to take care of maintenance operations on vehicles, but others included aspects of overseeing maintenance activities in this indicator. Further hierarchical skill sets were also discovered, with the skills of "information sharing" as well as "meeting facilitation" often inferred from the requirement to liaise with other agencies, and "training of others" inferred from people/line management.

In this regards, the researchers met with a known problem whereby hierarchies in skill sets cause difficulties for the coding process as they do not ensure the independence and

mutual exhaustiveness of categories, which are often quoted as a validity measure of content analysis (cf. Cullinane and Toy, 2000; Spens and Kovács, 2006). Further fine-tuning may, thus, be needed not just for the coding categories, but for the underlying T-shaped model as well. A first finding of the study is, thus, that the T-shaped model needs to be adapted in order to remove hierarchies and interdependencies between its indicators.

Further problems with coding may have also have resulted from language discrepancies as, although the majority of the advertisements were in English, 12 of them were in French or Spanish. However, many French and Spanish NGOs also advertised their jobs in English and, in one case, mixed in French and Spanish within the same vacancy notice. This has the potential for multiple biases: (a) the language bias of coders (not coding in their native language - although this applies to English language adverts as well), (b) the language bias of recruiters (not advertising in their native language), and (c) biases based relating to the definition of logistics that the recruiters based their advertisement on.

Discussion of Findings

Notwithstanding problems in some of the skill groups, the study points to a number of interesting findings. As illustrated in Figure 2, there was an overwhelming emphasis on skills that were not embraced in the original T-shaped model. Thus, whilst many of the skills in the T-shaped model were also applicable to the humanitarian context, this first finding shows that the model does not capture a number of areas that are essential (and probably specific to) this context.

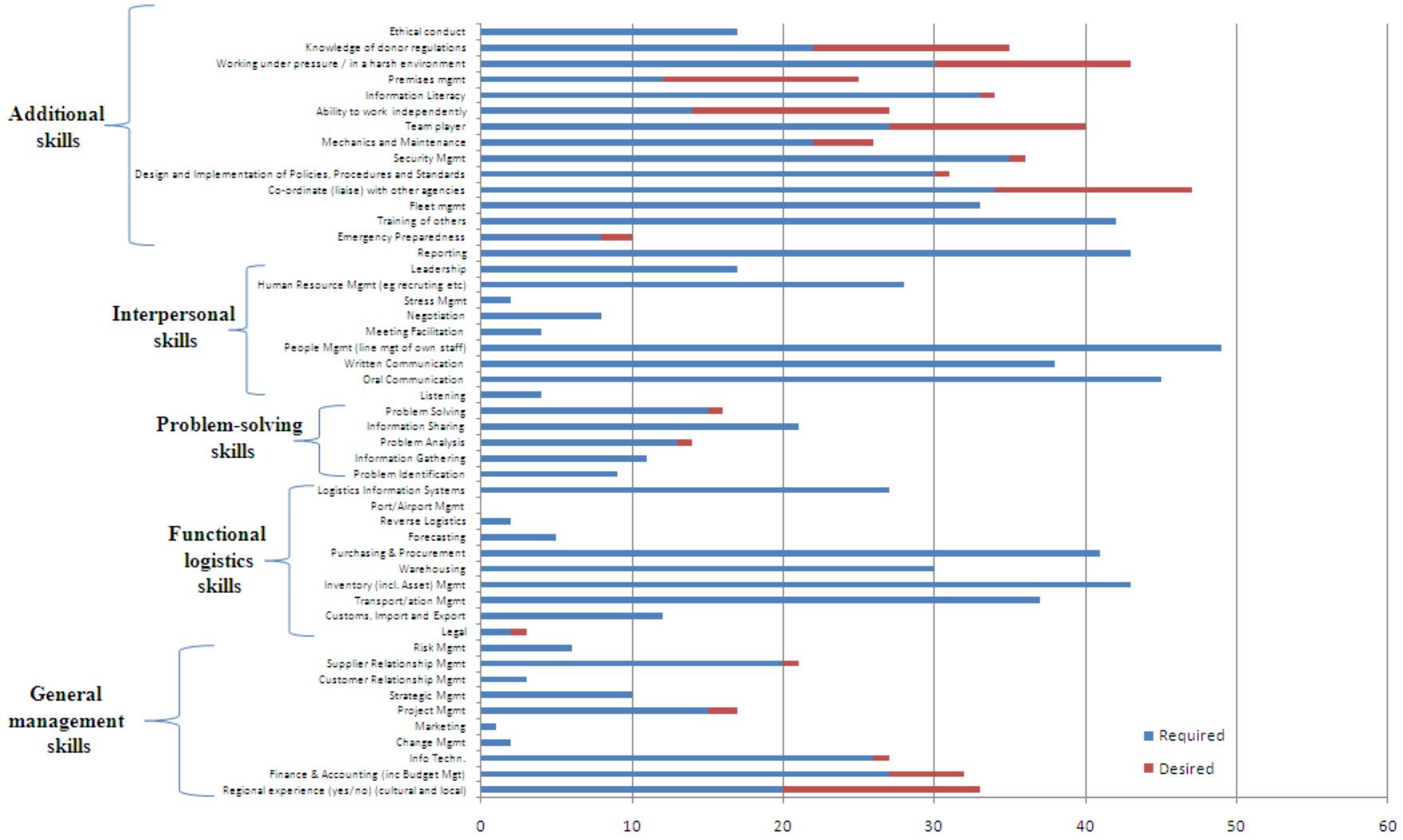

Figure 2: Results from the content analysis

It will be noted that, within Figure 2, the basic content analysis has labelled them as additional skills although it is clear that some of them (e.g. fleet management) could be added to the group of functional logistics skills, and others (e.g. team player) to interpersonal skills.

The content analysis also corroborated the finding of Tatham and Kovács (2009) that marketing and change management skills are less emphasised in the humanitarian context, as well as the lack of emphasis on reverse logistics and port/airport management – indeed, reverse logistics only featured in the context of ensuring the return of IT equipment. Furthermore, a significant emphasis on the group of functional logistics skills in the humanitarian context was evident in the content analysis and this also supported the finding in the Tatham and Kovács (2009) survey.

Interestingly, job advertisements for humanitarian logisticians emphasised the administrative role of the logistician. Skills related to reporting, oral and written communication, knowledge of donor regulations, and the implementation of procedures and standards were explicitly asked for in many cases, and the need for the logistician to manage people, train, and even recruit them was also stressed. That said, both the administrative, and the training and people management roles may reflect the fact that the vacancy notices on ReliefWeb typically advertise positions in headquarters and regional headquarters, but rarely in the field. These areas of emphasis may, thus, stem from a sampling bias and be generalisable for similar level positions only. However, even rosters of humanitarian aid workers see logisticians as part of "administration" and combine the two fields in their database (see e.g. CANADEM's roster, CANADEM, 2010). This is to say that in an organisational context, humanitarian logistics is frequently seen to be part of the administration function.

The job ads also underlined the need for security management as a core skill in humanitarian logistics, whilst in relation to the personal attributes; individuals were required to be team players, to be able to work independently, and to be able to work under harsh conditions. With this in mind, the authors were surprised at the lack of mention of "stress management" within the job ads, albeit "working under harsh conditions" could, perhaps, be taken as reflecting this.

Interestingly, albeit suggested by the CILT (2008) study, "emergency preparedness" was rarely mentioned in the job ads. A possible interpretation of the absence of such skills as requirements is that humanitarian organisations still lack the emphasis on and/or funding for, these activities. An alternative interpretation, however, suggests that ReliefWeb is not used for the hiring of logisticians for rapid onset disasters. Rather, most jobs are related to areas with ongoing complex emergencies – a fact that may also explain the high emphasis on security management.

Another much-stressed additional skill was the one of fleet management. Whilst this skill could arguably be included in transportation management, the fact that both (fleet management and transportation management) were explicitly mentioned in the same job ads points to the fact that humanitarian organisations often outsource inbound transportation but manage their own fleet when delivering aid in the last mile.

Humanitarian organisations have for a long time been criticised for a lack of co-ordination in their activities. Results from the content analysis show that international disaster relief agencies have taken this criticism to heart; and they are now actively looking for logisticians who have the skills necessary to successfully liaise with other agencies. Considering the link between recruitment and the development of the field (cf. Keller and

Ozment, 2009), the added skill of liaising with other agencies can be expected to counteract the criticism of a lack of co-ordination in the field.

A final observation is that the emphasis within the source of the vacancy notices (ReliefWeb) on HQ jobs may mean that field appointments are actually made by other means such as advertisements in local media, world of mouth, etc., rather than through international webs sites etc.

Conclusions

The study revealed a number of skills that were not to be found in the T-shaped model of logistics skills. As logistics skills literature suggests (cf. Mangan *et al.,* 2001, Hannon, 2004, Keller and Ozment, 2009), such additional skills are of high relevance for developing training and education modules of humanitarian logisticians. What is more, these are the skills logisticians would need to develop before entering the humanitarian field. One of these skills relates to security management, which is of particular importance for humanitarian logisticians working in areas of complex emergencies. This emphasis on security (also in CILT; 2008) also points to the need for more research on security management in humanitarian logistics.

The repeated emphasis on functional logistics skills (including additional skills such as fleet management) point to a traditionalist view (cf. Larson *et al.,* 2007) of logistics in the humanitarian context. In this regard, humanitarian logistics is similar to public sector supply chain management, adopting a relatively narrow perspective on SCM (Larson, 2009). Widening this view to embrace the strategic-managerial aspects of supply chain management could contribute much to the field of humanitarian logistics.

Most importantly, the findings of the study indicate the need for further developing the T-shaped model of logistics skills. Hierarchies between skill sets are problematic not only for

the validity of a content analysis, but also to determine the level at which these skills should be targeted in training and education. This said, the repeated call for information literacy in humanitarian logistics illustrates that (even lower level) IT literacy cannot be taken for granted in this field. Furthermore, the stress placed on fleet management in parallel to transportation management shows the structure of delivering humanitarian aid, with outsourced inbound transportation but own fleets to deliver aid to beneficiaries. Fleet management, and fleet management systems, thus deserves more attention in the humanitarian context.

Whilst this study unearthed a number of skills that were previously not embraced in the T-shaped model, further research is needed to assess the weight of these skills. Content analysis evaluates the frequency of mentioning indicators, but not their relative weight within a vacancy note. This shortcoming of the method calls for a survey across humanitarian logisticians to evaluate the relative importance of the additional skill sets to complement the earlier research by Tatham and Kovács (2009).

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Appendix 1 (CILT, 2008)