

INTERMODAL TRANSPORTATION COSTS

Esa Hämäläinen¹

Abstract. This paper exposes with empirical case data how the maritime-based short sea shipping costs aggregate in export industry. The authors had possibility to utilize invoice data of the delivered orders. The data contains the information of logistics costs from the mill located in a Nordic country to two countries to the customers located in the Mediterranean region. This study shows that micro level data may reveal interesting perspectives for logistics research tradition.

Keywords. Intermodal, logistics, cost, maritime, transportation,

1 Introduction

Long transport routes including short sea shipping can be a challenge for export industry. Serving customers located far from the manufacturing unit increases delivery time and also costs. The aim of this study is to present intermodal logistics components and their costs from a mill to end customers. The integration of manufacturing and logistics are essential topics for an export dependent industry (see [1, 2]). Efficient logistics makes globalization possible offering methods to transport raw materials and end products (see [3]). Logistics costs averagely constitute a considerable proportion of operating costs, often more than 10 per cent of the company's turnover (see [4, 5]). Main topics of this paper: 1) Expose foreign deliveries with detailed invoice-based transport data. 2) Reveal variations in logistics data during the transport process. 3) Provide how short sea shipping together with port handling impacts on the delivery costs. 4) Analyse delivery volumes and logistics costs any correlation. These four points are important topics when intermodal transport is exposed with help of very accurate case data.

2 Research data

Research material for this study is received from the integrated cost management system and this confidential data was converted for research purposes. The data

contain invoice information from the deliveries to two countries located far from the Nordic mill in the Mediterranean region. We could utilize 71 invoiced deliveries from country 1 and 111 deliveries from country 2, totally 182 deliveries from June 2006. These invoices contained detailed logistics data after the mill warehouse: total transport costs, delivered tons, transport to port and port handling costs, maritime costs, land transport from export port to consignee/warehouse and domestic and export warehousing costs.

3 Main results

The study reveals a correlation (fig. 1) between delivered tonnage volumes and costs in €/T. In the country 1 there is a strong negative correlation (calculated with Excel-spreadsheet). When tonnage volumes rise the actual transport costs per ton lower even there is also a big variation between deliveries. The transport costs understandable vary because packages are delivered different places in the target country. The country 1 is located

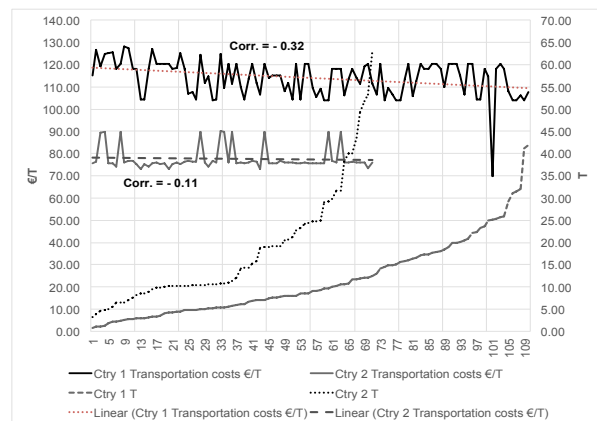


Figure 1: Correlation of transport costs €/T with delivered tons.

also closer and delivered volumes per order are nearly double as bigger than in the country 2. In theory it could be vice versa, so when a country is closer the delivered volumes are smaller, but of course this is depending on shipping timetables and intensiveness of traffic between export and import port. Correlation in the country 2 is

¹ Author is with Brahea-Center, Center for Maritime Studies, University of Turku, Finland. E-mail: esaham@utu.fi.

much smaller and also negative. The authors calculated correlation of all deliveries together and correlation was -0,34. The negative correlation referees that company get logistics services cheaper in €/T when delivering more tons in the same order. The delivery volumes are naturally dependent on how much customers order. There can be break even so that when order volume is very low the invoiced price does not cover expensive transport.

4 Conclusions

An intermodal supply chain adds costs in every step and unfortunately from freight owners views the shipping companies have a strong negotiation position when rates are stated. This study shows that sea freight has fundamental role in cost accumulation in intermodal logistics. The negative correlation referees that company get logistics services cheaper in €/T when it delivers more tons in same transportation.

References

- [1] L. Huemer, Unchained from the chain: Supply management from a logistics service provider perspective. *Journal of Business Research*, vol. 65, no. 12, pp. 258–264, 2012.
- [2] J. D. Pagh, M. C. Cooper, Supply chain postponement and speculation strategies: how to choose the right strategy. *Journal of Logistics Management*. vol. 19, no. 2, pp. 13–33, 1998.
- [3] J. Eckhardt, J. Rantala, The role of intelligent logistics centres in a multimodal and cost-effective transport system. *Procedia - Social and Behavioral Sciences. Transport Research Arena– Europe*. vol. 48, pp. 612 – 621, 2012.
- [4] J. Engblom, T. Solakivi, , J. Toyli and L. Ojala, Multiple-method analysis of logistics costs. *International Journal of Production Economics*, vol. 137, no. 1, pp. 29–35, 2012.
- [5] E. Hämäläinen, Economic geographical analysis of the Finnish Paper Industry. *Annales Universitatis Turkuensis, SER A11 – TOM, 263*, Turku, 2011.