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# **QUANTITATIVE AND QUALITATIVE PERSPECTIVES ON GENDER IN HUMANITARIAN LOGISTICS**

Gyöngyi Kovács

Humanitarian Logistics and Supply Chain Research Institute (HUMLOG Institute)  
Hanken School of Economics  
Arkadiankatu 22, P.O.Box 479,  
00101 Helsinki, Finland

Peter Tatham

Centre for Human Systems, Cranfield University  
DCMT Shrivenham, Swindon, Wilts, SN6 8LA, UK  
Phone: +44 (0)1793 785734 Fax: +44 (0)1793 782179  
p.h.tatham@cranfield.ac.uk

## **Abstract**

Logistics is continuously portrayed as a male dominated field, with a focus on 'male' skills and even vocabulary. Prior studies in humanitarian logistics, however, suggest not only a lack of, but also a need for female humanitarian logisticians. This paper presents the findings from a survey on the gendered nature of logistics skills. Particular attention is paid to the discrepancy between quantitative and qualitative findings from the survey. Findings also highlight situations in which the gender of the logistician has an effect on logistics performance. The hazardous working environment of humanitarian logisticians favours male logisticians for security reasons but needs female humanitarian logisticians in order to access and understand (female) beneficiaries.

**Key Words:** survey, humanitarian logistics; logistics skills, logistics performance; gender

## INTRODUCTION

Logistics has for a long time been criticised for being a male-dominated field, including from the perspective of a rather masculine vocabulary (Metcalf *et al.*, 2007). The male image of the logistics discipline can be attributed to its association with the field of engineering (Sohal and D'Netto, 2004, European Parliament, 2007). Even those application areas of logistics where the overall female:male staff ratio is otherwise predominantly female, such as in humanitarian organisations being up to 90:10, this ratio is reversed when it comes to logistics. At the same time, humanitarian logistics is a field in which the gender of the logistician has significant implications (Kovács and Tatham, 2009).

Apart from the very notion of a gendered disaster vulnerability, the specific (and gendered) needs of those affected by a disaster are assessed in the activity of needs assessment, though access to male and female beneficiaries often depends on the sex of the person assembling this data. This data, however, drives the logistical provision of humanitarian aid, i.e. what is provided and to whom. Access to aid also depends on a number of cultural including gender attributes. Another area in which a gendered approach was considered to be important was that of the “last mile” deliveries. Here, again, the presence of female logisticians was perceived to have benefit in meeting the needs of those affected by the disaster in a sensitive and appropriate way. It is, however, stressed that the research did not suggest that all of the logisticians should be female (or male) – rather that there was *prima facie* evidence from the literature that a suitable mix of both genders would be more effective than the current situation in which, generally, only male logisticians are present in the aftermath of a disaster. (Kovács and Tatham, 2009).

Yet there is a lack of clarity not only of gender attributes in logistics, but generally of the skills logisticians need to perform better in their respective environment, be it business, humanitarian, or the military. Whilst some skills may be generally of importance to logistics, the set of skills that are emphasised may be context-dependent. The aim of this article is, therefore, to examine the gendered nature of logistics skills with a focus on the humanitarian context. Quantitative and qualitative findings from a survey are presented and contrasted.

## A SURVEY ON GENDER IN HUMANITARIAN LOGISTICS

Prior logistics literature has investigated the areas of gender, logistics skills and logistics performance as separate from each other. This study presents a survey that combines the three.

### The conceptual model and survey construction

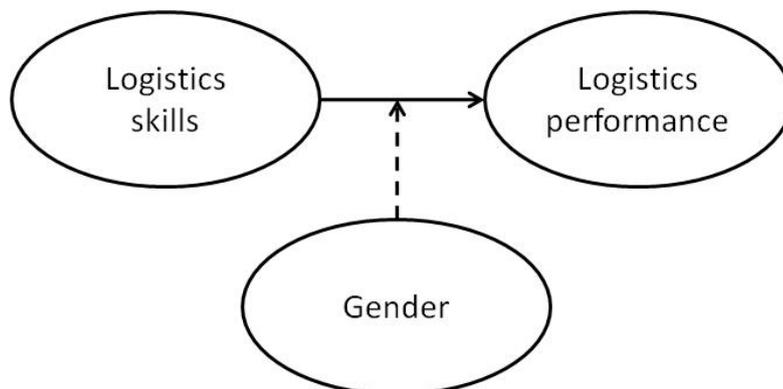
The study was based on a conceptual model linking the areas of gender, logistics skills and logistics performance. Gender has been previously considered in logistics literature from the perspective of the underrepresentation of women in the field which is reflected in a number of studies, e.g. the Canadian Logistics Institute's studies, CILT UK's survey, and the annual Ohio State survey among the Council of Supply Chain Management Professionals. Whilst they have been criticised for some sampling problems, i.e. for not necessarily capturing female logisticians as they may not be part of any of these associations (Trunick, 2007), all these surveys point into the direction that female logisticians are scarce overall, and whilst their number may be increasing, they rarely occupy higher management positions (see also Lynagh *et al.*, 1999). Two barriers are commonly cited for entering the logistics profession: work-family conflicts, and the male image of logistics. Already in education, there is a lack of female logistics students, with the Fritz Institute reporting only 20% of students enrolled in their (global) training courses for the Certification of

Humanitarian Logisticians and Certification for Humanitarian Supply Chain Management by mid-2008 being female (Macdonald, 2008). Sex segregation in logistics can thus be attributed to females not entering the profession in the first place (Trunick, 2007).

Logistics skills, on the other hand, were highlighted for the purposes of career development (Murphy and Poist, 2007), including the development of training and education programmes (Mangan *et al.*, 2001), and to emphasise differences between the skill sets of logisticians and supply chain managers (Gammelgaard and Larson 2001; Dischinger *et al.* 2006). Considering the view on logistics as an engineering discipline, it is not surprising that the T-shaped model of skills was also introduced to logistics. This model suggests that the modern, also logisticians, manager requires a combination of 'hard' technical knowledge and 'soft' business skills (cf. van Hoek *et al.*, 2002, Mangan and Christopher, 2005, Veerecke *et al.*, 2008). In other words, the T-shaped model introduces the emphasis beyond 'functional logistics skills' such as transport and inventory management on groups of skills related to 'general management', 'problem-solving', and 'interpersonal skills'. This is not to underemphasise 'functional logistics skills' which are still the basics for the profession and, to live with Mason-Jones *et al.*'s (2000) words, the 'market qualifiers' for logistics, but to highlight the importance of further sets of skills as 'market winners'. The (scarce) literature combining gender and logistics skills emphasises differences in leadership skills (female leaders being more empathetic and gathering more social backing for their decisions, CSCMP 2006), and negotiation skills, where female purchasers arguably 'soften' initial negotiation phases (Min *et al.*, 1995).

Which sets of logistics skills should be emphasised, however, need to be evaluated from the perspective of logistics performance. However, not only have skills not been evaluated from this perspective, but the T-shaped model of logistics skills is yet to be tested empirically. Generally, however, logistics performance is a much-researched topic (Neely, 1999), with increased attention being paid to metrics also in not-for-profit contexts (Micheli and Kennedy, 2005, Moxham, 2009), such as indeed, humanitarian logistics (Beamon and Balcik, 2008, Schulz and Heigh, 2009).

In summary, it is suggested that the areas of logistics skills, logistics performance and gender are interlinked. Thus different sets of logistics skills would appear to impact on logistics performance, with gender affecting this relationship. This leads to the conceptual model in *Figure 1* as a basis of this study.



**Figure 1. Logistics skills and performance in the light of gender**

Based on this conceptual model, a survey was constructed that included questions on logistics skills as portrayed in the T-shaped model, in relation to logistics performance. Apart from demographical data, a survey questionnaire set out to capture the relevance of logistics skills for logistics performance, in essence

evaluating the perceived importance of each skill (belonging to one of the sets of 'functional logistics skills', 'general management skills', 'problem-solving skills' and 'interpersonal skills') for logistics performance on a 7-point Likert scale (1-not important -> 7-very important). Thus, particular skills were not evaluated *per se*, rather in relation to their perceived impact on logistics performance overall. Skills for each subset were developed from literature (notably, Mangan and Christopher, 2005, Thomas and Mizushima, 2005, Murphy and Poist, 2007, Vereecke *et al.*, 2008), and complemented (or re-labelled) in a pilot study at the LRN 2007 conference (see Appendix A). A further set of questions asked for the gender attribution of the same skills, again on a 7-point Likert scale with 1-best carried out by females, 4-gender not important to 7-best carried out by males. Another general question was to rate whether the gender of the logistician was important to logistics performance. The survey ended with open-ended questions on positive and negative situations in which the gender of the logistician had an effect on logistics performance, and a final open-ended question on 'why do you think there are so few humanitarian logisticians?'

### **Data collection**

To highlight the skills needed in humanitarian logistics, the survey was sent out to humanitarian logisticians as well as logisticians in other application areas such as business logistics, military logistics, and academia in the sample. The online survey was distributed via mailing lists (such as CILT International's newsletter and the humlognews list) and promoted via links on for example the WISE webpage. Further snowball sampling was employed, asking logisticians to distribute the survey among their colleagues in their own and other organisations.

The response rate can be estimated (cf. Menachof *et al.* 2009) from the number of site visits (505) that resulted in 174 valid submissions (34.5%). Respondent demographics show that the respondents had a significant expertise in the logistics field, with 46.6% having worked in logistics for over 10 years (a number that is higher outside of academia, totalling 59.8%). They represented citizens of 36 countries, with deployments in 35 (other) countries, attesting a global expertise, albeit UK citizens and deployments were overrepresented with 41.9%. Importantly given the focus on gender in our research, overall 41.4% of respondents were female, though the figure is lower if taking out academics and 'other' (34.3%) as well as for humanitarian logisticians (37.9%). Overall, it reflects the male dominance of logistics but also shows a bias towards female humanitarian logisticians responding to the survey. This is probably less surprising considering the publicity the survey got via WISE, the Women's Institute for Supply Chain Excellence, which has it as its mission to increase the number of female humanitarian logisticians by 80% by 2010.

### **Quantitative data analysis**

In terms of the responses to the first section of the survey (in which respondents were invited to indicate the importance of the 32 skill sets), the areas of 'general management' or even 'functional logistics' skills were perceived by the respondents to be of lesser importance than 'problem solving' and 'interpersonal' skills. Whilst this may be surprising from the background of Mangan and Christopher (2005) highlighting the importance of 'general management skills' for logisticians, on the other hand, the finding is aligned with van Hoek *et al.*'s (2002) suggestion of functional logistics skills being a qualifier but not a differentiator for employment in logistics. In other words, logisticians need this kind of 'textbook knowledge', but in order to advance in their careers cannot rely on such skills alone. Notwithstanding differences in the relative importance of skill groups, the survey confirmed the T-shaped model of logistics skills including all of its skill sets.

Turning to the group split between the humanitarian and other cohorts, an independent *t*-test showed that humanitarian respondents valued functional logistics skills significantly higher than the general group (with the notable exception of reverse logistics and logistics information systems). This would indicate a more traditional view of logisticians in the humanitarian sector and/or the need for more technical (rather than managerial) expertise. Surprisingly, the humanitarian group placed less emphasis on skills such as change management (mean 4.88 vs. the general 5.45) in spite of the dynamics of the sector in responding to disasters as well as employee turnover.

As for the gendered nature of logistics skills, skills that came back as more male were transportation and warehousing (from functional logistics skills) as well as leadership (as an interpersonal skill). Only the functional logistics skill of legal specifications was deemed more female, though many of the general management skills (finance and accounting, marketing, customer relationship management), problem-solving (information gathering, information sharing) and interpersonal (listening, oral and written communication) skills were attributed to be best carried out by females. Interestingly, however, negotiation skills were not among the significantly female ones. As for the humanitarian context that places a stronger emphasis on functional logistics skills, however, the 'male' perception of transportation and warehousing skills may be an explanatory factor for the lack of female logisticians in this field.

Notwithstanding the gendered nature of skills, the question relating gender to logistics performance revealed that the gender of the logistician was perceived to have *no effect* on logistics performance. (The means of the humanitarian cohort were 3.00 compared to 2.36 generally, with 1 signifying 'no effect' to 7 'highly affects' on the 7-point Likert scale.) This finding is rather surprising considering the ample anecdotal evidence of situations in which the gender of the logistician indeed affected the performance of a humanitarian operation (cf. Kovács and Tatham, 2009). Even more surprising was a discrepancy of this statistical insignificance of gender in light of the numerous situations respondents of the very same survey described where the gender of the logistician had an impact on logistics performance.

### **Qualitative findings from open-ended questions**

More intriguingly, and notwithstanding the strictly statistical finding that gender had no bearing, the three open-ended questions in the survey showed a different picture. 29 examples were given where the gender of the logistician had a positive or negative impact on logistics performance, and another 124 insights were offered on the final question of why there are so few female humanitarian logisticians. Both positive and negative examples pinpointed the cultural sensitivities under which humanitarian operations are performed. The following quotes highlight these in particular:

“Although humanitarian organizations are striving to increase the number of female logisticians, in most of the areas where we operate women are under respected or simply banned of performing certain activities. In this context performing logistics activities that require direct interaction with men is challenging, time consuming and most of the time frustrating for women. In Uganda for example, having both women and men working as logisticians has shown that men could perform some tasks such as negotiating procurement of goods or managing staff more easily than women. Having said so it is also true that this ease in interacting with the host community is not related to the capacity or skills of women, but with gender discrimination embedded in the society.”

“In a western culture the answer would be a resounding 1 (no). However, if delivering humanitarian logistics in nations/cultures that do not recognise woman in position of authority or responsibility, gender may become a local issue – this would need to be recognised early on to manage expectations. The opposite is also true of course, where the presence of a male may be detrimental due to local culture sensitivities and a female operative is the only option. [...]”

And, to sum it up:

“Gender of a logistician may have a negative effect on organizational logistics performance when the logistician’s job is to communicate with suppliers(s) and/or customer(s) whose social norms dictate rules of gender in interactions differently from the logistician’s.”

A need for women in humanitarian logistics is highlighted already in the questions asking for (general) examples. One respondent even answered (all capitalised as in original) as the example for a positive effect of the gender of the logistician “WHEN DEALING WITH FEMALE BENEFICIARIES”. More specific examples here referred to needs assessment of personal items and more particularly, hygiene products. This comment summarises the point:

“In needs identification given that most of those who are normally affected are women so it is easier for women to access women, understand and interpret their actual needs. Women are also quality focused and know a lot more on domestic needs than technical like choosing generators or vehicles.”

Opinions differ on the matter of negotiation, but not on security – in times of conflict, male logisticians are perceived to be an advantage. Generally, however, (humanitarian) logistics is deemed a ‘man’s world’ yet many responses in this section voice that there *should not* be a difference between female and male logisticians, just between personalities and skills.

At the same time, respondents offered quite some insight as to the causes of a lack of female humanitarian logisticians (see Table 1).

*Table 1: Causes to a lack of female humanitarian logisticians*

<b>Observation</b>	<b>Number of Times Offered</b>
Hazardous Environment	22
Work life balance (including high travel content/separation)	22
Profession is perceived to be dominated by males	17
Culture (in affected country)	15
Perceived nature of job content, especially technical content, is not appealing	14
Entry level jobs (e.g. trucking/warehousing) are male dominated	12
Poor marketing of employment possibilities (e.g. in school)	10
Paucity of female logisticians overall	3
Physically demanding job	2
Emotionally stressful job	2
Living conditions	2
Job insecurity	1
Fewer females study technical subjects at school	1
Females prefer well bounded problems	1
<b>Total</b>	<b>124</b>

These findings emphasise the perception that the humanitarian logistics field continues to suffer from a degree of male dominance although it is not clear whether this is an historical legacy or whether it reflects the reality of disaster relief in certain countries where female logisticians are unlikely to be accepted or valued. Questions of access to, and understanding of, (female) beneficiaries call for female humanitarian logisticians, whilst security concerns (i.e. a hazardous environment) for the presence of males. In the view of a respondent, “it is best to have a mixed group of logisticians working together (both women and men) in order to keep things in balance”.

### **The catch: discrepancies between quantitative and qualitative findings**

Whilst some findings are consistent between quantitative and qualitative analyses (such as negotiation skills not necessarily being female), there is a large discrepancy between the general insignificance of gender and the vast number (as not to say, rich content) of responses related to particular situations in which the gender of the logistician does, indeed, matter, as well as reasons for the paucity of female humanitarian logisticians. A possible explanation for this discrepancy lies in the normal distribution curve followed in the Likert-scale significance questions, while open-ended questions deliberately asking for outliers. Another possibility is the view that the gender of the logistician should not matter, though some situations favour female or male logisticians. Whichever may be the case, the discrepancy in itself calls for more research on the topic.

## **CONCLUSIONS AND FURTHER RESEARCH**

The general conclusion of this study is that the T-shaped model of logistics skills has withstood a test across several cohorts of logisticians. However, differences in emphasis arise from the context in which a logistician operates. Humanitarian logisticians, as highlighted in this study, focus more on functional logistics skills – whether for the reasons of a more ‘basic’, technical orientation of the job, or a more traditional view of what logistics entails. Other than that, functional logistics skills are seen as market qualifiers, and not as market winners or differentiators.

The gendered nature of skills offered some surprises. Neither quantitative and qualitative analyses could confirm Min *et al.*'s (1995) view on female logisticians being ‘better’ in purchasing negotiations. Comments in the survey rather point to the opposite direction. Generally, some skills could be attributed to be better performed by females / males. Most interestingly for humanitarian logistics, those functional logistics skills that were most important for this context were deemed male. In other words, the combination of a focus on functional logistics skills, and their perception of being best carried out by men, potentially contributes to a preference of male logisticians in the humanitarian context. Moreover, the focus on ‘male’ functional logistics skills in humanitarian logistics implies that a change away from a traditional view on logistics to encompassing a supply chain view may lead to more equal representation of both genders in this context. In the light of the perceived operational benefit of female humanitarian logisticians, and the tendency towards a perception that females are particularly adept in the market winning areas of interpersonal and problem solving skills, this is potentially a significant finding – but it clearly requires additional research to validate this tentative conclusion.

One of the most problematic findings of the study is the general insignificance of gender in logistics versus the numerous situations offered in which the gender of the logistician does bear significance. Notwithstanding possible explanations for this discrepancy of the quantitative and qualitative analyses of the survey, this point deserves more attention in further research.

Finally, it is clear that the outcomes of this survey as they relate to the humanitarian field require triangulation with the views of the beneficiaries. Thus even if the respondents perceived no difference between the impact of logistics performance of male and female humanitarian logisticians, the beneficiaries may see things differently. Needs assessment and the access to beneficiaries are, after all, the areas in which a need for female humanitarian logisticians is highlighted the most.

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*Appendix A. Skills in the T-shaped model*

<b>General Management Skills</b>	<b>Functional Logistics Skills</b>	<b>Problem Solving Skills</b>	<b>Interpersonal Skills</b>
Finance and Accounting	Legal	Problem Identification	Listening
Information Technology	Customs, Import and Export	Information Gathering	Oral Communication
Change Management	Transport Management	Problem Analysis	Written Communication
Marketing	Inventory Management	Information Sharing	People Management
Project Management	Warehousing	Problem Solving	Meeting Facilitation
Strategic Management	Purchasing & Procurement		Negotiation
Customer Relationship Management	Forecasting		Stress Management
Supplier Relationship Management	Reverse Logistics		Human Resource Management
Risk Management	Port/Airport Management Logistics Information Systems		Leadership