Transportation Needs of Entrepreneurs in Wroclaw Agglomeration – Study Results

Marcin Pawęska
CL Consulting and Logistics, Wrocław, Poland

Agnieszka Tubis & Zenon Zamiar
International University of Logistics and Transport in Wroclaw, Poland

The article aims to present the results of research conducted by the International University of Logistics and Transport in Wroclaw on behalf of the Municipality of Wroclaw, concerning the demand for transportation among entrepreneurs in Wroclaw Agglomeration in the medium term (3 - 5 years). The essence of the study was to determine the volume of traffic generated by enterprises excluding intra-urban traffic and to provide additional information describing this movement in terms of dynamics and modes of transport used. The obtained results are compared to research conducted by J. Burnewicz (2007) regarding the projected demand for transport services in Poland until 2020.

Key words: the need for transport, cargo transport

1. INTRODUCTION

The need for transport means a desire or necessity to transfer from one place to another by means of transport (Koźlak, 2007). It is therefore a need to organize and deliberately move the freight and passengers using means of transport and equipment (Grzywacz, Burnewicz, 1989). W. Rydzkowski and K. Wojewódzka-Król have stressed that this need, reported by the economy and society, has a potential character and is isolated from other needs. Transport needs are not always, in fact, reflected in the form of demand revealed by the market and not every need for transport is reflected in the form of physical movement. This follows from the resulting discrepancy between the potential demand, and the real demand (effective), which is actually appearing on the market, expressed by the size of the services that transport users want to buy (Koźlak, 2007).

Any needs for movement of passengers or goods in space are due to lack of temporal and spatial compatibility between the components necessary for economic and social activities of man, i.e. not all human needs can be met in the certain location. For this reason, there is a need to change the residence, i.e. the need to move. Transportation needs are, therefore, secondary in relation to economic and social needs (2007). This relationship is also highlighted by W. Rydzkowski and K. Wojewódzka-Król (2004), who clearly states that "the social and economic sphere influences the formation of transport needs, their level, nature and consequently the need to adapt the quantity and quality of transport services to the potential demand."

Therefore, A. Koźlak (2007) divides the sources of transport needs into two main groups:

- the source of the transport needs arising from economic activities of man;
- the source of the transport needs connected with organization of social life, including those arising from the individual needs of the population or the functioning of the state.

Due to the nature of research, the attention paid in this article is primarily to the needs that arise from human economic activity and possibly with the functioning of the state. The aim of this paper is to present the results of research carried out among companies in Wroclaw Agglomeration of existing and projected transportation needs over the next 3 - 5 years.

2. DEMAND FOR TRANSPORT OF GOODS IN POLAND

Transportation needs, which derive from economic activity, have their source in the following factors (Małek, 1989; Grzywacz, Burnewicz, 1989; Rucińska, Ruciński, Wyszomirski, 2004):

- the spatial distribution of wealth and natural resources;
- the spatial location of material production (the concentration of industrial production and its dispersal, the distribution of agricultural land);
- co-operation and specialization of production;
- the existence of the international division of labour and international trade;
- the distribution of manufactured consumer goods, industrial and agricultural products (distribution outlets for such goods, the organization of the distribution process, such as the number of traders).

In addition to the factors mostly generating transportation needs in Poland and other EU countries there are also other sources of such needs, specific to the current stage and direction of economic development of the Community, as the globalization of economic processes, economic and political integration and the mobility of EU societies (Mindur, 2006: 56-60).

Cargo primarily classified as domestic and the transport of goods resulting from Polish foreign trade are in the authors' area of interest. In this study, however, these two groups of transport markets are not separated, but researched together as a global demand for transport in the selected area.

Demand for the transport of domestic cargo is dependent on the intensity of production and exchange, the structure of manufactured products, raw material and energy absorptivity of production, the system of cooperative relations between the major economic centres of the country, and many supply factors in the sphere of transport. According to the study conducted by J. Burnewicz (2007) the domestic demand for the four cargo transport modes (rail, road, water and pipeline) for 2020 will increase:

- in the best case scenario, the annual average by about 1.8%
- while in the worst case scenario, the annual average by about 1.4%.

A relatively high growth rate of rail and inland waterway transport is expected, as well as a bit less dynamic growth of road transport (2007).

According to J. Burnewicz (2007) the projected dynamic growth rate of cargo transport with respect to the carriage of Polish foreign trade is a bit different:

He predicts the highest growth rate of transportation for road transport - on average 6.3 - 7.3% in tonnes;

- dynamics of the rail transport would be around 1.8 - 2.2% in tonnes;
- dynamics of inland waterway transport would be around 1.5 - 1.6% in tonnes
- and other means of transport (including maritime) 2.4 - 2.6% in tonnes.

The high level of growth for road transport in this case may result from the fact that this mode of transport in 2020 will be the most important branch of serving this trade (2007).

3. RESEARCH METHODOLOGY

Study of transportation needs is essential for transport companies, but also for those responsible for shaping the sustainable transport policy and the development of transport infrastructure. Specificity of transport services requires the use of specialized research methods. These studies are conducted in three aspects (Koźlak, 2007) :

- the size of transport needs;
- spatial distribution and temporary demand for transport services;
- user preferences regarding the choice of modes and the desired quality features of transport services.

The purpose of a study commissioned to the International University of Logistics and Transport in Wroclaw by the Economic Development Office of the Municipal Office of Wrocław was to determine the demand for transport in the Wroclaw Agglomeration among entrepreneurs in the medium term, i.e. within a period of 3-5 years. The essence of the study was to determine the volume of traffic generated by businesses with the exception of intra-urban traffic and to provide additional information describing the movement in terms of:

- dynamics
- directions
- types of goods
- modes of transport,

But it should be noted that the authors attention in this article is focused only on the dynamics of the movement and the type of transport used.

The main tool used in the study was a survey. For the purpose of the study, the participants were classified in accordance with the Economic Freedom Act (2004), which allowed distinguishing: small, medium and large entrepreneurships. According to the classification adopted in the study, there were:

- 583 representatives of small businesses,
- 312 representatives of medium-sized companies
- 102 representatives of large companies.

At the same time the companies have been divided by the type of the activity in accordance with the Polish Classification of Economic Activities, excluding companies whose main activities are services. The companies whose main activity is production took part in the study, leaving aside strictly services (e.g. banks) and transport companies.

Telephone surveys have been conducted in the premises of the International School of Logistics and Transport. At the same time a survey was sent to the entrepreneurs of the Wroclaw Agglomeration associated with the Lower Silesian Chamber of Commerce. Data needed to classify the companies and their contact numbers have been collected from publicly available sources and were based on the data used to create a list of the largest generators of traffic in the Wroclaw Agglomeration.

4. RESULTS OF THIS STUDY

The first task was to determine the current volume of imports and exports to and from the Wroclaw Agglomeration (WA) and determine how these flows will change in the adopted perspective of the next 3 - 5 years. Tables 1 and 2 show the respondents' answers concerning the current situation of import & export by the distinguished group of enterprises.

Table 1. The aggregate results for the volume of imports to the Wroclaw Agglomeration

Import	Small	Medium	Large
Percentage of companies importing goods from outside the WA	89%	96%	95%
Imports from outside the WA as a percentage of total imports	65%	71%	74%
The average tonnage of imported products [in tonnes]	106	12077	289619

Table 2. The aggregate results for the volume of exports from the Wroclaw Agglomeration

Export	Small	Medium	Large
Percentage of companies exporting goods outside the WA	72%	81%	85%
Exports outside the WA as a percent of total exports	47%	58%	67%
The average tonnage of exported products [in tonnes]	103	11511	291178

As it can be seen in the presented results, the main generators of traffic are mainly medium and large enterprises. These companies have significant processing capacity, which causes that the supply in the Wroclaw Agglomeration is not sufficient for their needs; hence there is a need for exports outside the region. Also large and medium-sized enterprises often operate on the national or international market, and therefore most of their products are directed beyond the boundaries of the Wrocław Agglomeration.

Predictions of enterprises located in the Wroclaw Agglomeration deviate from the forecasts created by. J. Burnewicz (2007).

Table 3. Projected trends of import in subsequent years

Import	**Small**	**Medium**	**Large**
No change	62%	59%	61%
Increase	33%	37%	30%
Decrease	5%	5%	8%

Table 4. The size of expected changes in imports

Import	**Small**	**Medium**	**Large**
Increase	34%	15%	20%
Decrease	34%	24%	17%

Table 5. Projected trends of export in subsequent years

Export	**Small**	**Medium**	**Large**
No change	65%	57%	58%
Increase	32%	40%	38%
Decrease	3%	3%	4%

Table 6. The size of expected changes in exports

Export	**Small**	**Medium**	**Large**
Increase	31%	14%	23%
Decrease	30%	25%	15%

As it can be seen from the above tables, the majority of respondents assumed no change in the volume of demand of freight transport in the medium term, the invariability of import is declared by 514 respondents, invariability of export - 434 respondents. This represents over 60% of all respondents who answered the question.

Decrease in demand for transport has been declared by small number of respondents, less than 5%. At the same time, import data show that 8% of large companies are expected to reduce the tonnage of freight to the Wroclaw Agglomeration (compared to 5% for small and medium enterprises), but for large companies expected decrease in the average size is equal to half of that declared by the small and medium businesses. Similarly, the results are formed with regards to exports. Among the large companies there is the largest percentage of companies that expect a fall in exports over the next 3-5 years, however, this decrease would equal to an average of 15% and will be about half of that, compared to the case of small businesses.

Growth in demand for transport (such as import and export) has been declared by more than 30% of respondents. At the same time among those respondents who declare the highest level of growth, which are small companies – an average of 34% for imports and 31% for exports. It is a logical consequence of the future development of the Wroclaw Agglomeration and indicates that a substantial percentage of small businesses are planning to expand in coming years. This research has been also extended by the conditional analysis, necessary to determine in which industries the demand for transport will increase the most. The results are presented in Tables 7 and 8.

Table 7. The growth of imports by sector

Industry	**Percentage of respondents**	**Expected growth**
Clothing	42%	+ 17%
Engineering	39%	+ 20%
Trade	38%	+ 30%
Automotive	31%	+ 35%
Other	30%	+ 25%
Construction	28%	+ 31%
Production of Fuels	27%	+ 21%
Mining	24%	+ 19%
Chemical	23%	+ 42%
Food	23%	+ 21%
Agriculture	10%	+ 16%

Table 8. The increase of exports by industry

Industry	Percentage of respondents	Expected growth
Automotive	36%	+ 33%
Chemical	30%	+ 12%
Trade	29%	+ 30%
Construction	27%	+ 22%
Agriculture	24%	+ 13%
Mining	22%	+ 26%
Other	20%	+ 25%
Clothing	18%	+ 41%
Engineering	18%	+ 36%
Food	15%	+ 18%
Production of Fuels	5%	+ 6%

The presented results show that the highest increase in imports provides companies from the chemical sector (42%) and automotive sector (35%), on the other hand the lowest increase in agriculture sector (16%) and clothing sector (17%). The highest growth rate of exports is projected for the clothing industry (41%) and engineering (36%) and the lowest expected increase relates to the production of fuels sector (6%) and chemical sector (12%). Here some correlation can be seen - those industries that are planning to increase growth in imports, at the same time specify a smaller increase in exports (the chemical sector) and vice versa (clothing industry).

The second main issue tested, was the choice of means of transport used to transport cargo to and from Wroclaw Agglomeration. Certainly, the main factor influencing the choice is the availability of transport infrastructure, but not only. Equally important is the quality of services provided by operators of various modes of transport, as well as the demands of the market (mainly the expected short delivery time and high flexibility).

As demonstrated by these results, currently, the vast majority of companies (almost 100%), importing or exporting products to and from the Wroclaw Agglomeration, decides to use road transport. At the same time, it should be noted that almost none of the respondents declared the expected changes in the means of transport in the medium term. This result is different from J. Burnewicz (2007) research, which predicts the increase in the share of rail and inland navigation transport, in freight services in Poland.

Table 9. Means of transport used for the importation of goods to the Wroclaw Agglomeration

Import	Small	Medium	Large
Road	97%	97%	98%
Rail	1%	1%	1%
Air	1%	1%	0%
Inland navigation	1%	0%	1%
Modal transport	0%	1%	0%

Table 10. Means of transport used to export goods from the Wroclaw Agglomeration

Export	Small	Medium	Large
Road	98%	97%	97%
Rail	1%	1%	3%
Air	1%	1%	0%
Inland navigation	0%	1%	0%
Modal transport	0%	<1%	0%

5. CONCLUSIONS

The survey was conducted by the International University of Logistics and Transport in Wroclaw, for the Economic Development Office in the Wrocław Municipal Office in the project Via Regia Plus, action 3.4.8. co-funded by European Regional Development Fund under the European Territorial Cooperation - Central Europe. The study covered the small, medium and large enterprises (including more than 900 respondents), and the analysis was performed on a sample of 900 companies divided by the size and industrial sectors. The purpose of this study was to determine the transportation needs of companies located in the Wroclaw Agglomeration now and over the next 5 years. The main conclusions of the study indicate that:

1. Imports from outside the Wroclaw Agglomeration constitute a significant percentage of the total imports of products for entrepreneurs in the Wroclaw Agglomeration, where the biggest share belongs to the large companies because of their increased demand (74%), and the smallest share – small businesses (65%).
2. Exports outside the Wroclaw Agglomeration constitute a significant percentage of the total exports of products for entrepreneurs in the Wroclaw Agglomeration. But it should be noted that small businesses are primarily focused on serving the local market - the average share of exports consist of only 47%, while medium and large enterprises direct more than half of their products outside the Wroclaw Agglomeration.
3. In the medium term (3 - 5 years), approximately 35% of respondents expect an increase in demand for transportation, 34% expected growth in imports to the Agglomeration of Wrocław, 35% growth in exports from the Wroclaw Agglomeration. This growth, both for imports and exports should not be less than 17%, which significantly differs from the expected J. Burnewicz who assumed for the national transport an optimistic increase of about 1.8% a year, so about 10% within 5 years. It can be concluded that the growth predicted by the surveyed companies refers to a large extent, the Polish foreign trade operations.
4. Currently, the road transport is the main mean of transport used by entrepreneurs. In the medium term, there are no expected changes.

Results of this study can be used by companies from the TSL sector in the process of forecasting demand for transport services in the coming years, reported by operators located in the Wroclaw Agglomeration. They should also give a signal to local authorities regarding the future demand for transport infrastructure and the possible difficulties that may arise in the road network within the Agglomeration.

BIBLIOGRAPHY:

[1] Burnewicz J., *Prognoza zapotrzebowania na ugi transportowe w Polsce do 2020 roku*, in: B. Liberadzki i L. Mundur (eds), *Uwarunkowania rozwoju systemu transportowego Polski*, Wydawnictwo Instytutu Technologii Eksploatacji, Warszawa – Radom, 2007

[2] Grzywacz W., Burnewicz J., *Ekonomika transportu*, WKŁ, Warszawa, 1989

[3] Koźlak A., *Ekonomika Transportu. Teoria i praktyka gospodarcza*, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk, 2007

[4] Małek P., *Ekonomika transportu*, PWE, Warszawa, 1997

[5] Mindur M., *odarki we j i w Polsce*, Przegląd Komunikacyjny nr 11/2006, pp. 56 – 60, 2006

[6] Rucińska D., Ruciński A., Wyszomirski O., *Zarz transportowych*, Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk, 2004

[7] Rydzkowski W., Wojewódzka – Król K., *Transport*, PWN, Warszawa, 2004

[8] Economic Freedom Act of the 2nd of July 2004, including Annex from the 1st of January 2005.