PROXIMITY MATTERS: SHARED CHALLENGES WITHIN A LOGISTICS CLUSTER

Andrew Gough and Liam Fassam
University of Northampton, Northampton Business School
andrew.gough@northampton.ac.uk ; liam.fassam@northampton.ac.uk

Introduction

The widespread tendency of logistics companies to become established in close proximity to each other has been explained by the existence of collective benefits in doing so (Sheffi, 2012). Port areas, in particular, can be expected to attract logistics companies through a combination of international connectivity and intermodal facilities (De Langen and Visser 2005; Mangan et al, 2008; Brett and Roe, 2010). However, the occurrence of clusters of otherwise competing firms in areas without port facilities received very little academic attention until a recent study by the University of Eindhoven (van den Heuvel et al, 2014), which identified that co-located logistics establishments more often combine transport capacity, have better availability of truck drivers, are better accessible, have better availability of repair and maintenance facilities, and have better expansion opportunities than do non-co-located logistics establishments.

However, co-location can also be expected to bring a number of shared challenges, relating to the economic and political environment of the day. This study aims to identify those challenges, in order to better inform local government support offered to companies situated within logistic clusters.

Context

The county of Northamptonshire in England contains upwards of 1400 logistics companies and branches, providing employment for over 27,000 people, representing nearly 10% of all employment in the county (PACEC, 2012). Once industries whose primary operation is not logistics (but where logistics activities take place) are added, this figure rises to 40,000. Growth in the sector was expected to take the figure above 51,000 by 2021.

Research Methodology

A two-stage approach was followed. An initial bibliometric analysis was performed in order to identify the key issues that were covered by the academic and trade press over a four year period between 2010 and 2014. The results of this analysis were then used to construct a questionnaire that explored the issues in greater depth.

This methodology combines both the quantitative approach of content analysis (Callon et al, 1983) with the qualitative, evidence-based approach advocated by Harland (2013), yielding an output that is resistant to short-term bias caused by pressing operational issues.

A broad range of potential respondents was identified, representative of the incumbents, suppliers and customers of the logistics cluster in Northamptonshire. A total of 302 useable responses were received from a total of 1241 invitations, representing a response rate of 24.3%.

Identifying the Key Issues in Logistics

In our experience, logistics is an industry that possesses a dual character. As an industry, logistics is dependent on long-term investment, yet the day-to-day operations of logistics companies can seem very short-term indeed, often placing management under significant pressure to perform.

In seeking to identify the key issues in logistics, we recognised that we needed to overcome the natural tendency of individual companies to put forward the issues that are most pertinent to their short-term problems, rather than offer insights into their longer-term plans.

Our approach has therefore been to use bibliometric analysis as an initial tool to identify those issues that have received the most attention in the past three years. We distinguish between academic sources – which represent issues that have been supported by research grants and are therefore deemed important by funding institutions – and the broader press. The broader press, including the trade press, has a tendency to publish material that its readership considers important, an important distinction from the more fundamental scientific principles of the peer-reviewed academic literature.

Indeed, some issues of great strategic importance may not even be considered by some editors, whose focus on the interests of a narrow readership is based on sound commercial principles. In such cases, we will have to apply our own judgement as experts in the field to determine whether an issue that has received a high degree of attention is, in fact, material to the development of a medium-term strategy.

We therefore conducted separate bibliometric analyses of the peer-reviewed (academic) and non-peer-reviewed literature in order to develop a balanced view of industry opinion and to guide the design of the survey of logistics companies in Northamptonshire.

Bibliometric analysis of the peer-reviewed literature

A two-stage bibliometric analysis was conducted using the British Library's ZETOC database1. Firstly, an initial sample of 600 peer-reviewed records dating from 2013 that contained the keyword "logistics" was inspected to determine the subject of the article. The subjects were classified into broad categories, shown in Table 1.

Subject Category	Occurrences	Frequency (%)
Solution Design	58	9.7%
Reverse Logistics	25	4.2%
Commercial	15	2.5%
Outsourcing	13	2.2%
Infrastructure	11	1.8%
Renewables	9	1.5%
E-business	6	1.0%
Waste & Recycling	4	0.7%
Metadata	2	0.3%
RFID	1	0.2%
Other	456	76.0%

Table 1: Subject Analysis of 600 articles from 2013 (ZETOC)

[1] ZETOC is an online research database, providing access to over 29,000 both peer-reviewed and non-peer reviewed journals through the British Library's electronic table of contents.

The results of this initial sample show academic literature to be broad and diverse, with no single subject accounting for more than 10% of the total.

The appearance of solution design, a mathematical discipline focused on creating algorithms that can be incorporated into software for logistics planning, as the most common subject of an individual article is a reflection of the strengths of the academic community.

However, the appearance of reverse logistics in second place is notable, since it reflects a substantial funding stream across Europe for a single issue.

In the second stage of our analysis, we looked at the consistency of publications of articles covering these main subjects over time. Table 2 shows the frequency of publication from 2010 until April 2014.

Keyword	2010	2011	2012	2013	2014 (4 months)
Logistics	2142	1982	2087	2158	151
Solution Design	270	264	249	178	62
Reverse Logistics	80	83	89	98	39

Table 2: Longitudinal analysis of key publication subjects, 2010 – 14 (ZETOC)

From this analysis, we can observe that the output on the subject of reverse logistics is increasing whilst the output on the subject of solutions design is reducing. This is a significant result, as the funding available for logistics research is generally under pressure, suggesting that reverse logistics is an area of research that finds particular favour with grant-awarding bodies.

Bibliometric Analysis of the Trade Press and Media

An initial analysis of the trade press and media was undertaken using the advanced search functions provided by Google, with manual intervention to remove duplicates and eliminate hits due to alternative meanings of the relevant search terms.

A sample of 120 hits (representing 384 articles due to multiple reporting) was analysed to identify the key stories published in the media in the twelve months from June 2013 to June 2014. The results are shown in Table 3.

Subject Category	Hits (Occurrences)	% Frequency (% Occurrences)
Company Performance	59 (223)	49% (58%)
General News / People	21 (45)	17% (12%)
Property	14 (43)	12% (11%)
Skills Shortages	9 (35)	7% (9%)
IT	6 (8)	5% (2%)
Trends / Reviews	4 (12)	3% (3%)
Decarbonisation	2 (6)	<2% (<2%)
Fraud	2 (8)	<2% (2%)
Rail	1 (2)	<1% (<1%)
Ports	1 (1)	<1% (<1%)
Historical	1 (1)	<1% (<2%)

Table 3: Subject Analysis of 384 articles from 12 months to June 2014 (Google)

The mainstream press can be clearly seen to concentrate on company performance, on general news such as awards and on key personalities. Reports in the specialist press are rarely reported by the general press, leading to a phenomenon whereby the most published articles are often not the most important from a whole industry perspective.

Findings

A total of 302 useable responses were received from a total of 1241 invitations, representing a response rate of 24.3%. This level of response meets the generally accepted criteria for statistical sufficiency for a group of this size.

Business demographics were also captured as part of the process, in order to detect any variation of responses in relation to the scale and geographical spread of businesses, though no significant variation was found.

Skills Shortages

A chronic shortage of skilled workers in the past 12 months was reported by over 54% of respondents, confirming prior reports by Skills for Logistics and others (Skills for Logistics, 2010).

Has your business experienced a shortage of skilled logistics workers in the last 12 months?	
Yes	54.1%
No	45.9%

The respondents offered several reasons for this situation. Firstly, they did not believe that potential candidates for jobs within logistics properly understood the industry (-0.78 against a neutral view). Secondly, they believed that women were under-represented in logistics (-0.57).

The shortage of skills was also reported by non-UK respondents, indicating that this issue in of concern across Europe. The availability of skilled labour was also considered the most potent economic constraint affecting logistics.

The group was very receptive (+1.24 from a neutral position) to the suggestion of a full educational pathway (from apprenticeship to undergraduate degree) that might be used to attract people into the industry with the potential for continuing education whilst employed.

Performance Indicators

Traditionally, performance has been closely associated with key indicators such as fuel efficiency, vehicle fill and drop density and whilst this focus has not lessened, companies are increasingly setting targets for reverse logistics and recycling.

The use of alternative fuels in vehicles and alternative energy in warehouses, though often the subject of press releases by logistics companies and a common feature of real estate marketing, does not play a crucial role in performance monitoring. However, the respondents felt that their logistics infrastructure decisions took clear account of recycling options and of the availability of alternative fuels (+0.91).

Please rank the following resource efficiency metrics according to the manner they affect your business (1=highest and 6=lowest)		
METRIC	Average rating	Rank
Fuel Efficiency	2.38	1
Vehicle fill	3.28	2
Drop density	3.44	3
Reverse logistics	4.44	4
Recycling	4.46	5
Alternative fuels (vehicle)	4.90	6
Alternative energy (warehouse)	5.10	7

Impact of Key Logistics Trends on Current Business

The majority of businesses responding to the survey saw their main focus as being close to the customer. Only a few companies were concentrating on export activities.

When reviewing logistics location advantage, which of the following pertains to your business?		
OPTION	Response	Rank
Trade and distribution advantage (main focus is being close to the customer)	55.2%	1
Resource based (close to regional resources)	24.1%	2
None of the above	17.2%	3
Import substituting	14.9%	4
Export platform	9.2%	5

The importance of the road network to the logistics industry was confirmed, together with the pressing problems posed by traffic congestion and fuel costs.

Of the following, what do you feel is a logistics network constraint?		
CONSTRAINT	Response	Rank
Facility location to major road networks	51.1%	1
Traffic congestion	47.7%	2
Fuel costs	38.6%	3
Environment considerations	22.7%	4
Ability to have a true multi/synchromodal transport network	15.9%	5
Time from inland port to warehouse back door	13.6%	6
Cut off times for major parcel carriers and freight forwarders	13.6%	7
Location to air freight options	8.0%	8
Location in terms of rail freight options	6.8%	9

A further question confirmed the conclusion that the most important factor affecting the choice of business location was proximity to the customer. This result was in contrast to the findings of Ellram and her co-workers (Ellram, 2013), which identified a low priority on proximity to the customer when taking a manufacturing location decision; clearly the distribution location decision conveys the customer proximity in this case.

However the high rankings given to the availability of local staff and the availability of grants were entirely consistent with Ellram's work.

Please rank the following factors when choosing a business location (1=most important, 10=least)		
FACTOR	Rating	Rank
Distance to customer	3.38	1
Availability of local staff	3.81	2
Availability of local management	4.67	3
Distance from supplier	5.31	4
Subsidies / grants	5.43	5
Availability of transport capacity	5.48	6
Stability of transport cost	6.14	7
Availability of expert advice	6.38	8
Reliability of transport	6.58	9
Intermodal solutions	7.80	10

The low rating given to intermodal solutions is not surprising, given the dominance of road transport within the UK and Europe, but it is perhaps rather lower in absolute terms than we would expect. It is certainly indicative of the challenges facing the UK government in promoting the transfer of freight onto the railways, and of the likelihood that those companies that are most favourably disposed to rail may lie outside of the county.

We conclude that proximity to the customer is particularly valued by the logistics industry, but less so by the manufacturing sector. The rationale for the marketing of London Gateway as a premier logistics location with the advantage of close proximity to the largest market in the UK can clearly be seen in the responses to our survey.

Facility cost was, predictably, the factor uppermost in our respondents' minds. The high rating given to the quality of public transport provision, above more traditional complaints such as a lack of flexibility over the length of leases or contracts, was unexpected.

Which of the following do you see as a logistics facility challenge?		
FACTOR	Response	Ranking
Facility cost	54.0%	1
Location to alternative transportation	34.5%	2
Not on a public transportation route	29.9%	3
Lack of development	21.8%	4
Constrained by contract length	20.7%	5
Site security	19.5%	6
Constrained by size	13.8%	7
Constrained by type	12.6%	8
Other (please specify)	Nil	N/A

One sixth of businesses stated that their operations were being affected by current reshoring decisions, citing a drive for shorter lead times as the prime motivation. Several respondents indicated that the UK was behind other countries in terms of the availability of specialist advice and subsidies to attract their business.

41.4% of respondents indicated that they had been subject to supply chain fraud in the past 12 months. The respondents agreed that greater sharing of information between logistics operations at the regional level would aid in lowering logistics crime (+0.97 from a neutral position). Also, the level of fraudulent activity was considered to be a factor in the decision of where to site logistics facilities

(+0.59), suggesting that Northamptonshire could gain a location advantage through initiatives aimed at lowering supply chain crime.

Only 43% of respondents had heard of the circular economy and only a weakly positive response was observed to the question whether reverse logistics was important to their business (+0.13 from a neutral position). These are very disappointing figures.

A further question asked for suggestions as to how reverse logistics could be improved. The responses displayed confusion between backhauling, which typically aims to avoid empty running of vehicle fleet, and reverse logistics, which aims to recover goods that have been returned by the customer. A lack of willingness to collaborate was frequently cited as a barrier to improving performance.

Discussion

Our survey paints a picture of a logistics industry that is under severe cost pressure, facing major skills shortages, increased competition, and yet lacking the cohesive will to pull together to improve their situation.

The industry's focus on its customers is not in doubt, yet its stance appears to be reactive and short-term, with very little evidence of an appreciation of even medium-term developments. The low awareness of the planned legislation establishing the goals of the Circular Economy is a concern, since many of the logistics industry's own customers will look to them for guidance on meeting resource recovery targets. The low priorities afforded to the adoption of alternative fuels and sources of energy are also indicative of a focus on current operations, rather than on the future of the industry.

Nowhere is this short-termism more evident than the lack of collective investment in the future of the labour force. The level of engagement between the logistics industry and local schools and colleges is simply not comparable to the efforts made by the UK's European competitors.

For example, the Education and Information Centre at Rotterdam Mainport hosts over 25,000 schoolchildren every year; over 50 partnering companies offer site visits to interested groups. A target of 500 apprenticeships per annum has been laid down as part of a clearly articulated collective plan agreed by over 700 businesses, working together in an association known as Deltalinqs. This plan is itself aligned to an equally-clear vision for infrastructure development that is aligned with a long-term strategy for growth reaching out to 2030.

Rotterdam's vision aims to secure the future of some 90,000 jobs. The cooperation between national and regional government, city authorities and business that underpins Rotterdam's success should be closely studied in Northamptonshire.

We continue to believe that logistics will play a major role in the Northamptonshire economy. The best way to support local logistics companies in overcoming their day-to-day challenges is to show leadership in identifying solutions to the skills shortage in Northamptonshire and to identify further improvements to infrastructure that can improve transport reliability in the medium-term.

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