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THE DEMAND FOR TRANSPORT AND LOGISTICS SERVICES IN THE FRIULI VENEZIA GIULIA REGION

The paper reports on a research carried on in April 2007 on a sample of manufacturing firms in the Friuli Venezia Giulia Region, Italy. The aim was to understand the nature and the prospects of the transport and logistics demand deriving from firms. It resulted that firms require an intense and growing amount of services to procure inputs and deliver products to a large number of destination, both nationally and internationally. A large percentage of the shipments is full load, point-to-point shipments which require traditional transport operators. However, there is a growing share of shipments which demand groupage\courier services implying logistics operators able to make higher levels of investments, manage a national or international network, exploit scale and scope economies and compete in quality and not only in costs.

Key words: *freight transport, logistic services, transport demand, outsourcing*

1. INTRODUCTION

Logistics is thought to be a crucial feature of a successful economy. A large body of scientific and policy literature stresses the importance of providing industries with a sound and well organized logistics infrastructure and services. But which logistics services do firms actually need in an advanced economy? What is their current demand for transport and logistics? Are logistics firms able to provide it in a satisfactory manner?

In order to reply to these important research and policy question, a telephone survey was carried out in the Friuli Venezia Giulia, a region located in the Northern Eastern border of Italy, one of the most industrial and economically successful region of Italy.

This paper is part of a broader stream of literature which includes recent papers as Hensher and Figliozzi (2007), Hensher, Puckett, and (2007) and Figliozzi (20007).

2. THE SAMPLE OF THE INTERVIEWED MANUFACTURING FIRMS

During April 2007, a total of 51 firms were interviewed, classified as reported in Table 1 and 2. They belong to a quite diversified set of sectors representing different technologies, industrial organization and logistics needs. Throughout most of the paper a detailed 5 sector classification will be maintained. Some tables will use the 2 sector classification of Table 2 when data are particularly scarce.

Table 1. The sample of the interviewed manufacturing firms by sector and by province at a 5 sector classification (n° of firms)

Province	Food	Beverages	Rubber and plastics	Manufacturing product*	Wine	Total
Gorizia	2	2	1	1		6
Pordenone	2		6	9	4	21
Trieste	3	1	1	2		7
Udine	4	3	2	7	1	17
Total	11	6	10	19	5	51

**The caption Manufacturing products includes chemical-pharmaceutical products, leather and skin products, editorial and paper products, textiles, glass and ceramics*

Table 2. The sample of the interviewed manufacturing firms by sector and by province at a 2 sector classification (n° of firms)

Province	Food, Beverages, Wine	Rubber and plastics e other Manufacturing products	Total
Gorizia	4	2	6
Pordenone	6	15	21
Trieste	4	3	7
Udine	8	9	17
Total	22	29	51

The average size of the firms interviewed measured by the number of employees is 50 (Table 3). Hence, the sample represents the large number of Small and Medium Enterprises (SMEs) which characterizes the Italian industrial structure, especially of the Northeastern and Central regions. The wine producers have an average size of about 20 employees, rubber and plastic firms are slightly larger. The manufacturing firms have a larger average size equal to about 70 employees. It is an industrial structure which shows high specialization, often in niche products, and low economies of scale and of scope in production, and, possibly, in the transport and logistics operations as well.

Table 3. The sample of firms by dimension

Sector	Average number of employees
Food	47,6
Beverages	41,4
Rubber and plastics	30,6
Manufacturing products	71,2
Wine	21,4
Total	49,98

3. THE CURRENT TRANSPORT AND LOGISTICS FOR INBOUND AND OUTBOUND FLOWS

A first set of questions was focused on quantifying the current transport and logistics activities carried out at firm level. Table 4 reports on the weekly average number of orders performed by a firm. The numbers are quite large signaling an intense buying and selling activity by the firms. It is most likely the effect of the de-verticalization of the regional industrial structure and of the on-going delocalization trends which probably strengthened the regional competitiveness but increased the transport and logistics requirements of the firms. It is responsible for the recent growth rate in freight transport at higher levels than the growth in the regional GNP.

Table 4. Weekly average number of orders

Sector	Total
Food	46,2
Beverages	290,5
Rubber and plastics	17,0
Manufacturing products	12,8
Wine	32,0
Total	65,1

Table 5. N° of truck that weekly visit the firm (n° of flows)

	Inbound flows		Outbound flows	
Sector	Full load	groupage/courier	Full load	groupage/courier
Food	2,1	9.2	9,7	7,1
Beverages	12,8	0.6	38,4	0,6
Rubber and plastics	4,8	2.1	15,3	2,7
Manufacturing products	5,3	4.2	14,6	15,0
Wine	50,7	0.3	54,5	21,0
Total	10,0	4.1	20,5	9,7

The industrial and commercial activity generates a demand for transport, which mainly takes place by road transport. Table 5 reports on the number of trucks that weekly visit the interviewed firms. Besides distinguishing between inbound flows (of inputs necessary for production purposes) and outbound flows (of outputs of the firm), the Table distinguishes between full load trucks and less-than-full load trucks, termed as *groupage* or *courier* because these loads are usually carried jointly with the products of other firms or grouped with other products, in part or all the distanced traveled by the truck. We feel that this is a crucial distinction since it takes a completely different transport operator to carry out the two kinds of services. Full load transportation are usually point-to-point transport services carried out by single truck operators (the so called "padroncini" in Italian) or by small transport firms operating a small number of trucks. These firms are characterized by a quite simple organization, low level of technological means, inability to exploit economies of scale or of scope, little use of information technology and simplified supply of logistics services. But firms operating point-to-point compete on intense cost-cutting strategies and carry out highly customized services. All in all, they provide a cheap and satisfactory service to small firms, often enjoying long-standing personal relationships with the manufacturing firms' manager which enables them to be almost integrated with the manufacturing firm.

Just the opposite is most likely true for the firms which offer *groupage\courier* services. Since they have to organize a complex network to be able to cover a large section of the market and to provide a vast array of services, they are characterized by a larger dimension (up to few thousands employees), often national or international coverage, extremely high investment levels and a specific focus on exploiting economies of scope and of scale by making use of state-of-the-art information and communication technology. Since there is a much smaller number of operators in this section of the market, competition levels are less fierce and based more on quality than on costs.

Going back to Table 5, it is evident that the average number of trucks visiting a firm for full loads is twice as much as those visiting a firm for less-than-full loads. At sectoral level the wine and beverage industry registers the highest number of trucks carrying inputs as well as outputs. In the manufacturing sectors the number of trucks delivering outputs is higher than that of the trucks bringing in inputs.

When examining the distinction between full load and less-than-full load shipments by type of customer (Table 6) it is found that the ratio is 3 to 1 for business-to-business (B2B) transactions and almost 1 to 1 for business-to-consumer (B2C) transactions. At sectoral level, food is shipped mostly to consumers (75%), partly full load and partly by *groupage\courier*; when shipped to businesses it is shipped mostly by full-load trucks. A similar structure is in the beverage and wine sectors. Rubber and plastics are, on the contrary, shipped to businesses (69%) mainly full load; when shipped to consumers they are shipped full load in a 2 to 1 ratio. The other manufacturing products are partly shipped to businesses (44%) and partly to consumers; in the latter case they are shipped mostly by *groupage\courier*.

Table 6. Which type of shipments prevail (by volume or by value)? (percentage-wise)

Sector	Full load B2B	Groupage/ courier B2B	Full load B2C	Groupage/ courier B2C	Total
Food	21%	4%	35%	40%	100%
Beverages	25%	0%	58%	17%	100%
Rubber and plastics	50%	19%	21%	10%	100%
Manufacturing products	30%	14%	21%	35%	100%
Wine	18%	4%	57%	21%	100%
Total	30%	10%	32%	27%	100%

Examining the destination of the output shipments, it is evident that they are local or Italian but also with a good share of foreign destination both to bordering and farther away countries (Table 7).

Table 7. Localization of customers (average n° of destinations)

Sector	North of Italy	Italy	Bordering countries (Austria, Slovenia, Croatia, Hungary)	Other countries
Food, beverages, wine	7	12	5	6
Rubber and plastics and other manufacturing products	9	17	11	11
Total	16	29	16	17

A final point regarding the existing situation concerning the number of destination points (Table 8). As it is obvious, the share of firms by number of destination points increases when considering B2C firms against the B2B firms since consumers are more numerous and more scattered than firm customers.

Table 8. Share of firms by number of destination points (percentage-wise)

	B2B	B2C
From 1 to 5	15%	3%
From 5 to 10	10%	6%
From 11 to 30	10%	13%
from 31 to 60	5%	16%
From 60 to 100	40%	34%
More than 100	20%	28%
	100%	100%

4. FUTURE TRENDS AS TO APRIL 2007

The firms have also been asked about the forthcoming trends relative to April 2007. There is a large number of firms that think that the number of shipments is increasing, both with the Italian and foreign destinations. The market for transport and logistics is consequently going to increase.

Table 9. Questions of future increases in the n° of shipments (percentage-wise)

Question	Yes	No	Not sure
Will the n° of shipments increase?	58%	12%	54%
Will the n° of shipments increase in Italy?	32%	0%	68%
Will the n° of shipments increase in foreign countries?	34%	2%	68%

A prediction was also asked on the share of groupage\courier: 31% of the firms thought it is going to increase, 53% think it will stay constant and 16% do not know. None thinks it will decrease.

5. LOGISTICS MANAGEMENT AND OUTSOURCING

An important aspect of logistics and transport activities is who makes the main decisions. Italian firms, especially the SMEs in the industrial districts, are thought to disregard the organization of an efficient transport and logistics system for procurement of their inputs and shipment of their products by buying CIF (cost, insurance and freight) and selling FOB (free-on-board). With these contractual arrangements, it is the seller of inputs or the buyer of outputs who takes care and makes the important choices, hence, controlling the logistics and output activities. Consequently, the transport and logistics demand content deriving from Italian SMEs is rather poor and is not sufficient to allow a market for these services to develop.

In order to test this theory, a set of questions were included in the questionnaire.

Table 10. Who manages the groupage/courier input procurements to your firm? (percentage-wise)

Sector	By us	By the seller
Food	11%	89%
Beverages	25%	75%
Rubber and plastics	30%	70%
Manufacturing products	54%	46%
Wine	0%	100%
Total	31%	69%

A first question was about the management of the groupage/courier input procurements (Table 10). It resulted that on average, only 31% of the firms organized its own input procurements. At sectoral level, the percentage is higher in manufacturing products where most likely the productive logistics requirements are more stringent, whereas in the edibles and drinks sectors the percentage is much lower and in the case of wine equal to zero.

A second question was on the type of the logistics service bought\outsourced besides transportation (Table 11). It is evident that only few firms, 4 out of 51, buy warehousing services, none buys assembling or final product arrangements services, 4 buy invoicing services and 12 request payments-at-consignment services. Apart from the last case, it hence appears that firms buy most transport services whereas the demand for more complex logistics services is still rather low.

Table 11. Type of logistics services acquired\outsource besides transportation (n° of acquiring firms)

Sector	Warehousing	Assembling or final product arrangements	Invoicing	Payments at consignment
Food, Beverages, Wine	1	0	2	5
Rubber and plastics and other manufacturing products	3	0	2	7
Total	4	0	4	12

A last set of questions aimed at measuring whether there is a close one-to-one relationship between a firm and a transport and logistics provider or whether firms establish multiple relationships with providers in order to satisfy multiple requests or more simple to take advantage from the competition among providers.

The results are the following:

- For full load shipments the number of suppliers per firm is equal to 2.2 forwarders (with a maximum number of 10) and to 2.8 transport operators (max. 11).
- For less-than-full load shipments the number of suppliers per firm is equal to 2.3 forwarders (max. 7), 4.9 transport operators (2.6 for Italian destinations, 1 for abroad) (max. 12), 1 national courier (max. 2) and 3.3 international courier (max. 10).

It can be concluded then that manufacturing firms deal with more than one provider of transport and logistics firms, most likely both for quality and cost convenience. This results in an average cost for transport and logistics service estimated on average at 5% of the total value of production, which is a figure in line with the international average in developed countries. This figure, according to the literature has been declining over the last decades and is responsible for trends towards delocalization and globalization witnessed in recent years. It seems quite unlikely that it will further decrease. On the contrary, the tendency of road congestion to increase, the increasing cost of oil, the concerns with the environment and the political requests for decoupling and for internalizing road external costs is likely to keep that figure constant or, possibly, to increase it.

6. CUSTOMERS' SATISFACTION

A final set of questions comprised the level of satisfaction of firms with the transport and logistics services.

Table 12. Satisfaction with the tranportation door-to-door time?

Sector	*Not at all*	*Not much*	*Enough*	*Very*	*Tot.*
Food, Beverages, Wine	5%	25%	30%	40%	100%
Rubber and plastics and other manufacturing products	7%	0%	64%	29%	100%
Total	6%	10%	50%	33%	100%

Table 13. Satisfaction with the reliability of logistics services?

Sector	*Not at all*	*Not much*	*Rnough*	*Very*	Tot.
Food, Beverages, Wine	5%	11%	42%	42%	100%
Rubber and plastics and other manufacturing products	7%	0%	54%	39%	100%
Total	6%	4%	49%	40%	100%

The results are encouraging (Table 12 and 13). 83% of the firms deem themselves enough or very satisfied with the transport time and 89% of them are satisfied with overall logistics reliability. The share of firms not or little satisfied is equal to 16% for transport time and to 10% for reliability. The former percentage signals the existence of congestion problems in the network, both nationally and internationally, which are hard to solve, given the expected rapid growth rate in road transport and also because more and more limitations are imposed upon road transport (such as working hour, speed, day-of-the-week and route limitations) in order to decrease its negative environmental and safety impacts. Reliability appears to be less of a concern to firms and, contrasted with the huge reliability issues of intermodal road-rail transport, it is certainly one of the main competitive edges that road transport enjoys.

7. CONCLUSION

The paper presented a survey conducted on a sample of firms located in the Friuli Venezia Giulia region, Italy. It enquired on their current and future demand for transport and logistics services. It resulted that firms require an intense and growing amount of services to procure inputs and deliver products to a large number of destination, both nationally and internationally. A large percentage of the shipments is full load, point-to-point shipments which require traditional transport operators, equipped with few trucks and able to perform a low cost, highly customized service with low level of information technology skills. However, there is a, most likely, growing share of shipments which demand *groupage\courier* services implying logistics operators able to make higher levels of investments, manage a national or international network, exploit scale and scope economies and compete in quality and not only in costs.

Indicators such as the type of services (traditional transport services vs. logistics services) requested, the level of outsourcing, the control of the transport and logistics supply chain and the number of operators used confirm the picture sketched in the previous sentence: the demand for transport and logistics services is still of traditional type, focused more on costs than on innovative supply chain practices.

Most likely this depends on the current characteristics of the industrial system comprising a large array of SMEs focused on highly specialized niche markets. And, for the time being, they appear quite satisfied with the level of service they receive from the transport operators both in terms of transport time and reliability, although it is doubtful whether the current conditions could be sustained in the long run.

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POTRAŽNJA ZA TRANSPORTNO-LOGISTIČKIM USLUGAMA U REGIJI FRIULI VENEZIA GIULIA

SAŽETAK

U radu je prikazano istraživanje koje je, u travnju 2007., izvršeno na uzorku proizvodnih tvrtki iz regije Friuli Venezia Giulia u Italiji. Cilj istraživanja je bio da se utvrde vrste i mogućnosti udovoljavanja potražnjom transportno-logističkih usluga koje dolaze od samih tvrtki. Rezultati tog istraživanja pokazali su da tvrtke zahtijevaju intenzivniji i veći broj usluga kako bi ostvarile sve veći ulaz proizvoda kao i njihovu isporuka na veliki broj talijanskih i inozemnih odredišta. Veliki postotak proizvoda otpremljen je brodom kao puni teret, od mjesta ukrcaja do mjesta iskrcaja, što zahtijeva usluge tradicionalnih prijevoznika. Međutim, sve je veći broj proizvoda za čiju se otpremu brodom traže usluge zbirnog prijevoza, što uključuje logističke usluge prijevoznika na jednoj većoj razini, koji je u stanju sve više ulagati u razvoj te usluge, upravljati nacionalnom i međunarodnom mrežom transportnih usluga, iskoristiti stupanj i veličinu uštede, te konkurirati kvalitetom, a ne samo cijenom.

Ključne riječi: *prijevoz robe, logističke usluge, potražnja za prijevoznim uslugama, organizacija rada s ljudima izvan tvrtke*

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