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EXPORT OF UKRAINIAN AGRICULTURAL PRODUCTS THROUGH POLAND – ROUTE RESTRICTIONS

Purpose. The study aims to (i) identify barriers to the efficient flow of agricultural products from Ukraine along the European Union (EU) solidarity lanes that pass through the territory of Poland and (ii) recommend actions that will improve transit.

Methodology / approach. The information collection method was questionnaire using Computer-Assisted Telephone Interviews. Structured interviews were conducted with representatives of Polish transport companies that provided services for the transportation of agricultural products from Ukraine through Poland. Information processing methods include structure analysis and statistical description.

Results. It was found that improving the transit of agricultural products from Ukraine via the transit route through Poland would help mitigate the effects of the grain crisis in all its aspects. The bottlenecks of this alternative transit route are identified. It was presented what infrastructural, technical, regulatory, administrative and organisational activities would improve transit. Attention was paid to the importance of social support for the success of the project.

Originality / scientific novelty. The study is a source of new knowledge obtained by analysing methodically and purposefully collected data – through structured interviews with representatives of Polish transport companies. The applied value of the study lies in the fact that it formulates recommendations for solving an urgent problem of economic practice, namely the export of Ukrainian agricultural products under conditions of war.

Practical value / implications. Due to the prolonged Russian-Ukrainian war, there was an urgent need to develop alternative routes for the export of Ukrainian agricultural products. The development of the transit route through Poland expresses the commitment to alleviate the effects of the global food crisis caused by the war unleashed by Russia in Ukraine and to help the war-torn country. Hence the applied importance of research in this area.

Key words: agricultural trade, export routes, food security, grain crisis, Russian-Ukrainian war, transit routes, transport enterprises.

1. INTRODUCTION

The restrictions of traditional export routes of Ukrainian agricultural products, leading through the Black Sea ports, have had negatively affected global food security (Abu Hatab, 2022; Glauben et al., 2022; Jagtap et al., 2022; Mohylnyi et al., 2022; Arndt et al., 2023; Berezka & Kovalchuk, 2023; Götz & Svanidze, 2023; Hamulczuk et al., 2023b; Kozlovskiy et al., 2024). Due to the prolonged Russian-Ukrainian war and the related infrastructure destruction and blockades of Ukrainian ports on the Black Sea, which accounted for almost all of this agricultural potentate's exports (Guenette et al., 2022), there was an urgent need to develop alternative routes export (Sadłowski et al., 2023). This is important from the point of view of improving global food security,

as well as from the point of view of helping a country at war. The export of agricultural products, primarily grains and oil seeds, constitutes an important part of Ukraine's Gross Domestic Product and is a significant determinant of the hryvnia exchange rate (Kovalenko et al., 2024).

The EU joined in activities aimed at supporting the export of agricultural products from Ukraine by suspending customs tariffs. This was intended, in particular, to facilitate the transit of Ukraine's agricultural products through EU countries to the previous main (non-European) sales markets, i.e. to North Africa and the Middle and Far East (Sadłowski, 2023), but it also resulted in increased imports to EU member states (Hamulczuk et al., 2023a; Zawojcka & Siudek, 2024). Increased supply destabilises domestic prices, especially in EU member states located close to Ukraine, which significantly affects the situation in the agricultural markets of these countries. As a consequence, the economic condition of EU agricultural producers has deteriorated dramatically, particularly in Bulgaria, Hungary, Poland, Romania, and Slovakia (Donaj et al., 2023; Gołębiewski & Stefańczyk, 2023; Zawojcka & Siudek, 2024), which was an impetus for agricultural protests. This, in turn, prompted the authorities of some EU member states to introduce bans on the import of agricultural produce from Ukraine, which are controversial in terms of legality (Donaj et al., 2023). The national authorities waived them during the period of validity of the amended EU regulations, under which Bulgaria, Hungary, Poland, and Slovakia became only the transit countries for Ukrainian agricultural produce, while the remaining EU member states could invariably be both transit countries, as well as destination markets (Sadłowski, 2023). However, instruments financed from the EU budget and national budgets were introduced to support agricultural producers operating in EU member states located close to Ukraine, which were intended to compensate for the decline in prices of agricultural products caused by increased imports from Ukraine (Beluhova-Uzunova et al., 2024). These are ad hoc actions that mitigate the effects of a drastic deterioration in production profitability but do not solve the problem structurally (Jureńczyk, 2023).

Alternative, substitute trade routes through the EU are the so-called solidarity lanes. The increase in the volume of transited agricultural products is supported by administrative and organisational improvements as well as the modernisation and expansion of transport, transshipment, and storage infrastructure, especially in countries close to Ukraine. Transport through solidarity lanes means much higher costs compared to transport along traditional routes (Fernandes et al., 2023), but these routes allow for safe cargo transport (Rudloff, 2023).

The main alternative supply route for existing recipients of Ukrainian grain and oil seeds is through the Romanian port of Constanța. Like the Ukrainian ports, Constanța is a Black Sea port, making this route a relatively minor modification, compared to traditional routes, for transporting goods to established markets. However, the focus of this study is on the route through Poland, which involves a significantly longer land segment.

The study aims to (i) identify barriers to the efficient flow of agricultural products

from Ukraine along the EU solidarity lanes that pass through Poland and (ii) recommend actions that would will improve transit.

2. LITERATURE REVIEW

Since Russia started military actions in Ukraine in 2022, there has been a relatively large number of academic publications, focusing on the implications of the invasion for the export of Ukrainian agricultural products. The challenges associated with the need to unblock traditional and develop alternative trade routes in the context of the Russian-Ukrainian war have created a significant demand for studies to address pressing, current economic practice issues. Research in this area has huge practical potential and is very important not only from Ukraine's perspective, but also from the standpoint of countries importing Ukrainian agricultural products and transit countries.

Jagtap et al. (2022) examined the impact of the Russian-Ukrainian war on global food supply chains, highlighting the need to reconfigure logistical links to enhance global food security. Similar issues are addressed in the works of Ben Hassen & El Bilali (2022), Ahn & Steinbach (2023), Rudyk et al. (2023), and Pecheniuk et al. (2024), Dybala & Bezsmertna (2022) focused their research in this area on one of the most important agricultural products, namely wheat.

Zakharchuk et al. (2022) explored the logistics of Ukrainian grains under wartime conditions, including infrastructural constraints and transport economics issues. In conclusion, they stated that sea transport remains the most effective for transporting large quantities of grain, while the wider use of rail and road transport was hindered by rising transport tariffs and increases in fuel prices, and previously also by anti-epidemic restrictions at border crossings. Li et al. (2023) and Pavlenko et al. (2023) studied the feasibility of containerizing grain cargo.

According to Fernandes et al. (2023), the use of alternative transport routes, compared to traditional export routes, results in a doubling of direct transport costs as well as external costs in the form of increased greenhouse gas emissions. Sadłowski et al. (2023) examined the potential of the transport route of Ukrainian grain through Poland, concluding that transit through Poland could only be a significant supplement to other carriage options. According to the authors, the conditions as of the third quarter of 2022 provided – with some organisational effort and investment activities – real possibilities of transporting approximately 0.6 million tons of Ukrainian grain per month by rail to Baltic ports and further by ship, and approximately 0.2 million tons by road (in dispersed European relations), provided that truck handling at Polish-Ukrainian border crossings was improved. The potential of this route is therefore estimated at 9.6 million tons per year, while Ukraine's exports (grains alone) in 2022, the year of the war since February, exceeded 38.6 million tons (FAO, 2024).

Mulyk & Mulyk (2022), while studying the effects of trade liberalisation between the EU and Ukraine, pointed out the creation and diversion effects in agricultural trade. Similarly, Hamulczuk et al. (2023a) observed an increase in the EU's importance in grain imports from Ukraine. Svynous et al. (2024) provided recommendations for the development of Ukrainian agricultural supply chains to the EU market. Taran (2023),

on the other hand, emphasised that non-compliance with agreements and international treaties (such as Russia's violation of the Black Sea Grain Initiative and unilateral import bans introduced by some EU member states despite the EU-wide regulation on trade liberalisation with Ukraine) significantly reduces Ukraine's export capabilities and decreases its economic resilience during the war.

Overall, the recognition of the current situation and the prediction of changes in a highly turbulent economic environment during wartime provides researchers with a foundation for formulating recommendations. These, in particular, involve indicating various remedial actions, where infrastructure investments, logistical and organisational improvements, as well as administrative, legal, and regulatory facilitation are seen as ways to achieve the goal of ensuring a higher level of global food security under the conditions of war in Ukraine – a country that is one of the world's leading agricultural producers.

The research question posed in this study is: “What infrastructural, regulatory, and organisational limitations hinder the efficient transit of Ukrainian agricultural products via the EU's solidarity lanes through Poland, and what actions should be taken to overcome them?”.

3. METHODOLOGY

The conceptual framework of the study is presented schematically in Figure 1. The information collection method used was a questionnaire. Using the CATI (Computer Assisted Telephone Interviewing) technique, structured interviews were conducted with representatives of companies based in Poland that provided transport services as part of the trade in goods with Ukraine, consisting of the transport of cereals or oil seeds originating from Ukraine through Poland. The respondents were owners or managers of transport companies that started their business no later than 2018. Despite these numerous restrictions narrowing down the potential group of respondents, as well as circumstances that did not encourage voluntary participation in the survey (in particular, cases of ‘leakage’ of grain declared for transit to the Polish market, as reported in the media), the group of respondents consisted of 10 company representatives. The information collection period was monthly – interviews were conducted from March 16 to April 15, 2024.

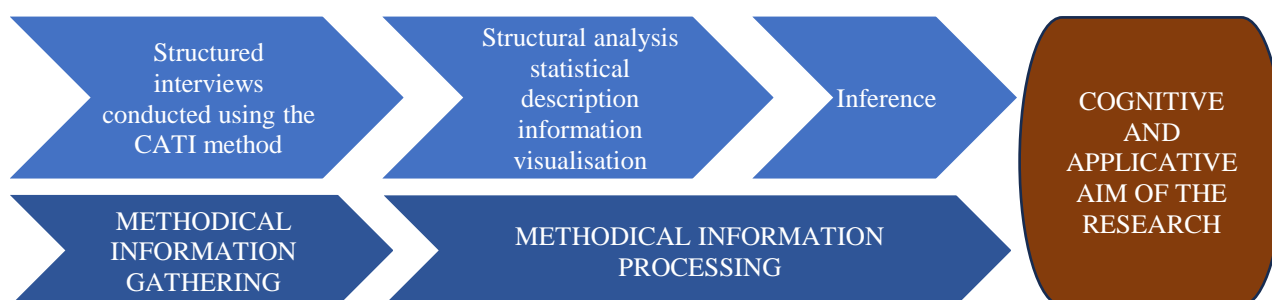


Figure 1. Conceptual framework of the study

Source: own study.

The questions asked during the interviews concerned potential actions to improve

the transit of agricultural produce from Ukraine through Poland. These activities were grouped into the following areas:

- supporting transport companies,
- regulating the activities of transport companies,
- regulation of relations with foreign countries,
- administrative and organisational improvements,
- improvement of technical infrastructure.

Representatives of enterprises assessed the importance of certain activities, which allowed them to be hierarchised. A balanced, 4-point Likert scale was used, allowing for the answer “difficult to say”, which the interviewer did not read when presenting the options of statements. Only representatives of those companies that provide transport services using a given type of transport answered questions regarding infrastructural, regulatory, administrative, or organisational improvements or facilities specific to a given type of transport. Based on the responses obtained, a ranking of activities was created in individual areas that can be considered the most urgent from the point of view of the surveyed group of enterprises.

The information obtained in the metrics part of the interview questionnaire is visualised in Figures 2–3.

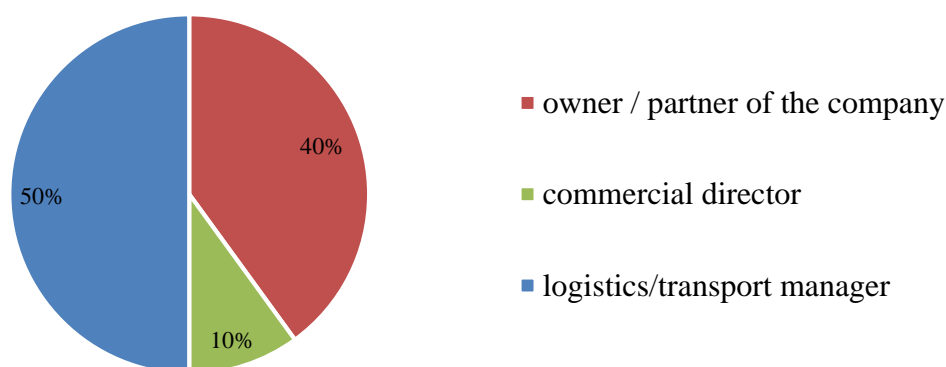


Figure 2. Structure of respondents by role in the company

Source: own study.

Half of the people answering the questions asked during the interview were logistics or transport managers. The second largest group was the owners of the enterprise or partners of the company. The structure of respondents according to their role in the company is shown in Figure 2.

In turn, the charts presented in Figure 3 present the structure of the surveyed enterprises according to various division criteria. Taking into account the organisational and legal form, limited liability companies prevailed. Individual enterprises were the second largest group. In turn, taking into account the size of employment, small enterprises dominated (i.e. those employing from 10 to 49 employees), while the second largest group was medium-sized enterprises (i.e. employing from 50 to 249 employees). Among the respondents, there were no enterprises classified as large (i.e. employing at least 250 employees).

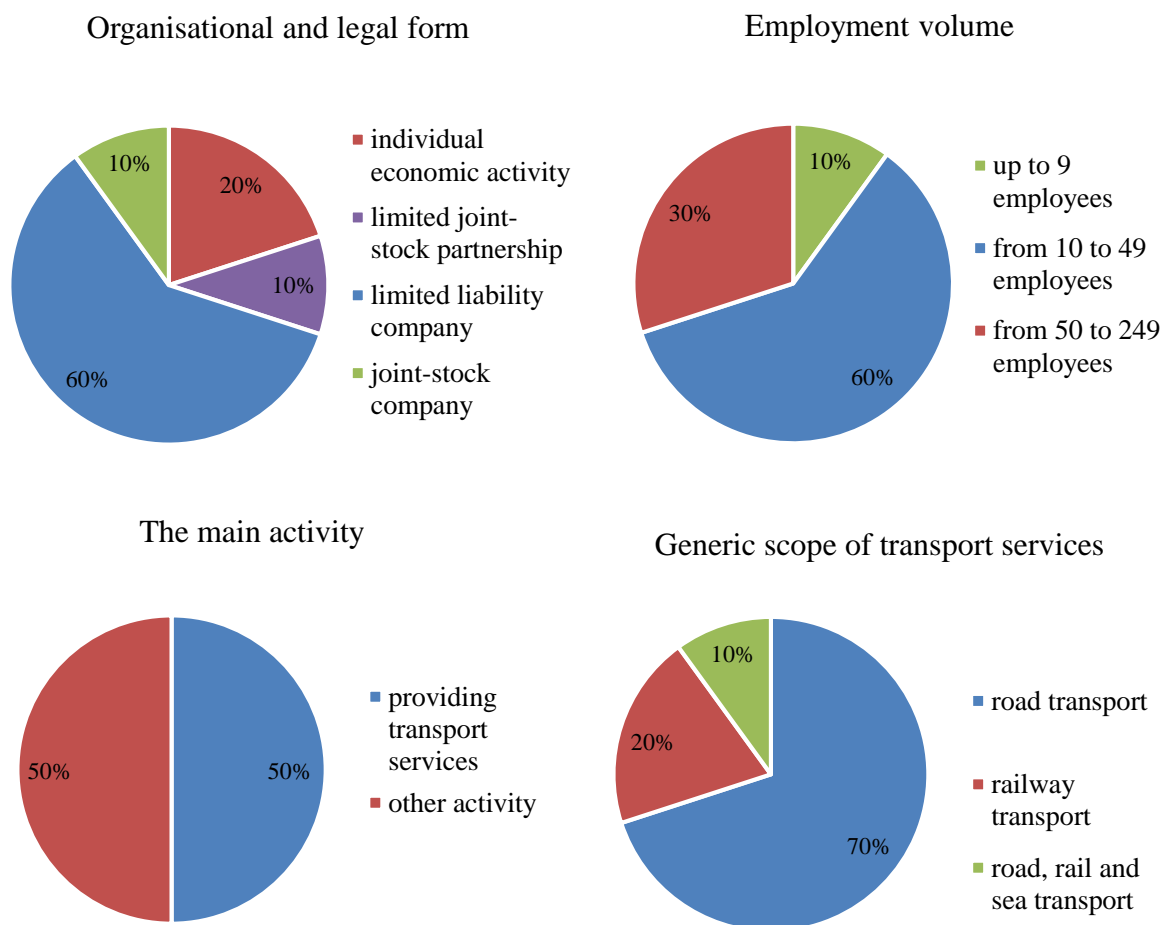


Figure 3. Structure of the surveyed enterprises according to various criteria

Source: own study.

Providing transport services was the main activity of half of the surveyed enterprises. Most of the surveyed enterprises provided transport services using road transport.

4. RESULTS

The assessment of the importance of sector support instruments for improving the transit of Ukrainian agricultural produce through Poland from the perspective of Polish transport companies is presented in Figure 4. Activities to support the transport sector that, in the opinion of Polish transport companies, could largely contribute to improving the transit of agricultural products from Ukraine through Poland are the introduction of financial or fiscal incentives stimulating investments in fixed assets, e.g. financial support or tax preferences in connection with the purchase of means of transport or specialised equipment. According to 70 % of the surveyed enterprises, the use of such instruments is definitely (30 %) or rather (40 %) important. Taking into account the needs related to improving the transit of Ukrainian agricultural produce, this would contribute to eliminating the shortage of means of transport (in particular grain and intermodal wagons (Bezpartochnyi et al., 2023), containers, and tankers for

sunflower oil) and the shortage of specialised equipment supported the transport in transshipment centres (including high-performance grain loaders and mobile container cranes).

According to 80 % of the surveyed enterprises, providing state guarantees in the event in case of a partner's failure to fulfil contractual obligations is either definitely (20 %) or rather (60 %) important. This means that, in their opinion, activities aimed at reducing the risk associated with cooperation with Ukrainian enterprises are of great importance. However, the concerns of Polish entrepreneurs related to sending rolling stock to Ukraine are less important. Providing quick, equivalent compensation in the event of the loss of rolling stock sent to Ukraine was considered definitely important by 20 % of the surveyed enterprises, and rather important by 10 %.

According to 70 % of the surveyed enterprises, the provision of preferential financing for operating or investment activities is either definitely (10 %) or rather (60 %) important. This means that bank loans play an important role as external sources of financing the activities of transport enterprises, and the relatively high cost of obtaining capital hinders not only the development, but also the current operations of enterprises in this sector.

How important are individual activities in the area of supporting transport companies based in Poland to ensure efficient transit of agricultural produce from Ukraine through Poland?

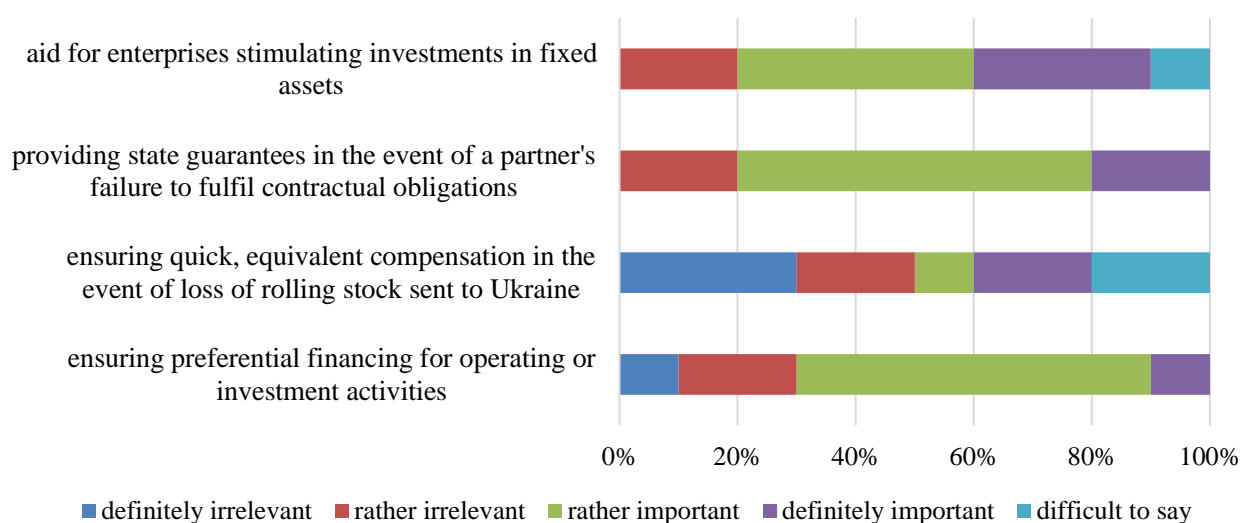


Figure 4. Ranking of importance of sector support instruments to improve the transit of Ukrainian agricultural produce through Poland – the perspective of Polish transport companies

Source: own study.

The attitude of the surveyed enterprises to activities in the area of regulating the activities of transport companies at the EU and national level is presented in Figure 5. According to 70 % of the surveyed enterprises, levelling the playing field to eliminate unfair competition from non-EU carriers is definitely (50 %) or rather (20 %) important in the context of ensuring efficient transit of agricultural products from Ukraine through Poland. Detailed requirements related to this were formulated by economic

self-government organisations in the transport sector during the protests of Polish carriers organised at road crossings on the border with Ukraine. In turn, lifting the ban on truck traffic on Sundays and holidays is generally not perceived as an action that could significantly improve the transit of Ukrainian agricultural produce through Poland. Only 20 % of the surveyed enterprises considered this activity to be definitely or rather important in this context.

How important are individual activities in the area of regulating the activities of transport companies or relations with foreign countries to ensure efficient transit of agricultural produce from Ukraine through Poland?

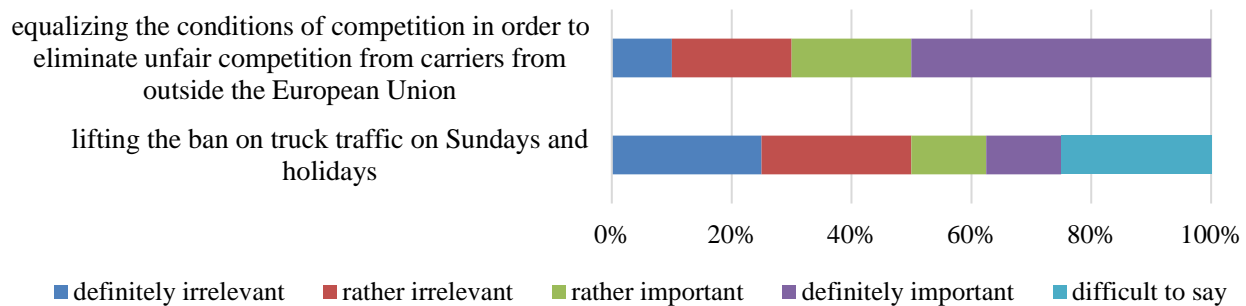


Figure 5. Ranking of importance of activities in the regulatory sphere and foreign relations to improve the transit of Ukrainian agricultural produce through Poland – the perspective of Polish transport companies

Source: own study.

The attitude of the surveyed enterprises towards administrative and organisational improvements that would facilitate the transit of Ukrainian agricultural products through Poland is visualised in Figure 6.

How important are individual activities in the area of administrative and organisational improvements to ensure efficient transit of agricultural produce from Ukraine through Poland?

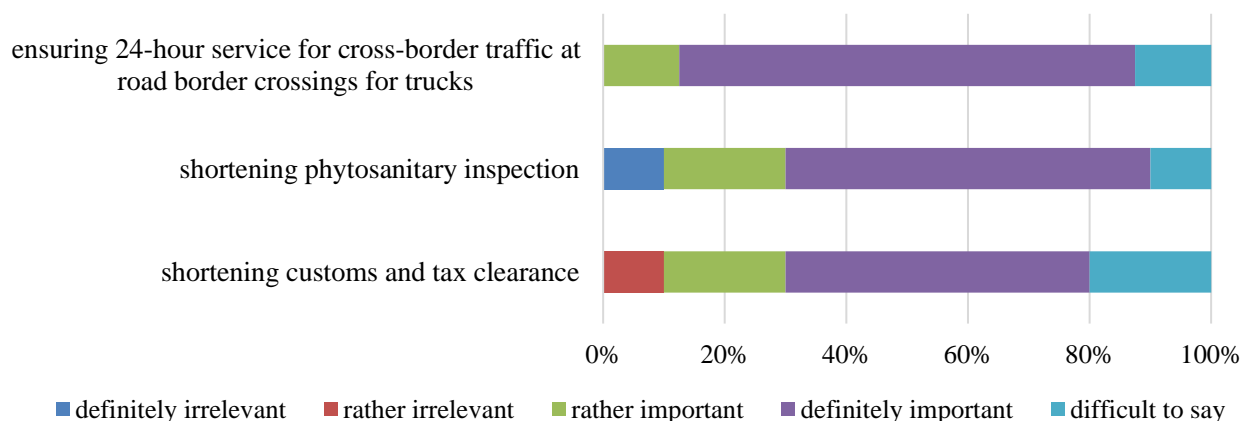


Figure 6. Ranking of importance of administrative and organisational activities to improve the transit of Ukrainian agricultural produce through Poland – the perspective of Polish transport companies

Source: own study.

It shows the urgent need to ensure 24-hour service for cross-border traffic at road

border crossings for trucks (75 % of the surveyed enterprises considered this action to be definitely important), shortening phytosanitary inspections (definitely important according to 60 % of the surveyed enterprises) and shortening customs and tax clearance (half of the surveyed enterprises considered this to be definitely important). Border crossings remain transit bottlenecks (Zakharchuk et al., 2022) – despite the reorganisation measures taken (e.g., allocating lanes for trucks that were previously available for passenger cars) and development measures (e.g., additional check-in points).

Figure 7 shows what, in the opinion of Polish transport companies, is the biggest obstacle to the transit of Ukrainian agricultural products through Poland by rail. In the opinion of the surveyed enterprises, the most important thing is to improve the capacity of railway border crossings – all the surveyed enterprises considered this measure to be definitely important. According to all surveyed enterprises, it is definitely or rather important to expand the transshipment and storage capacity of terminals in seaports (the insufficient potential of Polish Baltic ports is also noted by Bezpartochnyi et al. (2023)), as well as the development of point railway infrastructure at border crossings, in transshipment centres and seaports, and expanding the transshipment potential of terminals at border crossings. The majority of the surveyed enterprises considered these activities to be definitely important. Slightly less importance is attached to the development of linear railway infrastructure connecting border crossings, transshipment centres, and seaports, which could involve, for example, building additional places on the route enabling trains traveling in opposite directions to pass each other. The next important actions that, in the opinion of Polish transport companies, would improve the transit of Ukrainian agricultural produce along transit routes through Poland are to ensure the compatibility of the Ukrainian railway infrastructure with the European infrastructure by adjusting the rail gauge, and the expansion container terminals at border crossings and seaports, as well the transshipment potential of terminal in Sławków (Sławków is a town in Będzin County (Silesian Voivodeship), where the almost 400 km long Broad Gauge Metallurgy Line ends). According to the companies participating in the study, expanding the storage potential of terminals at border crossings and in Sławków is less important. It can therefore be assumed that indirect transit with temporary storage is generally not practiced.

Apart from the possibility of using the above-mentioned Broad Gauge Metallurgy Line, the incompatibility of the Ukrainian railway infrastructure makes it necessary to change wagon bogies or reload goods (from a wide-gauge wagon to a standard-gauge wagon) or containers (from one railway platform to another), which slows down transport and increases transport costs.

There are several arguments in favour of using the Broad Gauge Metallurgy Line to transit Ukrainian grain. This line runs from the railway border crossing with Ukraine (in Hrubieszów), and its more intensive use would relieve the burden on other border crossings. It is the longest broad-gauge line in Poland and the westernmost one in Europe.

How important is it to overcome specific limitations of technical infrastructure to ensure efficient transit of agricultural produce from Ukraine through Poland by rail?

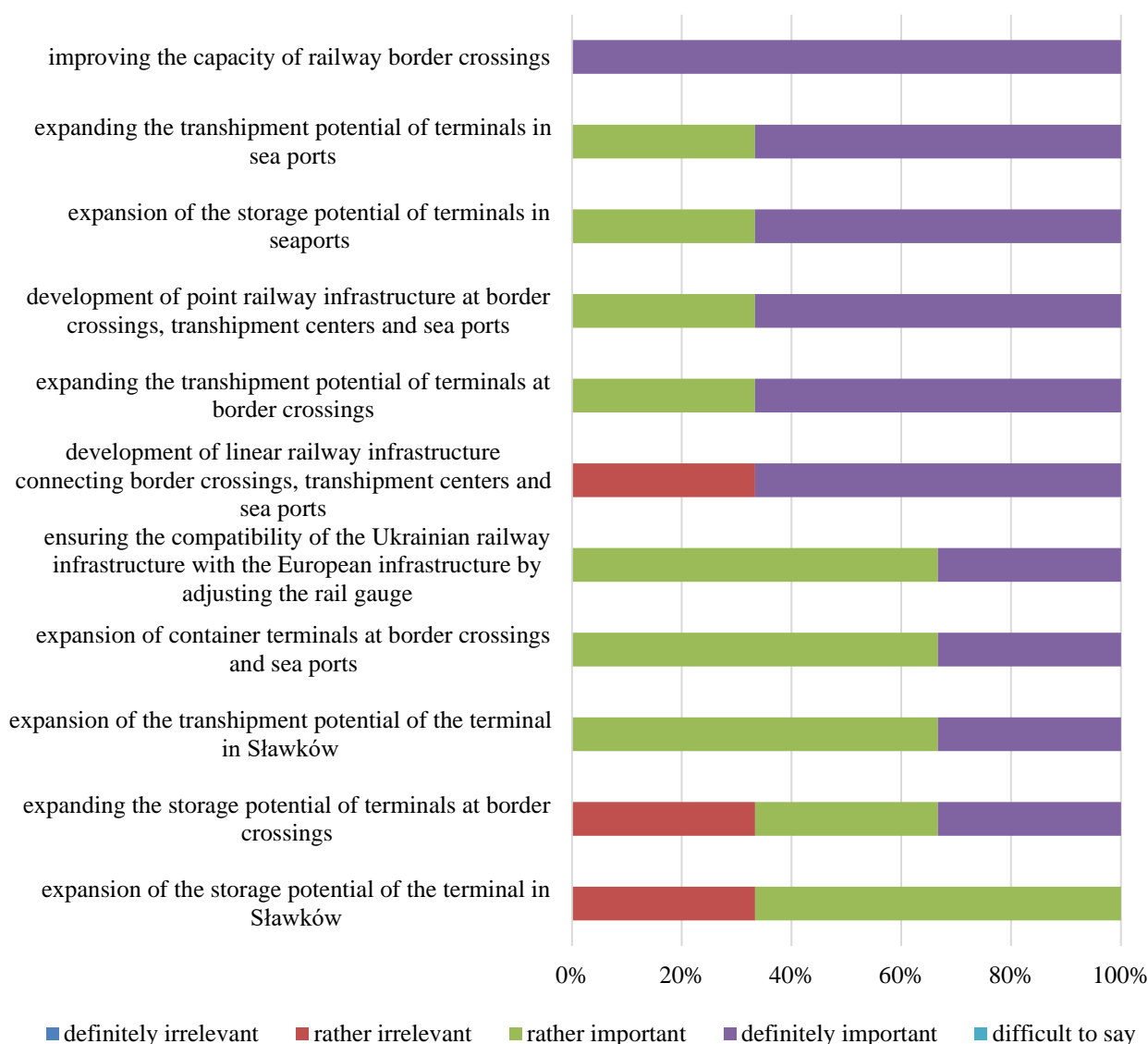


Figure 7. Ranking of importance of activities improving the transit of Ukrainian agricultural produce through Poland by rail – the perspective of Polish rail transport companies

Source: own study.

Although it is a non-electrified, single-track line, it ensures easier passage across the border and distances transshipment activities from border crossings, which are bottlenecks in the logistics chain. This line runs far from larger urban centres, hence it has little potential to grow passenger traffic. Therefore, the basis for development investments on this line, e.g. electrification or the construction of a second track, is in particular the intensification of freight transport, e.g. containers from China or Ukrainian grain. It was also possible to obtain external (American) financing for the construction of grain silos in Sławków. Another advantage would be easier control of transported loads (compared to the situation when they are transported by various types

of transport in dispersed directions), which is of great importance from the point of view of preventing the “leakage” of grain declared for transit to the Polish domestic market. Moreover, it would create the possibility of successive delivery of grain to seaports, depending on their transshipment capacity and demand on world markets. This would prevent paralysis in rail transport, which occurred when – under the embargo on Russian coal and in connection with the approaching heating season – priority was given to the transport of coal hastily imported in large quantities from other countries.

Figure 8 summarises, ordered by importance, the activities that – in the opinion of Polish road transport companies – would improve the transit of Ukrainian agricultural produce through Poland by road.

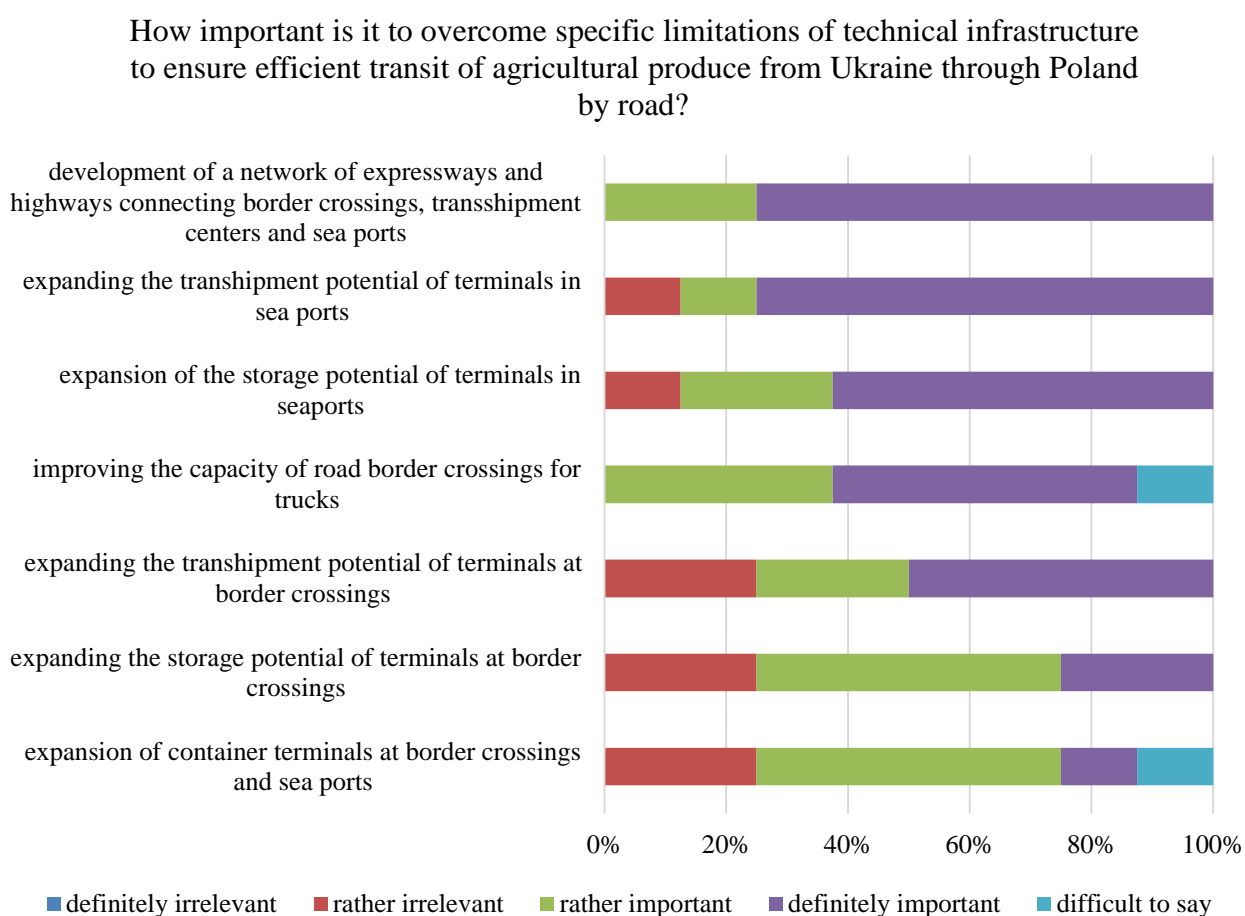


Figure 8. Ranking of importance of activities improving the transit of Ukrainian agricultural produce through Poland by road – the perspective of Polish road transport companies

Source: own study.

The surveyed enterprises see the need to further develop the network of expressways and highways connecting border crossings, transshipment centres, and seaports – all surveyed enterprises considered this action to be definitely (75 %) or rather (25 %) important. The next places on the priority list are the expansion of the transshipment and storage potential of terminals in seaports and the improvement of the capacity of road border crossings for trucks. These activities are definitely

important or significant in the context of improving the transit of Ukrainian agricultural produce through Poland, according to almost 90 % of the surveyed enterprises. The expansion of the transshipment and storage potential of terminals at border crossings is of slightly less importance. The expansion of container terminals at border crossings and seaports is less important, according to the surveyed enterprises. The progressive containerization of grain transport applies not only to rail and road transport but also to sea transport, although technical solutions, such as self-unloading containers with a bottom chute, facilitate the intermodal transport of grain, which after being delivered to the port in containers can then be transported by bulk carriers.

The development of a transit route through Poland would result in an increased Polish contribution to mitigating the effects of the global food crisis caused by the war in Ukraine (Sadłowski et al., 2023). The increased import of Ukrainian agricultural produce to Poland, which accompanies it and is a natural consequence of the liberalisation of trade relations between the EU and Ukraine, causes dissatisfaction and protests among Polish agricultural producers who contest the entire project in the belief that the tightness of transit will not be ensured. Therefore, regardless of infrastructural, technical, regulatory, administrative, or organisational constraints – alternative export routes of Ukrainian agricultural produce were periodically blocked by protesting farmers, opposing the inflow of Ukrainian agricultural produce to the domestic market, accompanied by grain pouring from wagons at border crossings. In this context, it should be noted that the adoption of costly measures to ensure sealed transit (e.g. convoys) during temporary import bans imposed unilaterally by some countries is surprising, as EU trade liberalisation regulations allow imports of goods (including agricultural products) from Ukraine to the EU (except that in the case of some EU member states and certain agricultural products, only transit is temporarily allowed).

From the perspective of Polish transport companies, it is important to prevent unfair competition from carriers from outside the EU. This is another aspect of the matter that makes us realise that the success of the project, which is the transit of a large amount (10 million tons per year) of Ukrainian agricultural produce along the transit route leading through Poland, also depends on the acceptance of various social groups, which in turn requires the development of coherent, systemic solutions at the EU and national level, respecting the demands made by the economic self-government of interested communities.

5. DISCUSSION

This study focuses on the restrictions of the transit route for Ukrainian agricultural products through Poland. It presents the results of unique research aimed at formulating recommendations after diagnosing the situation in key areas that determine the efficiency and effectiveness of this route. Due to undertaken organisational improvements, investments in infrastructure and transportation means, and regulatory changes, the subject of the research demonstrates a high dynamic of change. Consequently, there are few other similar studies with which the obtained results can be compared, especially since the route through Poland is not the most significant

among alternative routes (the main role is played by the route through Romania). The infrastructural and other restrictions of alternative export routes indicated in relatively few publications (Zakharchuk et al., 2022; Bezpartochnyi et al., 2023; Sadłowski et al., 2023) are consistent with the findings resulting from the conducted research and were cited in the previous section of the study.

The thematically related literature explores, in particular, the issue of the increased inflow of Ukrainian agricultural products to the EU market (increase in imports) as a result of the liberalisation of trade relations between the EU and Ukraine (NB, motivated by the facilitation of transit). The scale of this phenomenon and its economic effects are being examined (Mulyk & Mulyk, 2022; Buiak et al., 2023; Hamulczuk et al., 2023a; Sadłowski et al., 2023; Zawojka & Siudek, 2024). Potori & Molnar (2024) highlighted the compensatory effect of Ukrainian maize imports to Hungary, where due to drought in 2022, maize production dropped by over 60 % compared to the average of the previous five years. Sadłowski et al. (2023) studied the effects of the “penetration” of transited cereals into the domestic grain market, as well as assess the possibilities of using various types of transport for the transit of Ukrainian grain through Polish territory, concluding that the rationality of this endeavour requires a dominant role of rail transport in transit, while road transport can only have a supplementary role.

6. CONCLUSIONS

The grain crisis caused by Russia’s invasion of Ukraine has a multidimensional character. From Ukraine’s point of view, its essence is the deepening problems with the export of agricultural produce due to the obstruction of traditional export routes and the underdevelopment of alternative export routes. The growing difficulties in ensuring global food security in the conditions of the war in Ukraine are, in turn, a global manifestation of the grain crisis. At the same time, endemic problems have emerged, manifesting themselves in the economic collapse of farms in EU member states located close to Ukraine, caused by the increased inflow of Ukrainian agricultural produce, which is the local dimension of the grain crisis. Improving the transit of agricultural products from Ukraine via the transit route through Poland would contribute to mitigating the effects of the grain crisis in each of these aspects. This could occur in particular through:

- introduction of 24-hour service for cross-border traffic, which would require an appropriate number of border guard employees, phytosanitary inspectors, and customs officers at check-in and border control points;
- shortening phytosanitary control and customs clearance of freight trains and trucks, which would require simplifying administrative procedures, increasing the level of automation of service, or improving the process of information exchange between services and border inspections;
- increasing the capacity of border crossings to enable the flow of larger streams of goods, which requires further modernisation and expansion to ensure better functionality (in the case of railway crossings – in conditions of incompatibility of

Ukrainian railway tracks with the standard gauge infrastructure);

- increasing the transshipment and storage potential of terminals – primarily at border crossings and seaports, but also in other transshipment centres, which requires the creation of favourable conditions for investments (especially private ones) in specialised equipment and technical infrastructure;

- eliminating the shortage of means of transport adapted to the transport of agricultural produce, especially in the case of rail transport, which requires the creation of favourable conditions for investing in specialised rolling stock;

- increasing investments to eliminate the shortcomings of point and linear railway infrastructure on the routes leading from the border with Ukraine to the largest Polish seaports.

The success of the project also depends on social support. In this context, what is important is the credibility of the policy pursued and the coherence and stability of the solutions introduced at the EU and national levels, which builds a climate of trust and certainty.

The implementation of the recommended actions would increase the transport capacity of the transit route for Ukrainian agricultural products through Poland. Forecasting the impact of individual activities on the potential of this route would require adopting a lot of assumptions, in particular, because the material resources (including infrastructure) and human resources absorbed for the transit of Ukrainian agricultural products are also used to meet other transport needs, including increased demand for transport services in relations with Ukraine as a result of (i) the supply needs of the country at war (the humanitarian and military aid), (ii) the liberalisation of trade relations between the EU and Ukraine, which results in the trade creation and diversion effects, (iii) the forced reconfiguration of logistics connections due to the new geopolitical situation.

7. LIMITATIONS AND FUTURE RESEARCH

The limitations of this study primarily stem from the relatively small group of transport companies participating in the research (the sample size was too small to be considered representative). As a result, the empirical material was too limited to allow the use of advanced statistical methods. In addition, the study refers only to the transit route leading through Poland, while other alternative export routes for Ukrainian agricultural products operate in parallel, developed within the framework of the EU solidarity lanes. Therefore, further research in this area would be valuable, especially with a broader subjective and spatial scope.

Potential directions for future research include comparative studies of different alternative routes, specifically aimed at determining the role of each route in supplying hitherto and exploring new markets. Operational research in this field also holds significant applicative potential. Optimisation models would require a different type of data input but could help minimise transport costs or reduce the negative environmental externalities associated with transportation. In the post-war context, a highly practical research issue could be examining how the logistical connections developed for the

transit of Ukrainian agricultural products during the war might be used to meet Ukraine's supply needs during its reconstruction.

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Conflicts of interest: the authors declare no conflict of interest.

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