

CONTAINER TRANSPORT IN POLAND IN LOGISTIC SUPPLY CHAIN

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Abstract This paper discusses key issues concerning the dynamics of container transport development with the use of intermodal solutions against phenomena taking place in transportation systems. It also shows limitations and typical situations which determine the procedure of transport subjects within the confines of realized container transport in logistic supply chains service.

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1. INTRODUCTION

It is common to use big, container shipping units in more and more complex supply chains. They make the cost-consuming and time-consuming actions in trans-shipping and storing processes more efficient. The global character of economic relations enforces the dynamic development of this type of handling cargo in a mass dimension. It obviously fosters degression of transport and storing costs in the function of travelled distance and carried in this way load weight, which turns out to be useful for operators as well as customers.

Intermodal transport in Poland with the use of container shipping units, inside the country as well as in international relations, has been developing quite dynamically in the last decade (Guszczak, 2014). Taking into account the level of rail involvement or the trans-shipping results of marine ports, this development has, nevertheless, been slower than in other countries of the developed part of western Europe. Statistics show that combined transport with the main role of rail transport is being used in Poland for only a dozen or so containers, while in Germany or Holland this number is even 30-40 %. The reasons for this state of things were, and still are, numerous.

2. SITUATION ON THE CONTAINER SHIPPING MARKET

The development of container transport in the world has significantly preceded its development in Poland. In 80s of last century container bases competed in the amounts of trans-shipped TEU counted in hundred thousands (some ports achieved million results) while in Poland there was only one container terminal which just started its activity. Currently functioning model of marine container transport has a direct influence on the dynamic development and functional character of these terminals. That is why Polish Baltic terminals will not probably develop in the direction of achieving the status of megaports. Nevertheless, the Baltic Container Terminal and Gdynia Container Terminal are currently on its way to achieve a good position among secondary ports and Deepwater Container Terminal in Gdansk can slowly aspire to the role of one of the biggest handling bases in the Baltic Sea. DCT Gdansk Inc. can deal with 1 million TEU a year and, what is more, it has waterfront which is 15.5 m deep (not available in any other Polish seaport). It is not only the youngest but also the biggest container terminal in Poland. Due to its advantageous location it has a big development potential which can increase four times in the forthcoming years. As container transport has a global character, the level of transport or trans-shipping turnovers in seaports, also in Poland, is dependent on trends and dynamics in international economic relations. It is logical to conclude that economic growth in a given region results in an increase in the amount of goods shipped in containers.

It is worth to notice the achieved results. In 2011, 5.9 million of TEU was handled in Baltic ports. This result corresponds with the period of 2004-2008 when the increase in container trans-shipment was about 14.4% a year. For instance, DCT terminal in Gdansk trans-shipped 650 thousand of TEU in 2011, it is 200 thousand of TEU more than in 2010. The Baltic Container Terminal in Gdynia trans-shipped 41108 TEU in March 2012 and it is a record monthly result measured from October 2008. The biggest investment programme started in 2012 in BCT Gdynia (Polish Transport Newspaper, 2012). The investment involves equipment, infrastructure and information technology systems. The overall value of the project was 153 million of zlotys and the grant from the „Infrastructure and Environment” Operational Program was over 53 million zlotys. The realization of the project is another step on the way to achieve the trans-shipment power at the level of 1.2 million of TEU a year in the future. The Gdansk deepwater DCT terminal trans-shipped over 394 thousand of TEU in the first half of 2012. The record of trans-shipments was broken in May when the terminal trans-shipped over 79 thousand of TEU. According to the assumptions, the ports in Szczecin and Swinoujscie trans-shipped over 10 million tons in the first half of the year. The turnovers of unitized ferry cargo increased and container trans-shipments came up to over 26 thousand of TEU, which was a level close to the one in 2011.

To compare, the biggest Baltic container port is currently St. Petersburg which trans-shipped 1.9 million of TEU in 2011. It is also the only port in the Baltic Sea with trans-shipments exceeding a million of TEU. It is also worth noticing that the speed of the increase in container trans-shipments in Baltic ports were twice as big as the average global speed and it reached 17.5%. However, it decreased in comparison to 2011 when it reached 27%. In 2011 the amount of trans-shipped goods exceeded the record level from before the crisis and it reached 8.76 million of TEU (Baltic Container Report, 2012). Russia has been the leader of container trans-shipments in the area of the Baltic Sea for many years. Nevertheless, Poland has been dealing in this market better and better. Last year, the biggest absolute increase in shipment was recorded, apart from St. Petersburg, in two Polish ports: Gdansk and Gdynia. The fact that Polish ports are becoming more and more popular is owed to, among others, competitive level of costs. For example, trans-shipping a container from Shanghai to Warsaw via Gdansk is 28% cheaper than via Rotterdam. Polish companies working in this area of business have noticed increased interest in container transport. It is reflected in statistics. As much as 18% of cargo transported across the sea is containers. Nevertheless, working with containers requires developing procedures which allow for fast transport. It is also worthwhile to consider developing networks of own sender-recipient agents outside Polish borders.

It is necessary to implement long-term and costly investments in order to allow for further development of intermodal transport using containers. These investments should involve marine, rail and road transport. Apart from infrastructure development, which allows for smooth goods flow, the transporters also point to the need of unifying the customs and tax regulations with these used in the European Union.

The financial investments necessary to develop infrastructure, divided into at least a dozen or so forthcoming years, are huge. Nevertheless, there are many factors which encourage to make investment effort. These are:

- competitive price and the time of transport, especially in relation to long distances,
- simplified, in comparison to road transport, procedures of crossing customs borders,
- the possibility to transport heavy cargo,
- lower costs and simpler procedures of temporary goods storage.

Talking about financial investments, one needs to remember about the forecasted increase in demand for container transport, the level of which is determined by lots of different factors. More and more companies are searching for means of reducing the level of costs and they are outsourcing their production (or its part) to Asian and Middle East countries. What is more, the fast pace of economic growth in developing countries will probably enhance the demand for goods produced in Europe, also in Poland, which will also increase export.

The main advantages of intermodal transport are the quality of offered services and its potential high efficiency resulting from the possibility to transport a large number of containers at one time, even several dozen in rail transport. What is more, using rail transport fosters safety (lower risk of an accident, remoteness from communication tracks, possibility to transport ADR cargo) and there are no limitations connected with holidays, weather conditions (basically) or norms concerning working time of drivers in road transport. It is an especially important aspect in transport streams realized on long distances. Also, from the Polish socio-economic point of view, the most important advantage is that trans-shipping containers using rail transport results in unburdening the roads. A single train with the average weight of 1.4 tones replaces about a hundred of trucks. Therefore, the outside costs of transport will be lower.

The increase in the dynamics of container transport in supply chain service in Poland is also fostered by the development of road and rail infrastructure. The most important undertakings which facilitate the logistic supply base are building or modernization of the following: A1 highway (Gdansk and Gdynia), S7 freeway (Gdansk and Gdynia), S3 freeway (Szczecin and Swinoujście), CE-65 and E-65 railway lines (Gdansk and Gdynia) and CE-59 and E-59 railway lines (Szczecin and Swinoujście). The aforementioned investments will facilitate a more efficient use of country's transport-storing system, and this is connected with the necessity to develop domestic trans-shipping points or storing/logistic centers. Facilitating road and rail connections in the north-south direction will probably allow for more efficient use of ports' potential to service the transit loads (Szmida, 2012).

However, currently noticed and forecasted growth in the demand for container trans-shipping does not necessarily indicate an evident and long-term prosperity for the companies dealing with container transport. This type of transport requires using professional (port, trans-shipping terminals) and non-professional (roads, railway lines) infrastructures (Kadłubek, 2011). According to optimistic forecasts,

the number of trans-shipped containers on the Polish coast will exceed 2 million in 2015 and 4 million in 2020. Such significant increase depends on many factors, especially on the increase in demand and on trans-shipping capabilities. It will be quite difficult in the period of economic shake-out of many countries. Big ports in western Europe, mainly Dutch and German, also have free production capacity and they will not idly wait for Polish competitive ports to develop. An important and necessary condition for increasing the production capacity is also development of the deepwater DCT terminal in Gdansk and probably building new ones which will make it possible to deal with big container ships and not only with smaller units as it has happened up to now. Other important conditions, without which the increase in the number of serviced containers will not be possible, are development of road infrastructure and, basically mainly, development of rail infrastructure. The development of rail infrastructure should involve organization of transport and also rail connections with the neighboring countries.

Currently, according to statistic data, about 15% of containers in DCT Gdansk terminal are delivered or reclaimed by rail, while it is about 35% of containers in BCT Gdynia. It is not a big share compared to main European ports. The level of intermodal trans-shipments comes up to 38% in Hamburg, 44% in Rotterdam and 49% in Antwerp and Bremerhaven.

According to experts' opinion, Polish ports compete with foreign ports more and more efficiently. Undertaken and planned investments argue that the number of trans-shipped containers can increase even several times in the forthcoming decade. Transit location of Poland gives the chance to develop a regular network of intermodal connections from the West to the East and from the North to the South. Intermodal solutions using containers reduce the time and level of paid costs, which make the market favor not only standardization but also containerization of cargo. It can be observed that currently not only containers for powdery goods are being implemented but also containers for liquid goods. Rail transporters shipped 30% of containers more in 2011 than in 2010. According to the Rail Transport Office, intermodal transport was offered by seven transporters in the first three quarters of 2011. They transported 340.9 thousand of cargo units. It is 82 thousand more than in a corresponding period of time in 2010 and 71% more than in 2009. 98% of transport units are containers. Total weight of transported goods at this time increased by 28% and it came up to 4.1 million tones. This increase is quite spectacular, especially in such a short time. Nevertheless, there is common belief in a transport environment that the increase should have been much more dynamic and it should have started many years earlier.

The container units (Baltquest Report, 2013) which arrive to seaports are distributed, or delivered to ports, throughout Polish territory with the use of two branches of transport. The biggest share in the so-called supply base traffic have road transporters who engage in a road transport of 85% of containers.

There are over 16.5 thousand means of transport on the market which make it possible to transport containers on the level of 21 thousand of TEU. The analysis

of the changes taking place from 2004 to 2011 has shown a dynamic development of transport fleet, which has increased from 124 to 211%. This increase has surely been adequate to the changes in serviced cargo weight and shipment work performed with the use of containers. In the analyzed period of time, 2004-2011, the weight of cargo transported in containers increased by 254%, while shipment work increased by 181% (Central Statistical Office, 2012).

Table 1 The share of transporters in intermodal transport in 2011-2012 according to the weight of cargo and shipment work (Grzelakowski, 2014, p. 15)

Operator	2012*	2011*	2012^	2011^
CTL Logistics Ltd.	3.68%	1.70%	4.00%	2.95%
DB Schenker Ltd.	3.69%	0.21%	7.22%	0.49%
PKP CARGO Inc.	71.54%	73.28%	64.69%	70.64%
PKP LHS Ltd.	1.54%	2.20%	1.61%	2.46%
Lotos Rail Ltd.	17.53%	21.42%	20.44%	21.31%
Polish Rail Ltd.	1.15%	0.00%	0.99%	0.00%
Majkoltrans Ltd.	0.35%	0.00%	0.45%	0.00%
STK Inc	0.52%	1.19%	0.60%	2.16%

Key:

^ - the share of transporters in cargo weight volume in intermodal transport

* - the share of transporters in intermodal transport according to shipment work

3. OPERATIONAL DIMENSION OF CONTAINER TRANSHIPMENTS

Intermodal trans-shipments, despite repeated for many years statements about their potential profitability and the belief that they are generally the future of rail transport, are still only a margin of transport market in Poland. The European average of intermodal (rail) transport share counted by the so-called shipment work comes up to 13-15% of transport in total, while in Poland this ratio is on the level of about 3%. To compare, this share is about 5% in Slovakia, about 9% in the Czech Republic, 10% in Austria and 20% in Slovenia.

Entering the trans-shipment structure shows some regularity, independent rail transporters have demonstrated the ability to take over these kinds of trans-shipments which realization has generated the highest profit margin. These kinds of trans-shipments still do not include intermodal transport with containers playing the main role. Some part of rail operators manage also land container terminals at the same time. These operators include: Spedcont, Polzug, Cargosped, PCC Intermodal Inc, Schavemaker Cargo, Prokont, DB Schenker Polish Rail, Euroterminal Slawkow. The main problems of Polish rail container terminals are still insufficient

technical parameters and significant lack of equipment. Most locations also do not have sufficiently developed railway tracks. The minimum is 600 meters of length, which makes it possible to handle the whole train. The exceptions are: Polzug terminal in Dabrowa Gornicza (prepared to handle the Germany-Poland relation transport) and Spedcontu terminal in Olechowo Lodz. The PCC Intermodal Inc. terminal in Kutno will also have these parameters. It will replace the old terminal in Krzewie - forecasted for 2013-2014).

The tasks, costs and benefits accompanying the process of implementing intermodal formula have to be distributed in a way that will enable everyone interested to profit from using this formula. By people interested we mean intermodal operators, terminal operators and, of course, customers of TSL sector. The permanent dependence between the interested parties makes it essential to coordinate transport timetable and, in accordance to this timetable, plan using the available storing potential, prepare emergency solutions for the situations when one of the partners is late, and, finally, determine the fees which would be acceptable for each party. The trans-shipment efficiency on an acceptable level depends mainly on the compatibility of information technology solutions of the cooperators. Each time a container is subject to handling activities on individual stages of its movement from the sender to the recipient, its number has to be unambiguously identified with a given place or a vehicle in which it is transported in a given moment. Information technology solutions also have to make it possible to determine the status of accompanying, individual formalities which are necessary to perform. Therefore, it is justified to start recognition processes and then implement systems with the so-called 'open architecture' which gives space to widen the functionality of these systems according to the development of offered services and increase in the number of interested and cooperating parties of container goods turnover.

A big problem which is currently taking place in a container market is limited availability of empty containers in the country. It is mainly caused by insufficient development of depot networks, where potential shippers could acquire the so-called 'boxes'. Most of such facilities are located in ports or their neighborhood. Inside the country such possibility is offered only by land rail container terminals. What is more, depot services should also include professional preparation of a container for exploitation, such as repairs, cleaning, sweeping, disinfection and robustness controls. As it is not the basic area of land terminals activity, the quality of their offer in the range of depot service is limited. In consequence, the shipper has to pay additional costs of acquiring a container, which obviously results in lowering the attractiveness of this method of transporting cargo in supply chains.

4. CONCLUSION

To conclude, it is worthwhile to notice the difficulties connected with combined transport. Two key barriers to the development of intermodal solutions with the use of containers are (Lewandowski, 2011): outdated infrastructure, which was shaped in the interwar period and developed in the 60's and 70's of the 20th century, and high fees for its access. Another important barrier is the fact that in 2010 the preferential bids for intermodal transport were made equal with rail mass transport bids. It is common knowledge that low quality and high price is an efficient combination which can quash any activity directed at achieving a financial profit. Low quality makes the turnover decrease and smaller turnover means less money for infrastructure, etc. The key problem of development and participation of rail container trans-shipments in logistic supply chains service in Poland is the high level of fees for the access to the transport infrastructure. The bids for the access in Poland are almost the highest in Europe. We are only preceded by Slovakia. The Infrastructure Ministry has raised the level of fees for intermodal trains by 18% since the beginning of 2010. Instead of providing a comment, I would like to give you a simple example: the average speed of freight train in Poland is about 23 km per hour, while in Germany it is 45 km per hour. And yet, the fee for travelling one kilometer in Poland is 5.8 Euro, while in Germany it is only 2.55 Euro.

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BIOGRAPHICAL NOTES

Paweł Romanow Assistant Professor at Chair of Logistics Fundamentals at the Poznan School of Logistics; lead items directional transport logistics and freight forwarding and transport infrastructure. The main contractor a number of special

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