

Identification, categorization, and ranking of barriers, bottlenecks, and business needs for intermodal logistics along the NSB corridor

O 2.1

Version: Final

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Content

1	Introduction	3
2	Structure of interviewed companies	4
2.1	Logistic service providers	4
2.2	Shippers	6
3	Review of barriers to the development of intermodal transport	6
3.1	Identification and categorization of barriers	7
3.2	Ranking of barriers	8
4	Business needs for support intermodal transport – ICT tools usage	11
4.1	Use of ICT tools to support decision making in transport	11
4.2	Frequency of offering truck & trace services	14
4.3	Quality of existing system for exchanging electronic messages and documents between companies	15
5	Summary	18

1 Introduction

This paper is an output for the activity 2.1 in the project North Sea-Baltic – Connector of Regions (NSB CoRe) that is a flagship project founded by Interreg Baltic Sea Region programme. In the project 16 partners from the six countries Finland, Estonia, Latvia, Lithuania, Poland and Germany are working together in order to enhance regional development in the north-eastern Baltic Sea Region by improving the internal and external accessibility of the region along the North Sea Baltic TEN-T corridor.



Drawing 1 – North Sea Baltic Corridor map

Source: NSB CoRe study

The main aim of the project is the connection of the regions along the NSB corridor, especially

- improving the accessibility of cities, regions and industries,
- connecting the North Sea – Baltic Corridor (TEN-T) to its catchment area, its connecting nodes and access routes,
- communicating and facilitating between local, national and EU-level decision-makers,
- creating mechanisms to support private sector's participation in multi-level governance of transportation and logistics and
- implementing the TEN-T Regulation from a regional development perspective and brings the needs of peripheral regions to attention.

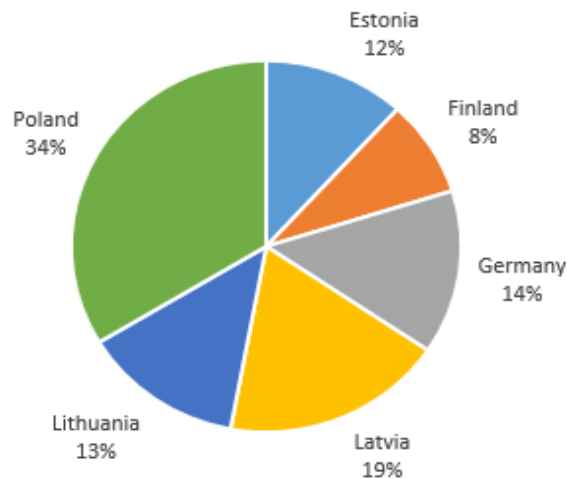
The aim of the output is to fulfil the business needs to identify and analyse the barriers, bottlenecks hindering cooperation among participants within intermodal supply chain, as well as, corridors connecting them.

2 Structure of interviewed companies

First step to identification, classification and ranking all occurring types of barriers, bottlenecks and business needs in intermodal logistics along the NSB corridor is to do research of current situation. For this purpose there was carried out the questionnaire for every participant of intermodal supply chain. Duration of this was 9 months length – since January to September 2017. 225 enterprises (including 119 Logistics Service Providers – LSP and 106 Shippers) from six countries have taken that questionnaire.

2.1 Logistic service providers

Research was conducted on a deliberately chosen sample representing the Logistics Services Providers sector in six countries. The largest number of surveys was conducted in Poland 34% and in Latvia 19%, the percentage share is evenly distributed to other countries and is respectively 14% Germany, 14% Lithuania, 12% Estonia, 8% Finland.

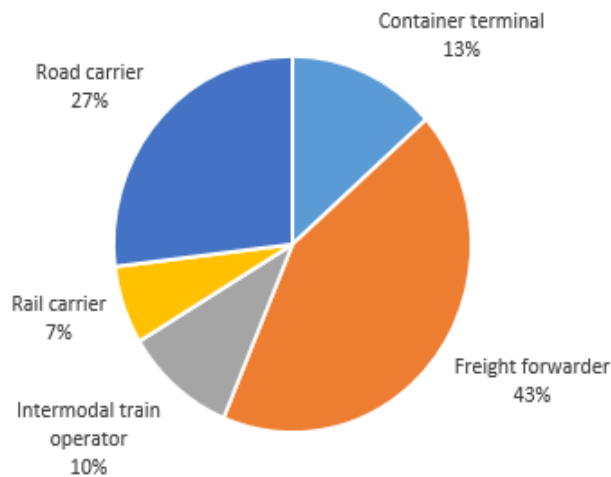


Drawing 2 – Percentage of countries participating in the survey

Source: NSB CoRe study

The research sample consisted of 119 service providers of varied nature of their activity. Freight forwarders accounted for almost 43% of the surveyed population, road carriers were represented by 27% of survey participants, and container terminal operators by 13.4% of respondents. 10% of the

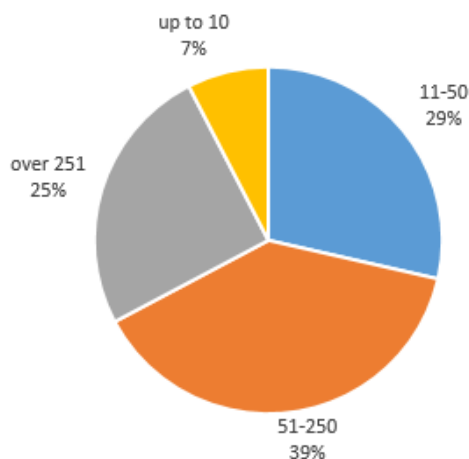
respondents were intermodal operators. The least numerous were railway carriers, whose contribution in the sample amounted to 6.7%.



Drawing 3 – Company’s position in a supply chain

Source: NSB CoRe study

As far as the employment is concerned, the largest segment were medium-sized enterprises employing from 51 to 250 employees. The share of large enterprises was 25.2%, and micro and small enterprises – 36.1%. These proportions are shaped similarly taking into account the amount of annual turnover. The representatives of enterprises participating in the study were high and middle level managers, most often employees employed in the rank of managers responsible for operational activities. The characteristics of the research sample are presented below.



Drawing 4 – Size of surveyed companies by number of employees

Source: NSB CoRe study

2.2 Shippers

Analysing the structure of respondents, focusing on group of Shippers in economic category, it is easy to notice that majority is from furniture, chemical and food industry. The most of surveys have been taken in Poland and Latvia. Specifics are presented in table below – Tab. 1.

Table 1 – Numbers of conducted interviews with Shippers

Economic sector	GER	POL	LIT	LAT	EST	FIN	TOTAL
Other manufacturing	4	13	3	3		1	24
Manufacture of wood and of products of wood and cork, incl. furniture	2	3	3	3	4		15
Manufacture of chemicals and chemical products	4	2	1	2	2		11
Manufacture of food products, beverages and tobacco products	1	2	4	2	2		11
M. of basic metals and metal products, except machinery and equipment	1	4		2		1	8
Manufacture of machinery and equipment not elsewhere classified	1	2			3	2	8
Manufacture of textiles, wearing apparel, leather and related products	1	2	1	2	1		7
Manufacture of paper and paper products	1		1	2	1	2	7
M. of computer, electronic and optical products, electrical equipment		3			3		6
Manufacture of rubber and plastics products		1		2			3
M. of motor vehicles, trailers and semi-trailers and other transport equipment		2					2
M. of basic pharmaceutical products and pharmaceutical preparations				2			2
Printing and reproduction of recorded media		1					1
Manufacture of other non-metallic mineral products						1	1
Total	15	35	13	20	16	7	106

Source: NSB CoRe study

3 Review of barriers to the development of intermodal transport

The research questionnaire consisted of 4 questions, divided into two blocks.

1) What according to you are the biggest barriers to the development of intermodal transport? (all respondents)

LSPs had been asked to rank the most important barriers to intermodal transport on a scale from 1 (no barrier at all) to 6 (very big barrier).

To develop the statistical results, PS Imago 4 software was used. The statistical description used standard measures of descriptive statistics and the Kruska-la-Wallis test, which was used to compare the average results between the surveyed groups in relation to ordinal variables. It was assumed that the result is statistically significant for $p < 0.05$.

In the second block were placed 3 closed questions, to which they responded by selecting one of the available answers.

- 2) *Does your company use ICT tools to assist decision-makers in the following fields related to transport ? (all respondents)*
- 3) *Do you offer your clients track & trace services on each segment of journey? (freight forwarder)*
Do you offer your clients track & trace services? (intermodal operator)
- 4) *Please evaluate the quality of existing system for exchanging electronic messages and documents between your company and the cooperated logistics service providers? (all respondents)*

3.1 Identification and categorization of barriers

Shippers and Logistics Service Providers (LPS) were asked for define the most significant barriers of intermodal transport. Project partners named 20 barriers significant for themselves. Due to that not every barrier pertain to every partner, there were separated six groups of process participants depending on their role in questionnaire: Shippers (consignors), Logistic Service Providers (Freight forwarder, Intermodal operator, Rail carrier, Container terminal, Road carrier). The identified barriers are presented in Table 2, assigning them to one of six categories:

- cost,
- transit time,
- security,
- network,
- resources,
- information.

If the respondents from the selected group defined the given barrier as significant, it was marked in the line as “x”.

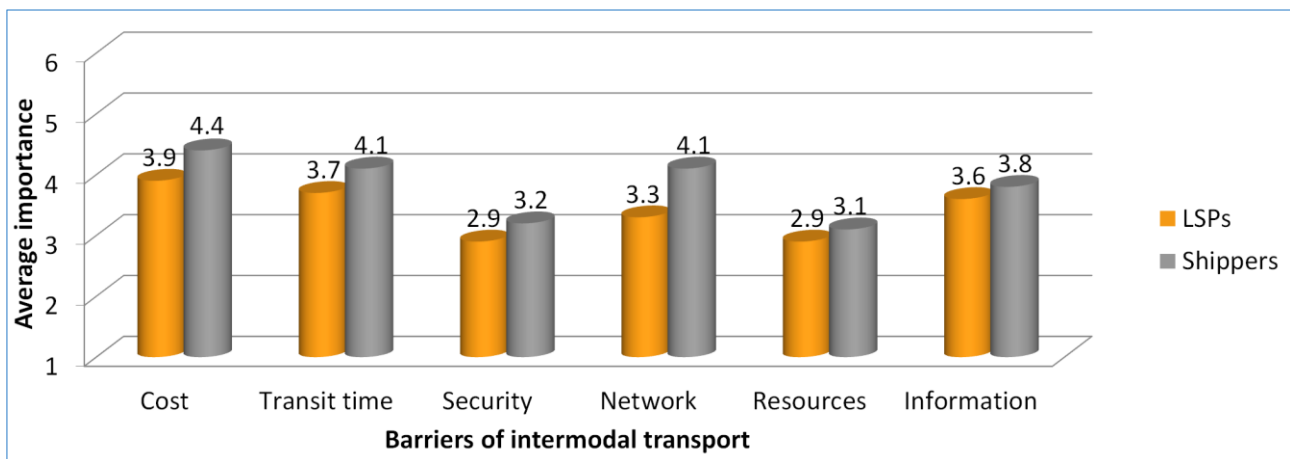
Table 2 – Barriers of intermodal transport development – identification, categorization

Category	Barrier	Freight forwarder	Intermodal operator	Rail carrier	Container terminal	Road carrier	Shippers
Cost	Not competitive towards road transport	X	X	X	X	X	X
	High fee for access to infrastructure		X	X	X		
Transit time	Long transit time	X	X	X	X	X	X
	Lack of reliability / schedule deviations	X	X	X	X	X	X
	Lack of flexibility						X
Security	Low security of cargo	X	X	X	X	X	X
	No track and trace service available	X	X	X	X	X	
Network	No adequate network (density)	X	X	X	X		X
	Lack of logistics centres nearby	X	X	X	X		
	No open terminals for every carrier		X	X	X		
	Different track gauge		X	X			
	Change of locomotives at borders		X	X			
	Inadequate frequency						X
Resources	Infrastructural bottlenecks						X
	Shortage of rolling stock		X	X			

	Shortage of multi system locomotives		X	X			
	Short. of qualified locomotive drivers		X	X			
	Small freight volumes						X
Information	Poor exchange of EDI messages	X	X	X	X	X	X
	No information about connections	X	X	X	X	X	X

Source: NSB CoRe study

In six identified categories, the average weights assigned by Logistic Service Providers were compared in aggregate with weights given by Shippers. When comparing the obtained results, it can be noticed that the tendencies in both the Shipper group and LSPs are similar, but weight for Shippers is higher in each category. As the biggest barrier for the development of intermodal transport, both for Logistics Service Providers (average classification 3.9) and Shippers (average rating 4.4) costs were recognized, while the least importance was attributed to security and resources. Detailed data is presented on Drawing 5.



Drawing 5 – Importance of barriers to LSPs and Shippers

Source: NSB CoRe study

3.2 Ranking of barriers

Table 3 presents the ranking of barrier categories identified in intermodal transport, including the division into roles in the supply chain. For each group, barriers were marked with values from 1 to 6 where 1 is the most important, the second most important were marked with number 2, etc. When looking at the results, it can be noted that for most intermodal supply chain roles (forwarder, intermodal operator, railway carrier, Shipper), **costs are the most important**, while container terminals and road hauliers have **indicated the time**.

Table 3 – Ranking of barriers by companies' roles in the supply chain

	Cost	Information	Network	Time	Security	Resources
Freight forwarder	1	3	2	4	5	-
Intermodal operator	1	2	3	4	5	6
Rail carrier	1	2	4	5	3	6
Container terminal	2	3	4	1	5	-
Road carriers	2	3	5	1	4	-
Shippers	1	4	3	2	5	-

1	first position
2	second position
3	third position

Source: NSB CoRe study

Table below shows the validity of barriers, which in the opinion of respondents, have a disruptive effect on the development of intermodal transport. As a grouping variable, the nature of the conducted activity was adopted. The research results are characterized by a low degree of differentiation. Generally speaking, the range of mean values measured on a 6-point scale ranged from 2.34-3.36 with a predominance of ratings close to 3, which on the one hand means that for many barriers respondents preferred to indicate neutral responses (neither important nor small significance), on the other hand, they assessed their meaning quite similarly.

Table 4 – Barriers to the development of intermodal transport from the perspective of logistic service providers, taking into account the nature of the business

	Freight forwarder		Intermodal operator		Rail carrier		Container terminal		Road carrier		Total	
	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ	\bar{x}	σ
Too expensive comparing to road transport	3,5 7	1,0 8	3,4 2	0,7 9	3,6 3	1,0 6	3,0 6	1,1 2	3,0 9	0,8 6	3,3 6	1,0 1
Long transit time	3,3 5	1,0 2	2,5 0	1,2 4	3,0 0	1,2 0	3,3 8	1,0 2	3,4 4	1,1 3	3,2 7	1,1 0
Frequent deviation from schedule	2,9 4	0,9 9	2,7 5	1,1 4	2,3 8	1,3 0	3,1 9	0,8 3	3,0 6	1,0 8	2,9 5	1,0 3
Low security of cargo	2,3 9	1,1 5	2,2 5	0,9 7	1,8 8	0,8 3	2,1 3	0,8 1	2,5 3	1,0 5	2,3 4	1,0 5
Inadequate information about intermodal transport connections	3,0 8	1,1 1	2,7 5	1,2 2	2,8 8	0,8 3	2,6 3	0,7 2	3,0 9	1,3 0	2,9 7	1,1 2
Poor information exchange between logistics partners in intermodal supply chain	3,3 5	1,0 9	2,7 5	1,2 2	2,8 8	1,2 5	2,7 5	0,9 3	3,2 5	0,9 8	3,1 5	1,0 8
Lack of open inland terminals accessible for all carriers	3,4 3	1,0 1	2,8 3	1,0 3	2,8 8	1,1 3	2,1 9	0,9 8	3,2 5	0,9 8	3,1 2	1,0 7
High access fees to railway infrastructure	----	----	3,3 3	1,6 3	3,3 8	1,4 1	3,1 9	0,9 1	----	----	3,2 7	1,1 7

Source: NSB CoRe survey

According to the presented results, among the examined factors the biggest obstacle to the development of intermodal transport is its high costs. Overall, the average of grades was 3.36 and

was above the middle of the scale (3). The distribution of responses shows that over 40% of respondents attribute large and very significant importance to this factor, however, most often they are railway carriers, freight forwarders and intermodal operators, in which there was a clear advantage of high marks (50.0%, 53.0%, 41.6%) over low ones (12.5%, 11.8%, 8.3%). As far as road carriers and container terminal managers are concerned, 31.2% and 18.8% of those surveyed were convinced of the importance of this factor. In both cases, the average ratings (3.09 and 3.06) were lower than the average railway carriers (3.63), forwarders (3.57) and intermodal operators (3.42). However, these are not statistically significant differences (Chi-square = 7.501 for $p = 0.112$).

Not without significance for the respondents were barriers referring to too long delivery time and high loads related to the use of railway infrastructure - in both cases with an average rating of 3.27. It turns out that the problems related to the long delivery time constitute a serious barrier limiting the development of intermodal services for container terminals (50%) of road carriers (47%) and forwarders (45%). Interestingly, the delivery time is not a serious development barrier for intermodal operators (2.50), in this case as many as 67% considered this factor as not important. Here, too, it turned out that the described differences are not statistically significant (Chi-square = 7.242 for $p = 0.119$).

As regards access to railway infrastructure, three respondents (intermodal operators, railway carriers and terminals) spoke out because the others (road hauliers and forwarders) do not know what these costs are, they are not directly involved in the organization and implementation of this part of the transport and don't have knowledge about the formation of rates for access to infrastructure. It is worth noting that both intermodal operators, container terminals and railway carriers are rather unanimous in assessing the significance of this barrier - the differences between them are not statistically significant (Chi-square = 0.056 for $p = 0.973$) and range from 3.19 in the case of terminals up to 3.38 for railway carriers.

Among the discussed barriers, it is worth pointing out the integration difficulties resulting from the insufficient exchange of information between cooperating logistics service providers. In this case, there are quite clear differences between freight forwarders (3.35), road hauliers (3.25) and other groups whose average ratings were well below the value of 3. Freight forwarders and road hauliers are therefore more convinced of the importance of this barrier than others service providers, although these are not statistically significant differences (Chi-square = 7.454 for $p = 114$).

Table 4 shows that the biggest differences in respondents answers were recorded when assessing the significance of the underdeveloped network of inland container terminals (Chi-square = 18.182 for $p = 0.001^{**}$). The multiple comparisons test showed that highly statistically significant differences exist between container terminals (2.19) and road carriers (3.25) and forwarders (3.43). The research shows that limited access to services related to container reloading is a more serious development barrier for the last two groups.

Among the factors that have received the lowest rating are successively: insufficient information about intermodal connections, frequent deviations from the timetable and low level of cargo security. The first two barriers were rated between 2.97 and 2.95 - so both results oscillate around the center of the scale. The low level of cargo security (2.34) was considered as a factor of minor inhibitory

importance. On the other hand, the advantage of low scores (low significance and very low significance) over high (high importance and very high significance) of 56% of responses was noted. Taking into account the nature of the conducted activity, the average of grades in individual categories does not differ in a statistically significant degree.

4 Business needs for support intermodal transport – ICT tools usage

The transport services market is a very dynamic. Increase in the supply of services and bigger and bigger competition on the market are determined by forwarding and transport companies to search for innovative solutions system supporting processes in the area of supply chain and increasing the level of customer service. The requirements of Shippers in this area are growing along with technological progress. Level of usage of ICT (Information and Communication Technologies) tools supporting communication between actors in the supply chain can constitute a barrier or opportunity to development for intermodal transport. This is why the use of ICT tools in the intermodal supply chain has been reviewed and presented, with a key impact on the integration between its partners.

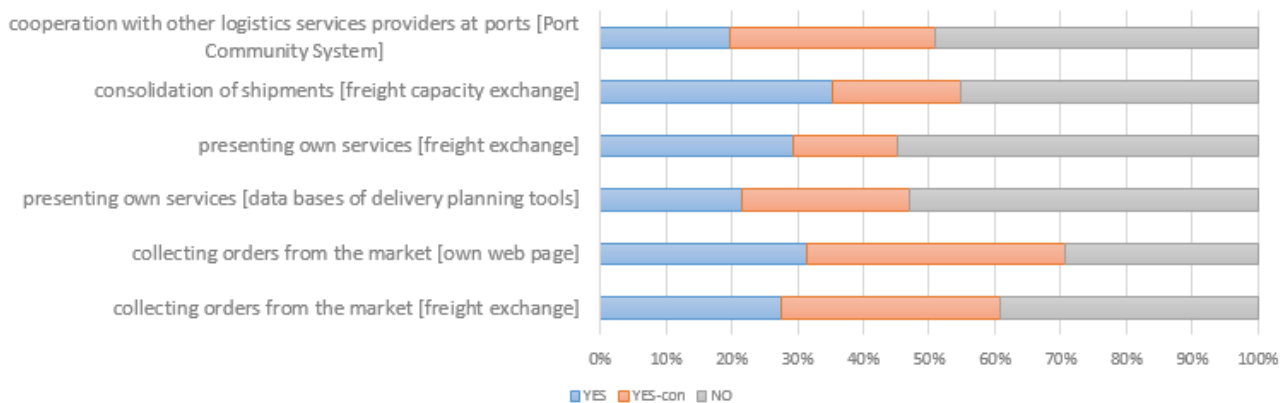
4.1 Use of ICT tools to support decision making in transport

Respondents answering a question related to the use of ICT tools supporting the decision-making process related to transport, had the opportunity to choose one of three answers:

- YES,
- YES-con (applicable to container transport),
- NO.

The questions that the respondents answered were dependent on the nature of their business.

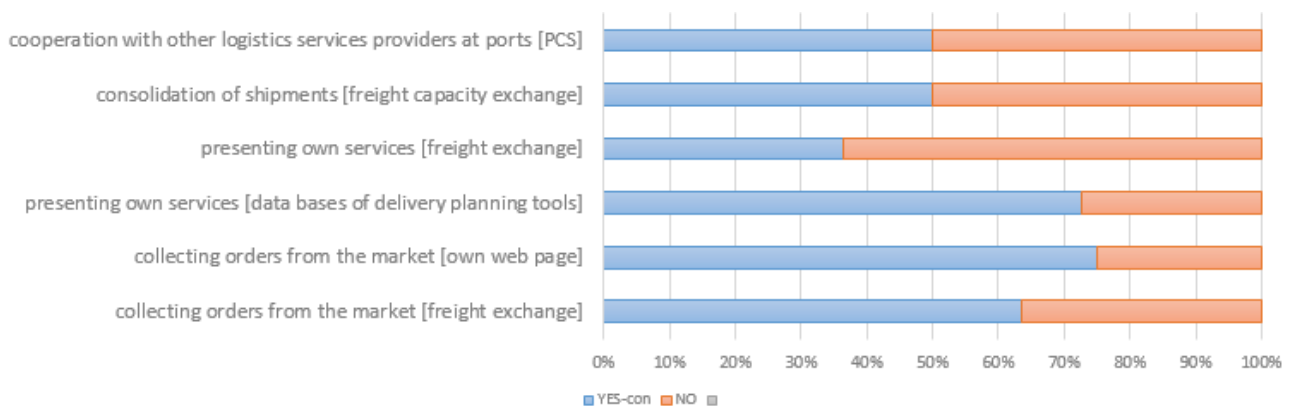
The drawing on next page presents the questions to which **freight forwarders** responded with the percentage contribution of each of the selected answers. The test results are characterized by a low degree of diversity. About half of the respondents confirmed that they use ICT tools for cooperation with other LSP at ports (Port Community System), consolidation from shipments, and presenting own services (data bases of delivery planning tools), (freight exchange). Most often, ICT tools are used by the freight forwarder to collecting orders form the marker by own page more than 70% and by freight exchange more than 60%.



Drawing 6 – Usage of ICT tools by freight forwarder

Source: NSB CoRe study

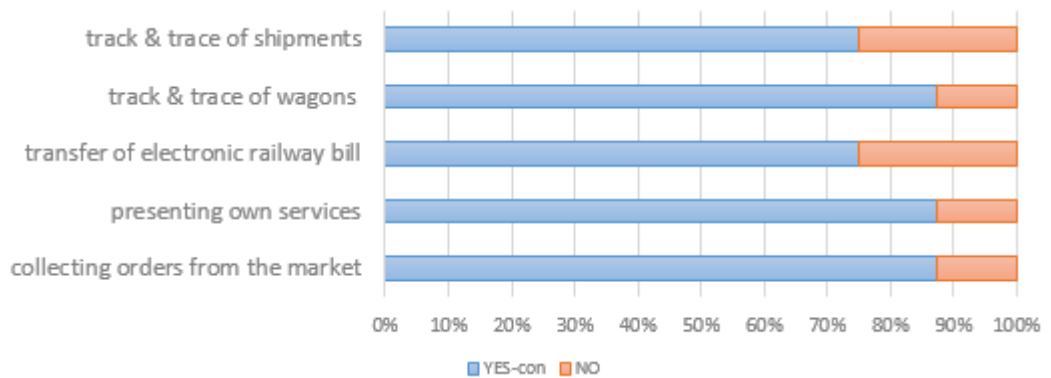
The drawing below presents the questions to which **intermodal operators** responded together with the percentage share of each of the selected responses. The test results are characterized by an average degree of differentiation. About half of the respondents confirmed that they use ICT tools for cooperation with other LSP at ports (PCS), consolidation of shipments. Most often, ICT tools are used to presenting own services (data bases of delivery planning tools) more than 70%, collecting orders form the marker by own page also more than 70% and by freight exchange more than 60%. The least is, however to presenting own services (freight exchange), about 35% responders chose that answer.



Drawing 7 – Usage of ICT tools by intermodal operator

Source: NSB CoRe survey

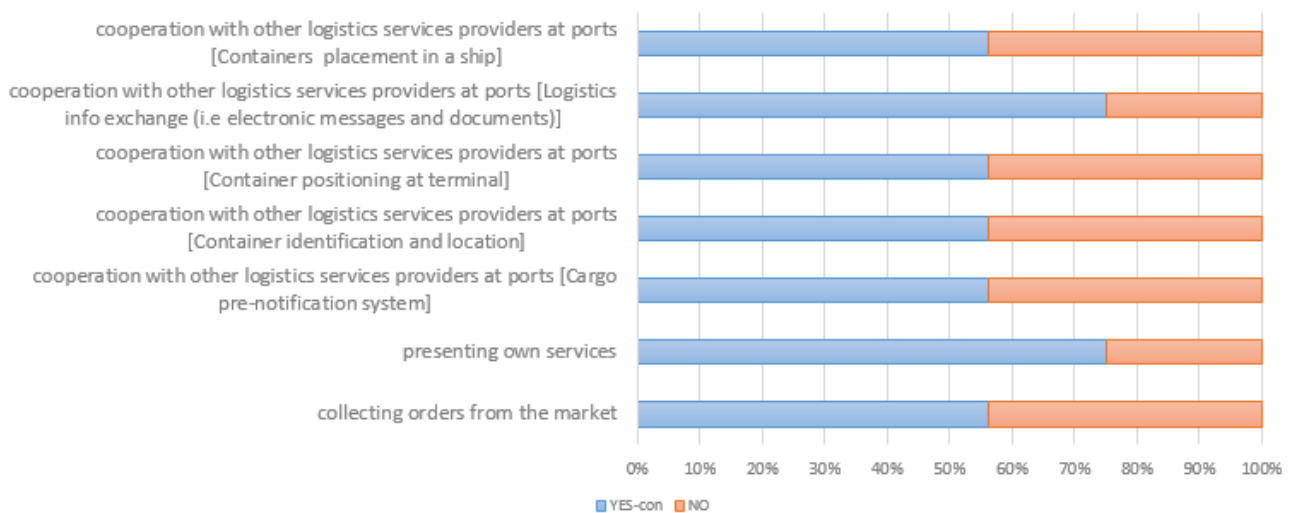
The drawing 8 presents the questions on which **railway carriers** responded, together with the percentage share, of each of the selected responses. The test results are characterized by a low degree of differentiation. It is worth noting a very high percentage of using ICT tools to support decisions related to the implementation of the transport process. Almost 75% -88% of respondents gave an affirmative answer to all questions.



Drawing 8 – Usage of ICT tools by rail carrier

Source: NSB CoRe survey

The drawing below presents the questions to which representatives of **container terminals** responded, with the percentage share, of each of the selected answers. The test results are characterized by a low degree of differentiation. About 75% of the respondents indicated that they use ICT tools to cooperation with other logistics services providers at ports [Logistics info exchange (e.g. electronic messages and documents)] and presenting own services. For all other questions about 55% of respondents made the answer in the affirmative.

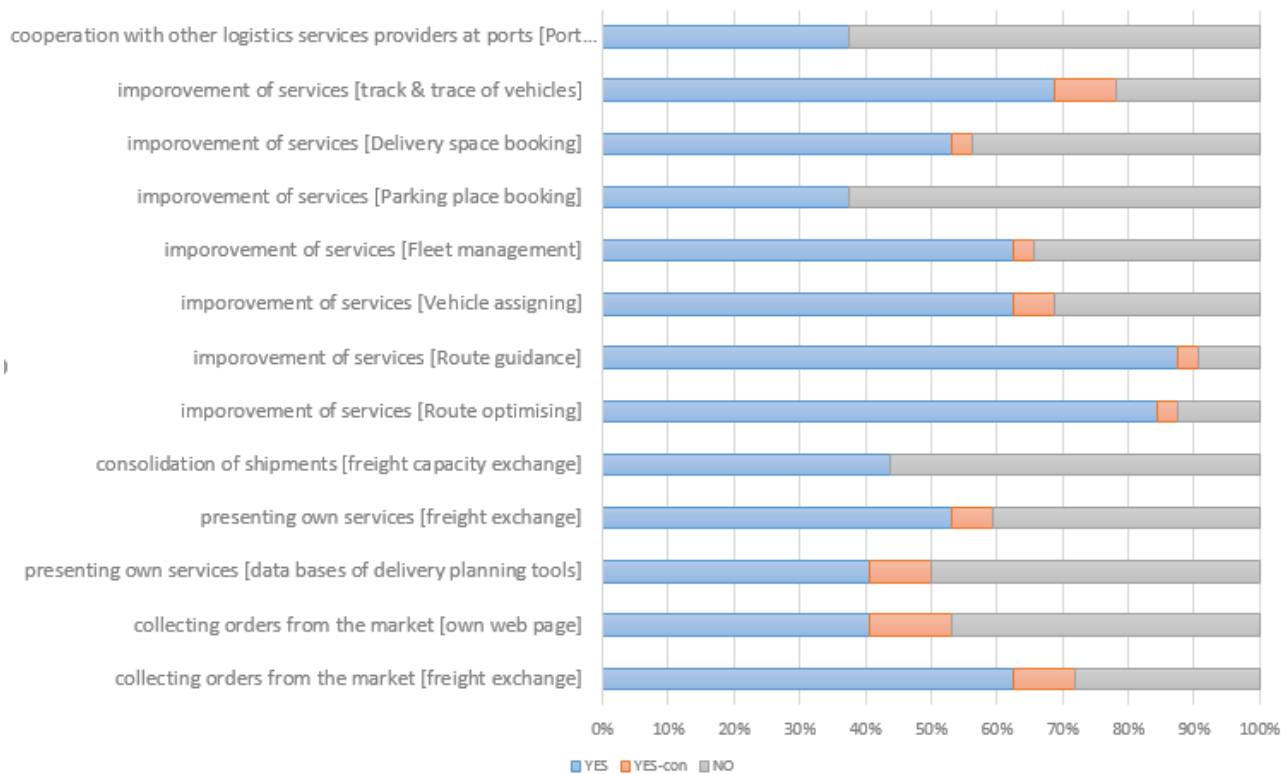


Drawing 9 – Usage of ICT tools by container terminal

Source: NSB CoRe survey

The drawing 10 presents the questions on which **road carriers** were responsible, with the percentage share, of each of the selected answers. The test results are characterized by a significant degree of differentiation. The least often, ICT tools are used by respondents to support the

improvement of service (parking place booking) approx. 37% and consolidation of shipments (freight capacity exchange) approx. 43%. In contrast, the highest number of responses indicated two responses, improvement of services (route guidance) above 90% and improvement of services (route optimizing) around 88%. It is worth noting that ICT tools are rarely used to provide services related to containerised transport.



Drawing 10 – Usage of ICT tools by road carrier

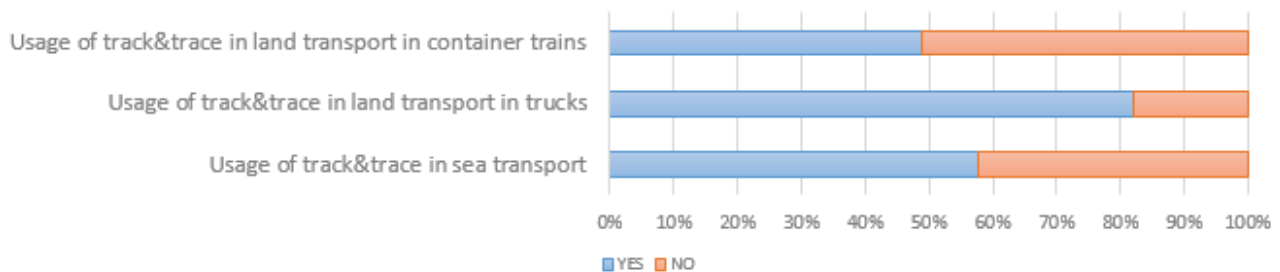
Source: NSB CoRe survey

In the conducted research, it can be noted that respondents show frequent use of ICT tools to support decision-making processes related to transport. To the greatest extent, as much as around 80% in the case of a railway carrier, while the responses given by the remaining respondents are characterized by diversification ranging from approx. 35% - 90% with a majority of responses above 50%.

4.2 Frequency of offering truck & trace services

The question regarding the offer of cargo tracking service during the delivery was given to respondents representing freight forwarders and intermodal operators. The forwarders responded to three questions, while intermodal operators responded to one query, with the option of choosing one of two answers: YES, NO.

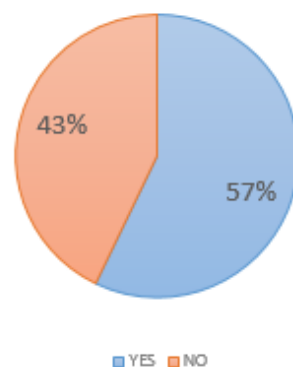
In most cases, the parcel tracking service is offered by the forwarding agent on the section realized via road transport over 80% of cases, and less often on the section carried out by railway transport - less than 50%. The drawing below shows the full juxtaposition.



Drawing 11 – Frequency of offering truck & trace services by freight forwarder

Source: NSB CoRe survey

The graph below shows the frequency of the intermodal operator's ability to track the load to its clients, 57% of respondents confirmed the availability of this service.



Drawing 12 – Frequency of offering truck & trace services by intermodal operator

Source: NSB CoRe survey

4.3 Quality of existing system for exchanging electronic messages and documents between companies

In the last question, respondents assessed the quality of the existing system of exchanging electronic messages and documents between their company and the indicated categories of Logistics Service Providers, using one of the three possible answers:

- Satisfactory,
- NOT satisfactory,

- NOT existing.

The **forwarder** as the most satisfactory considered electronic communication with the road carrier as many as 63% of respondents indicated this answer, then with the container terminal 43%. The least satisfactory 18% or defined as non-existent 47% was marked with an electronic data exchange between the forwarder and the intermodal operator. The collective results of the survey are presented in the next table.

Table 5 – Freight Forwarder's level of satisfaction from electronic data exchange with others supply chain participants.

level of satisfaction	intermodal train operator	rail carrier	container terminal	road carrier
Satisfactory	18%	24%	43%	63%
NOT satisfactory	35%	37%	29%	27%
NOT existing	47%	39%	27%	10%

Source: NSB CoRe survey

In the group of respondents representing **container terminals**, the coefficient of satisfaction with electronic information exchange with other participants in the supply chain was at the highest - 50% level in the case of cooperation with the intermodal train operator. The cooperation with the railway carrier and the container terminal was equally highly rated, they were indicated by 44% of respondents. The results of the survey were presented in the table below.

Table 6 – Container terminal's level of satisfaction from electronic data exchange with others supply chain participants

level of satisfaction	intermodal train operator	rail carrier	container terminal	road carrier
Satisfactory	50%	44%	44%	38%
NOT satisfactory	31%	25%	31%	38%
NOT existing	19%	31%	25%	25%

Source: NSB CoRe survey

The table below presents the level of satisfaction with electronic data exchange between the **intermodal operator** and other participants in the supply chain. The highest level of satisfaction was indicated in cooperation with a road carrier of 50%, slightly lower but still high, 42% in the case of a railway intermodal operator and a road guide. The exchange of information with the container terminal of 33% was indicated as the least satisfactory. The collective results of the survey are presented in the next table.

Table 7 – Intermodal operator's level of satisfaction from electronic data exchange with others supply chain participants.

level of satisfaction	intermodal train operator	rail carrier	container terminal	road carrier
Satisfactory	42%	50%	33%	42%
NOT satisfactory	33%	25%	50%	33%
NOT existing	25%	25%	17%	25%

Source: NSB CoRe survey

The **rail carrier** from all respondents showed the highest level of satisfaction related to electronic exchange of information, 63% of respondents indicated that answer as the most satisfactory, while in the case of the railway carrier and container terminal it was 50%. The survey results were presented in table below.

Table 8 – Rail carrier's level of satisfaction from electronic data exchange with others supply chain participants.

level of satisfaction	intermodal train operator	rail carrier	container terminal
Satisfactory	63%	50%	50%
NOT satisfactory	13%	13%	0%
NOT existing	25%	38%	50%

Source: NSB CoRe survey

In the group of respondents representing **road carriers**, the satisfaction rate with electronic information exchange with other participants in the supply chain was at the highest 66% level in the case of cooperation with an intermodal operator, cooperation with the railway carrier was positively assessed by 31% of respondents. However, as unsatisfactory 19% or non-existent 53%, the cooperation with the container terminal was assessed. The collective results of the survey are presented in the table below.

Table 9 – Road carrier's level of satisfaction from electronic data exchange with others supply chain participants.

level of satisfaction	intermodal train operator	rail carrier	container terminal
Satisfactory	66%	31%	22%
NOT satisfactory	22%	19%	25%
NOT existing	13%	50%	53%

Source: NSB CoRe survey

5 Summary

Over the next dozen years, in line with the EU development policy, the main modernization effort will be aimed at removing barriers to the development of intermodal transport, which in practice will require numerous infrastructural investments aimed primarily at modernizing all modes of transport and increasing mobility and spatial integration of regions. Among many projects planned for implementation, it is necessary to emphasize the urgent need to expand the existing network of handling terminals. Investments related to the development of offshore point infrastructure and road and rail terminals within the TEN-T network should be considered as particularly important.

Turning to the results of the survey, it should be emphasized that respondents, regardless of the nature of their activity, to **the main barriers hindering the development of intermodal transport (though not as strongly as initially assumed) included: high operating costs (including those related to the use of railway infrastructure) and too long delivery time**. Only in the case of the assessment of the importance of the underdeveloped network of inland container terminals was it noted that the opinions of the respondents are quite diversified depending on the type of business. It turns out that the above factor is a much more important development barrier for road hauliers and forwarders than for container terminal managers. It can be assumed that in the case of terminals there is a fear that the further development of point infrastructure (adding new locations) will lead to the appearance of alternative cooperation offers on the market, which will significantly exacerbate the current fight for the client.

In the light of the above, it is worth pointing out some additional weaknesses, which obviously limit the development potential of this market. We are talking here about both a small number of carriers who specialize in this type of service, as well as about the aforementioned high costs of their provision, especially in comparison to road transport. These two factors seem to be particularly important if we take into account the concerns raised by the Shippers themselves.

The study shows, that **the most important factors determining the use of intermodal transport are price competitiveness and delivery time as well as well-developed infrastructure**. These results provide clear guidance to stakeholders, which should be taken into account if the new infrastructure should be used to a large extent. The competitive conditions for road and rail transport should be harmonized to facilitate the transition from road to rail. In addition, it is important to provide uncomplicated access to infrastructure for potential users, such as consignor and logistics service providers. This could be facilitated by competitive infrastructure charges and financial support for intermodal transport and access points (Rail Road Terminals). As the Rail Baltica route crosses several national borders (in the case of intermodal transport) over relatively short distances, **it is inevitable to ensure interoperability between different national transport systems in order to increase reliability and time benefits**. Lack of interoperability at border stations leads to a loss of time and unfavourable conditions of competition.

Another **important aspect is the improvement of information flow** in several directions. On the one hand, it turned out that Shippers have no knowledge about intermodal transport. In particular, many of them do not know about specific train schedules and opportunities to overcome the first /



last mile and door-to-door solutions. This can be improved by marketing activities of LSP or other intermodal transport stakeholders.