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Marketing Mechanism for the Adaptation of Ukrainian Enterprises to Wartime Conditions Amid Geopolitical and Economic Challenges

By Svitlana Kovalchuk[1], Iryna Perevozova[2], Anastasiia Abdullaieva[3], Alona Tanasiichuk[4], Ihor Zhuk[5], Sergii Vyshniuk[6] , Olena Garmatiuk[7]

ABSTRACT

This study examines the development of a marketing mechanism to support the adaptation of Ukrainian enterprises in the face of geopolitical and economic challenges. It is argued that wartime conditions and geopolitical instability significantly affect business operations, particularly in areas such as sales, production, raw material supply, logistics, and other critical processes. The research demonstrates that the formulation of adaptive marketing strategies and mechanisms enables enterprises to maintain competitiveness during crisis periods. Developing and implementing marketing adaptation mechanisms is identified as a key success factor for Ukrainian businesses operating under extreme conditions of war and geopolitical uncertainty.

The study highlights that implementing modern methods of marketing adaptation requires acknowledging that contemporary businesses are subject to constant transformation due to rapid changes in the economic environment. Globalization, technological advancements, shifts in consumer demand and competition, and the need to adapt to wartime realities amid geopolitical and economic upheavals represent only a few of the challenges enterprises face. Accordingly, the study focuses on the rationale for adopting modern marketing adaptation methods. These include market analysis, attracting new customers, retaining and expanding existing customer bases, developing optimal strategies to respond to economic difficulties using marketing approaches, adaptive models that account for rapid changes in consumer behavior and psychological triggers under crisis conditions, building logistics management systems, and identifying key success factors for enterprise adaptation in times of economic distress.

The findings conclude that the war in Ukraine has led to a decline in investment and consumer demand. Manufacturers face limited access to international markets due to export restrictions, disrupted supply chains, and other trade barriers. Security costs for personnel and facilities have increased amid the intensifying conflict, and military actions often result in damage or loss of equipment and infrastructure. Companies located in frontline regions have been especially affected, with many forced to relocate to host communities during the war.

It is argued that an effective marketing-based resource management mechanism is a crucial component of a successful marketing strategy. This mechanism involves the optimal use of a company's financial, human, and material resources. Therefore, it is recommended that companies take into account market needs, the competitive landscape, and internal capacities and constraints to identify the most strategically important markets for achieving business goals and allocate resources accordingly.

[1]Professor, Head of the Department of Marketing and Management, Khmelnytskyi Cooperative Trade and Economic Institute, Ukraine.
[2]Head of the Department of Entrepreneurship and Marketing Ivano-Frankivsk National Technical University of Oil and Gas, Ukraine.
[3]Associate professor at the Department of Finance, Vinnytsia Institute of Trade and Economics of State University of Trade and Economics, Ukraine.
[4]Professor of the Department of Marketing and Advertising, Vinnytsia Institute of Trade and Economics of State University of Trade and Economics, Ukraine.
[5]Postgraduate student ESP Management Ivano-Frankivsk National Technical University of oil and gas, Ukraine.
[6]Postgraduate student, Khmelnytskyi National University, Ukraine.
[7]PhD, Senior Lecturer at the Department of Marketing, Management and Business Management, Institute of Economy and Business Education, Pavlo Tychyna Uman State Pedagogical University, Uman, Ukraine.

The study explores the methodology of Target Market Analysis (TAM), which offers deeper insights into the market and allows companies to make data-driven decisions aligned with their specific growth objectives. TAM helps businesses understand the total market size, identify opportunities for specific products, and assess how best to capture value within their target segments. A clear understanding of one's target market is vital for making strategic decisions and setting priorities in a competitive business environment.

A conceptual perspective is proposed on the marketing mechanism for retaining existing customers while acquiring new ones. This dual strategy involves maintaining loyalty among the current customer base through loyalty programs, discounts, and personalized services, while also implementing initiatives to attract new clients. The comprehensive application of these strategies can significantly enhance a company's success by ensuring a steady flow of customers and increasing its profitability. Another key advantage is the improvement of customer loyalty to the brand, especially under conditions of economic instability.

An assessment of commodity markets in Ukraine most affected during the war has made it possible to better understand supply and demand dynamics, and the competitive landscape, and to analyze and develop strategic pathways for enterprises producing products within commodity group 72 – "Iron and Steel." The application of a marketing adaptation mechanism enabled the formulation of recommendations for Ukrainian enterprises on how to adjust their products under complex and unstable conditions, thereby ensuring competitiveness and resilience in times of military conflict and geopolitical tensions.

Based on the analysis of export dynamics for the metallurgical industry (commodity group 72 – "Iron and Steel") in Ukraine from 2020 to 2024, it is concluded that the war had a profoundly negative impact on foreign economic activity. While 2021 marked the peak in exports for this commodity group, a sharp decline followed due to the war and other geopolitical and economic disruptions, including logistical breakdowns and the blockade of seaports. However, signs of stabilization emerged in 2024. Ukrainian exports demonstrated notable flexibility: a decrease in exports of iron and steel to certain countries was offset by growth in others, such as Moldova, Slovenia, and Greece.

An evaluation of market convergence was carried out for potential export destinations including China, Mexico, India, South Korea, Belgium, France, Vietnam, Spain, Thailand, and Indonesia. The analysis revealed similarities in business environments, which may be beneficial for Ukrainian industrial enterprises exporting iron and steel products. Among these, Belgium, France, and Spain were identified as the most promising markets due to their relative geographic proximity, high-quality infrastructure, trade openness, and political stability. The study emphasizes the importance of systematically accounting for current logistical constraints and actively seeking alternative export routes, considering the blockade of Black Sea ports and the destruction of transport infrastructure. Logistics flexibility is deemed a key factor for restoring export volumes of commodity group 72 – "Iron and Steel" in 2025.

The findings of this study will support the adaptation of Ukrainian enterprises to wartime conditions amid geopolitical and economic challenges, helping them avoid missing timely opportunities to access new international markets.

Keywords: marketing mechanism, geopolitical challenges, economic challenges, logistics, adaptive marketing strategies, competitiveness, consumer demand, competition, logistics management, international markets, export restrictions, disrupted supply chains, trade barriers, logistics, trade barriers, resource management, allocate resources, Target Market Analysis (TAM), Iron and Steel, marketing adaptation mechanism, foreign economic activity of enterprises, exports, market convergence, trade openness, political stability, logistical constraints, transport infrastructure, Logistics flexibility, logistics potential of enterprises.

1. Introduction

The development of a marketing adaptation mechanism for Ukrainian enterprises under geopolitical and economic challenges is a critical issue in light of the current situation in the country. Wartime conditions and geopolitical instability significantly impact business

operations, particularly in terms of sales, production, raw material supply, logistics, and other essential processes. Designing effective marketing strategies and adaptation mechanisms is vital for enabling enterprises to remain competitive during times of crisis. The development and implementation of such mechanisms is a key success factor for Ukrainian businesses operating under the harsh conditions of war and geopolitical tension.

This study explores the key factors influencing the creation of a marketing adaptation mechanism for Ukrainian enterprises under wartime and crisis conditions.

The formulation of optimal strategies to address economic hardships using marketing approaches is of great importance and relevance in today's environment. Ukrainian businesses must address many challenges, including economic instability, market volatility, consumer competition, and other factors that may affect their performance. Applying marketing-based strategies allows enterprises to adapt to market changes, respond to competitive pressures, attract new customers, and retain existing ones. A well-chosen marketing strategy can help optimize costs, increase sales volumes, and improve overall competitiveness. Ukrainian enterprises that effectively implement marketing strategies in their operations are more likely not only to survive in the market but also to grow and expand onto the international stage.

The implementation of modern methods of marketing adaptation in response to changes in the economic environment is based on the understanding that today's businesses are undergoing constant transformation due to the rapid pace of economic shifts. Globalization, technological advancement, changes in consumer demand and competitive dynamics, and the need to adapt to wartime conditions amid geopolitical and economic challenges are just some of the factors that present significant obstacles for enterprises. The adoption of modern marketing adaptation methods enables businesses to remain competitive in an environment of continuous change. This includes analyzing and adjusting marketing strategies to align with new conditions, particularly through the use of digital technologies, personalized consumer approaches, and data-driven decision-making.

The practical implementation of these modern marketing adaptation methods will allow enterprises not only to survive in a complex economic climate but also to grow and secure leading positions in both domestic and international markets.

The issue of analyzing the impact of economic challenges and wartime conditions within a broader context of geopolitical and economic disruptions on business processes and market positioning is highly relevant in today's world. War and geopolitical conflicts can instantly reshape a country's economic landscape — leading to currency volatility, decreased production and consumption, and disruptions in supply chains. For businesses, this necessitates continuous marketing research to monitor changes in the economic environment. Underestimating the impact of war and geopolitical factors may result in severe losses, while timely marketing research can help companies maintain competitiveness and secure a strong position in both domestic and international markets.

Identifying the factors that contribute to successful enterprise adaptation in response to economic challenges through marketing tools is a crucial step in the modern business environment. Enterprises must analyze the market, attract new customers, retain and expand their existing customer base, enhance their competitiveness, and adapt to rapidly changing conditions. These efforts allow them to effectively manage market shifts and ensure continued success.

The formation of a logistics potential management system has become increasingly important under current geopolitical and economic challenges. Managing a company's logistics capabilities ensures optimal resource utilization, reduces transportation and storage costs, improves customer service quality, and increases overall profitability. Furthermore, a well-structured logistics management system contributes to the improvement of production processes and enhances competitiveness in both domestic and international markets. In a time of rapid technological development and rising competition, effective logistics management has become essential for enterprises, enabling them to respond swiftly to market changes, optimize supply chains, boost customer satisfaction, and strengthen their capacity to adapt to complex geopolitical and economic conditions.

One of the fundamental aspects of logistics management during wartime is the necessity of balancing rapid response capabilities with the imperative to ensure the safety of shipments and supply chains. Companies can achieve this objective through the deployment of advanced monitoring and protection systems, as well as the development of flexible strategies for responding to evolving conditions. To maintain efficiency and adaptability in logistics under conflict conditions, companies should treat logistics as a strategic priority, integrating it into decision-making processes across all organizational levels. This approach encompasses enhancing crisis preparedness and training personnel to operate effectively under threat scenarios. In general, a successful logistics strategy during wartime is characterized by a company's ability to balance speed, security, and operational efficiency, thereby establishing a resilient and adaptive infrastructure capable of enduring diverse challenges. To successfully adapt to wartime conditions and broader geopolitical and economic challenges, several key aspects must be considered. First, it is vital to develop optimal strategies for responding to economic difficulties using marketing approaches that allow enterprises to adjust effectively to societal shifts. Second, the implementation of modern marketing adaptation methods is essential for remaining competitive. Third, it is necessary to implement adaptive models that take into account rapid changes in consumer behavior and psychological triggers during crises, such as event-driven responses, flexible adaptation mechanisms, and emotional intelligence. Fourth, marketing research into the impact of economic challenges on business processes and market positioning must be carried out to enable timely responses. Fifth, identifying the key success factors for enterprise adaptation through contemporary marketing tools can help mitigate risks and ensure business stability. Finally, the establishment of a logistics management system is a fundamental component of successful adaptation, as efficient logistics play a pivotal role in maintaining optimal enterprise operations during periods of change.

2. Literature Review

Various sources have explored the issue of marketing adaptation mechanisms for Ukrainian enterprises operating under wartime conditions amid geopolitical and economic challenges. Potential sources for such research may include academic journals focused on marketing strategies in conflict zones, case studies of Ukrainian companies operating

under extreme conditions, reports by international organizations on the impact of war on business practices, and analyses by experts in the fields of marketing and conflict studies.

Theoretical and methodological foundations for developing optimal strategies to respond to economic difficulties using marketing approaches have been addressed in the works of Porter M. [1985], Pavlenko A.[2008], Illiashenko S. [2023], Kudenko N. [2012], and Lambin J.-J [2012].

These studies devote significant attention to how companies can use marketing analysis tools such as SWOT analysis (assessing strengths, weaknesses, opportunities, and threats), competitor analysis, market segmentation, and supply-demand assessments. According to these scholars, applying evidence-based methodological approaches to the development of marketing adaptation mechanisms can improve business outcomes for Ukrainian enterprises facing economic challenges.

The issue of applying modern methods of marketing adaptation to enhance competitiveness has been addressed in the works of McDonald, Ansoff I. [1979], Shramenko O. [2021], Zhylina H. [2019], Zadorozhna S. [2019], and Bilovodska O. [2016]. Their research offers valuable insights into the complexities of selecting appropriate marketing adaptation methods that can help businesses remain competitive in both domestic and international markets.

The process of conducting marketing research into the effects of economic challenges on business processes and market positioning has been explored by Dlihach A., Zozulov O. [2017], Lylyk I., and Fedorchenko A. [2021]. In-depth studies on the development of enterprise logistics potential management systems have been carried out by Krykavskyi Ye. [2017], Chukhrai N., Chornopyska K., Velychko O. [2006].

These studies underscore the complexity and critical importance of business adaptation to changes in the modern economic environment.

The study of the marketing adaptation mechanisms of Ukrainian enterprises to wartime conditions and geopolitical and economic challenges is of significant importance in the modern world. Not only does it enable businesses to effectively counteract the negative consequences of conflict, but it also opens up new development opportunities. One of the key aspects of such research is the exploration of contemporary marketing tools that can be successfully applied in wartime conditions. Proactive planning and the adaptation of marketing strategies are becoming essential for ensuring the successful operation of enterprises in such circumstances. This research has a synergistic nature, as it combines theoretical knowledge with practical experience in the field of marketing. It helps identify optimal strategies and tools for supporting business in times of danger and instability. Thus, the study of marketing adaptation mechanisms for Ukrainian enterprises under conditions of war, geopolitical shifts, and economic disruptions represents an important step toward ensuring resilience and competitiveness in challenging environments.

3. Results of the Study

Ukrainian enterprises face numerous geopolitical and economic challenges during the full-scale invasion of Ukraine by an aggressor state, including economic instability, limited access to international markets, increased security costs, and the risk of equipment

and infrastructure loss. In these conditions, it is crucial for Ukrainian businesses to respond quickly, seek out new opportunities for development, and engage in partnerships with international stakeholders to mitigate the war's economic impact.

The war in Ukraine has led to a decline in both investment and consumer demand, which has negatively affected the financial performance of Ukrainian businesses. Manufacturers have encountered barriers to accessing international markets due to export restrictions, disruptions to supply chains, and other trade obstacles. Expenditures on securing personnel and facilities have risen substantially due to the escalation of conflict, and military action has frequently resulted in damage or loss of company equipment and infrastructure. Enterprises located in frontline regions have been particularly affected, with many forced to relocate to host communities.

Given the geopolitical and economic challenges faced by Ukrainian enterprises - regardless of their size or ownership structure - it is recommended to implement optimal response strategies to economic difficulties through marketing-based approaches in the following key areas (Figure 1).

The application of optimal response strategies to economic difficulties using marketing approaches enables companies to reduce risks and expand their customer base. This contributes to sustainable development amid economic instability, cost optimization, and effective responsiveness to changes in both internal and external environments. Achieving success requires identifying the strengths and weaknesses of the company's products and developing strategies to maintain or enhance their market appeal. It also involves optimizing supply chains across local and international markets. Retaining existing customers and attracting new ones is crucial for ensuring a stable revenue stream and increasing sales volumes. Moreover, improving brand awareness through marketing initiatives and engaging consumer interest in the company's products and brand is essential. Implementing optimal response strategies will help Ukrainian enterprises withstand economic challenges in the context of geopolitical conflict and ensure the resilience and stability of their operations.

Figure 1. Optimal Strategies for Responding to Economic Difficulties Using Marketing Approaches

The market diversification mechanism involves identifying new markets, both local and international, to increase profitability and reduce the risk of losses from adverse changes in any single market. By exploring new markets, companies can expand their customer base and boost sales volumes. Diversification allows risks to be distributed across various markets, thereby reducing dependence on a single source of income. This approach enhances a company's resilience to changes in the economic environment and competitive landscape.

The marketing mechanism for effective resource management is a key component of a successful marketing strategy. This mechanism involves the optimal use of a company's financial, human, and material resources to achieve strategic objectives. Effective resource management requires taking into account market needs, the competitive landscape, and the company's internal capabilities and constraints. One of the central aspects of effective resource management in marketing is identifying strategic priorities

and allocating resources accordingly. A company must accurately determine which markets are most critical to its business goals and direct its resources to those areas. Moreover, effective resource management entails continuous monitoring and analysis of outcomes to promptly detect inefficiencies and make necessary adjustments to the strategy. In wartime conditions, efficient resource management enables companies to pursue and achieve their objectives more effectively.

The goal of a marketing adaptation mechanism for Ukrainian enterprises operating under wartime conditions and facing geopolitical and economic challenges is to establish market leadership and ensure competitiveness in the modern business environment. Businesses require in-depth, targeted market analysis, as it helps identify which products or services are in demand, where the consumers are located, and what their needs and expectations are. This information makes it possible to identify potential customers, design effective marketing strategies, uncover new profit opportunities, ensure a high level of competitiveness, and detect threats from competitors promptly.

During the adaptation of Ukrainian enterprises to wartime conditions amid geopolitical and economic challenges, it is recommended to conduct Target Market Analysis (TAM), which offers deeper insights into the market and allows companies to make data-driven decisions aligned with their specific growth goals. TAM helps businesses understand the total addressable market, identify opportunities for specific products, and evaluate the viability of market entry. Understanding one's target market is essential for strategic decision-making and setting priorities in a competitive environment (Figure 2).

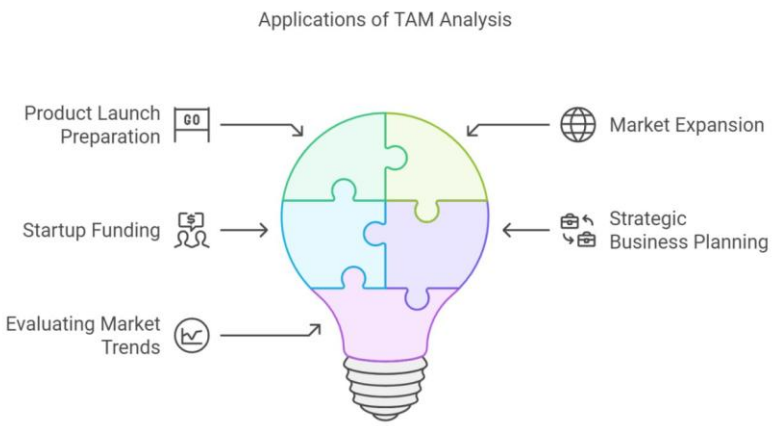

Figure 2. Key Applications of Target Market Analysis (TAM)

During the adaptation of Ukrainian enterprises to wartime conditions and broader geopolitical and economic challenges, the evaluation of market trends through targeted TAM analysis helps identify demand for specific products or services in particular regions. This enables businesses to adjust their strategies and adapt product assortments in response to evolving market conditions (Figure 3).

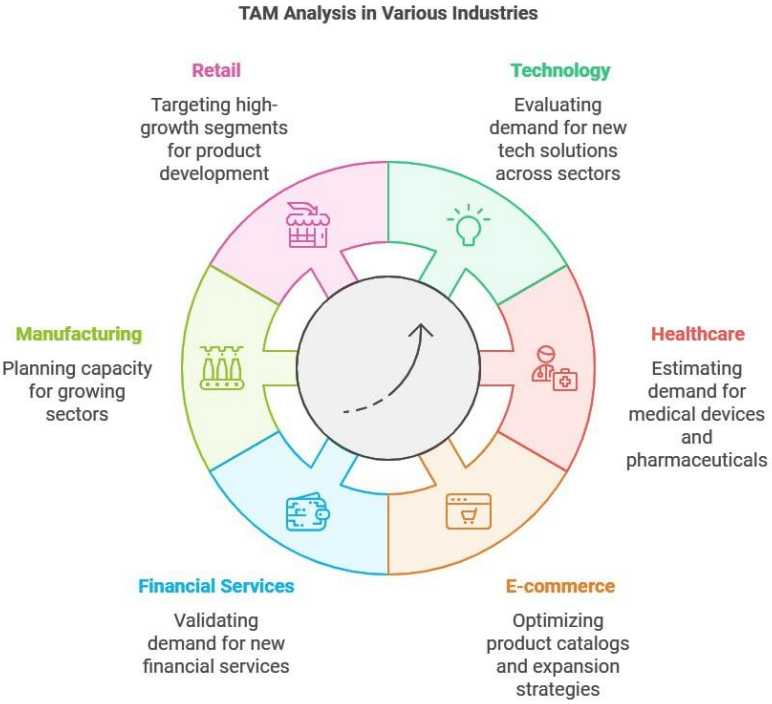

Figure 3. Industries of Target Market Analysis (TAM) Application, [2024]

TAM (Target Market Analysis) is a critically important tool across various industries. It enables companies to assess market potential, identify growth opportunities, and make informed decisions regarding expansion.

The marketing mechanism for retaining existing customers and attracting new ones combines strategies focused on maintaining the current client base while bringing new customers into the company. To attract new clients, businesses may employ various marketing tools such as promotional offers, campaigns, and advertising initiatives. Customer retention encompasses the implementation of loyalty programs, discount initiatives, personalized services, and the consideration of behavioral changes among consumers affected by hostilities, with the objective of maintaining their loyalty and stimulating repeat purchases. The integrated application of these strategies ensures a stable customer inflow to the company and contributes to its overall profitability.

Adaptive models that must account for rapid changes in consumer behavior and psychological triggers under crisis conditions include the event-driven response model, the flexible response model, and the emotional intelligence model. The event-driven response model emphasizes the necessity for immediate reaction to crisis events through the analysis of consumer demand dynamics and psychological factors, thereby enabling swift adjustments in marketing strategies and communications to sustain customer engagement. The flexible response model advocates for agile planning and the rapid modification of strategies in response to unforeseen market shifts, including the prompt adaptation of advertising campaigns and products to evolving consumer needs during periods of

instability. The emotional intelligence model underscores the capability to identify and address psychological triggers such as stress, anxiety, and uncertainty, facilitating the development of marketing strategies that are both empathetic and effective, ultimately aimed at providing support and fostering a sense of security among consumers during crisis scenarios.

Enhancing brand awareness is a key component of the marketing adaptation mechanism for Ukrainian enterprises under wartime conditions and in the face of geopolitical and economic challenges. It plays a crucial role in increasing consumer attention to the company's products or services. This process includes a range of strategies such as advertising, public relations, sponsorship, social media engagement, and marketing campaign execution. The primary goal is to make the brand recognizable among the target audience and to increase its attractiveness in comparison to competitors.

We now proceed to a practical assessment of the situation in a specific product market and demonstrate the application of the proposed marketing adaptation mechanism for Ukrainian enterprises operating under wartime geopolitical and economic challenges.

An in-depth assessment of the commodity markets in Ukraine that have been most severely affected by the war can offer valuable insights into demand and supply dynamics, competitive conditions, and potential directions for business development. Implementing a marketing adaptation mechanism enables Ukrainian enterprises to align their products and services with evolving customer needs in a highly volatile environment, supporting both their competitiveness and long-term resilience amid military conflict and geopolitical instability.

We will analyze the dynamics of Ukraine's exports during the period from 2020 to 2024, identify the commodity groups that have emerged as export leaders, and accordingly, determine the enterprises engaged in export activities within these groups that require the development of marketing adaptation mechanisms in response to wartime challenges (Table 1).

Table 1. Dynamics of Ukraine's export volumes by commodity groups, 2020–2024, million USD.

Code	Product label		Ukraine's Export Volume, USD million									
			2020		2021		2022		2023		2024	
	All products		49,2		68,1		44,4		36,2		40,4	
10	Cereals	Relatively stable share. Slight decline in 2023, recovery in 2024.	9,4	19,1	12,3	18,1	9,2	20,7	8,3	22,9	9,4	23,3
15	Animal, vegetable or microbial fats and oils and their cleavage products; prepared edible fats	Moderate volatility. Peak in 2023, slight decrease in 2024.	5,7	11,6	7,0	10,3	5,9	13,3	5,6	15,5	5,8	14,4

12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal	Moderate volatility. Peak in 2023, slight decrease in 2024.	1,8	3,7	2,4	3,5	3,8	8,6	2,9	8,0	3,4	8,4
72	Iron and steel	Growth trend since 2022. Significant increase in export volume.	7,7	15,7	13,9	20,4	4,6	10,4	2,6	7,2	3,1	7,7
26	Ores, slag and ash	Sharp decline during 2022–2023, weak recovery in 2024.	4,4	8,9	7,1	10,4	3,1	7,0	1,9	5,2	2,9	7,2
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television	Similar pattern to metals: substantial decline after 2021.	2,6	5,3	3,1	4,6	2,6	5,9	1,7	4,7	1,5	3,7
23	Residues and waste from the food industries; prepared animal fodder	Declining volumes since 2022.	1,6	3,3	1,7	2,5	1,1	2,5	1,4	3,9	1,5	3,7
44	Wood and articles of wood; wood charcoal	More stable performance, slight growth observed in 2024.	1,4	2,8	2,0	2,9	1,9	4,3	1,5	4,1	1,4	3,5
	Other		14,6	29,7	18,6	27,3	12,2	27,5	10,3	28,5	11,4	28,2

The largest volume of exports from Ukraine was recorded in 2021. A significant decline occurred during 2022–2023, with a partial recovery observed in 2024. The metallurgy and ore sectors experienced the sharpest downturn beginning in 2022 due to the war, destruction of production facilities, and disruptions to logistics. The structure of Ukrainian exports has changed substantially: the share of heavy industry has decreased, while the share of agricultural products has increased.

Since the onset of Russia's full-scale invasion, Ukraine's mining and metallurgical complex has suffered devastating losses — both literally and figuratively. The destruction of production capacity, the closure of traditional transportation routes, efforts to remain afloat in export markets, and a decline in domestic consumption have all posed significant challenges to Ukrainian producers — challenges that have required urgent and innovative responses.

The development of Ukraine's ferrous metallurgy over the past decade has resembled an obstacle course. The Russian invasion in 2014 and its consequences — including the illegal annexation of Crimea and the armed conflict in eastern Ukraine —

triggered an economic crisis in 2014–2015 that had a severe impact on the metallurgical sector due to damaged railway infrastructure, raw material shortages, and shelling of industrial facilities [2022].

Although some recovery was observed in 2016, production volumes declined again in 2017 due to the loss of assets located in temporarily uncontrolled territories of Ukraine. In the following years, the domestic industry was confronted with yet another challenge — the COVID-19 pandemic — which led to market closures and a decline in demand.

An analysis of the export dynamics of ferrous metals indicates that factors such as global market demand, metal prices, production volumes, and the competitiveness of Ukrainian enterprises—as well as broader geopolitical and economic conditions — have significantly influenced the export performance of commodity group 72 "Ferrous Metals" (Table 2).

Table 2. Export Dynamics from Ukraine for Commodity Group 72 "Ferrous Metals," 2019–2023

Period	Export Volume, thousand USD	% of Total Exports from Ukraine
2023	2643089	7,3
2022	4532366	10,3
2021	13950105	20,5
2020	7690560	15,6
2019	8735988	17,5

Source: generated based on State Statistics Service of Ukraine [2025]

The outlook for 2022 was highly uncertain due to a number of negative factors impacting Ukrainian steel producers. One of the most critical was the anticipated escalation of conflict with Russia, which ultimately became a decisive blow. As a result, steel production in Ukraine decreased by approximately 80% compared to 2013, with the greatest losses recorded in 2022 due to the destruction and shutdown of production facilities, the occupation of several ports, the inability to export by sea, and worsening power supply disruptions toward the end of the year.

In 2022, Ukraine produced nearly 6.3 million tonnes of steel — only one-third of the 2021 level. Rolled steel output fell by 72% to 5.4 million tonnes. Consequently, Ukraine dropped out of the top 15 global steel producers, falling from 14th place in 2021 to 25th in 2022 [2022].

Russia's strikes on railway infrastructure and the blockade of seaports created one of the most serious challenges for Ukrainian enterprises, as approximately 65% of metal exports had previously relied on seaport infrastructure. Companies were forced to reroute logistics via rail and alternative European ports, primarily through Romanian, Polish, and Lithuanian ports, instead of traditional Ukrainian ones. Exporters now face limitations due to border rail crossing capacities and incompatible track gauges, which cause delays and force restrictions on metallurgical shipments toward the EU [2022].

Mass missile strikes targeting critical infrastructure caused a complete blackout of Ukraine's energy system in November 2022, leaving both households and industrial enterprises without electricity. This marked the second suspension of core production processes by Ukrainian metallurgical companies since the onset of the full-scale invasion. Once the situation stabilized, enterprises resumed operations under strict energy quotas,

implementing maximum energy-saving measures and reducing equipment loads. By February 2023, the national energy system had returned to balanced generation levels.

In 2023, Ukrainian metallurgical companies increased rolled steel output by 0.4% compared to 2022, reaching 5.37 million tonnes. Pig iron production amounted to 6 million tonnes (6.1% less than in 2022), while steel production reached 6.23 million tonnes, a year-on-year decline of 0.6% [2023].

According to December 2023 data, Ukrainian steelmakers increased rolled steel production by 1.8% compared to the previous month, totaling 508 thousand tonnes. Monthly steel output declined by 4.4% to 520.4 thousand tonnes, while pig iron production rose by 2.8% to 556.7 thousand tonnes [2023].

Compared to December 2022, rolled steel output in December 2023 grew by a factor of 4.7, steel production by 3.9 times, and pig iron by 2.2 times.

By the end of 2024, Ukrainian metallurgical companies had increased pig iron production by 18.1% compared to 2023—from 6 million tonnes to 7.09 million tonnes. However, this figure remains significantly lower than pre-war levels. For instance, in 2021, pig iron output exceeded 21.16 million tonnes. Reaching such volumes is currently unfeasible due to the loss of integrated plants located in active combat zones.

The recovery of pig iron production in 2024 was facilitated by the reopening of maritime export channels earlier in the year, enabling deliveries to distant international markets. As a result, rolled steel production increased, and demand for pig iron grew. However, by the end of the year, global demand for steel had weakened, and domestic producers were forced to adjust production volumes due to persistent energy supply issues, rising electricity tariffs, and increased logistics costs.

Ukraine's metallurgical industry remains export-oriented. The following section examines the dynamics of global imports of metallurgical products and identifies the international markets with consistent demand for commodity group 72 "Ferrous Metals" (Table 3).

Table 3. Global Import Dynamics of Commodity Group 72 "Ferrous Metals," 2020–2024, USD

Import Markets	Import Volume, USD					Deviation		
	2020	2021	2022	2023	2024	2022/2021	2023/2022	2024/2023
World	339534,7	555102,4	592272,4	497523,4	296293,8	6,3	-19,0	-67,9
China	36901,2	43569,0	43662,1	36811,9	32071,3	0,2	-18,6	-14,8
United States	18799,9	38904,1	44933,0	33156,0	32993,6	13,4	-35,5	-0,5
Germany	21603,6	35352,2	39651,6	31987,5	28874,2	10,8	-24,0	-10,8
Italy	14855,3	28486,7	31965,7	25406,0	22868,0	10,9	-25,8	-11,1
Turkey	15102,9	27618,0	28366,9	24160,2	23659,3	2,6	-17,4	-2,1
Mexico	8802,8	17523,9	20822,2	21547,1	-	15,8	3,4	-
India	7550,9	11680,0	16740,8	18904,2	17673,4	30,2	11,4	-7,0
South Korea	11120,2	18490,6	18943,8	16471,7	14242,5	2,4	-15,0	-15,7

Belgium	9636,6	1772,3	19269,3	14479,8	8873,5	90,8	-33,1	-63,2
France	9657,5	15299,0	17198,5	14322,9	12670,0	11,0	-20,1	-13,0
Poland	8588,6	15227,8	16062,3	13144,1	12177,8	5,2	-22,2	-7,9
Vietnam	9900,3	14744,2	14329,1	12426,1	-	-2,9	-15,3	-
Spain	7893,9	13269,5	14362,2	12379,5	12063,9	7,6	-16,0	-2,6
Thailand	9345,5	15309,2	14552,2	12123,6	11169,9	-5,2	-20,0	-8,5
Indonesia	6855,2	11957,1	13928,2	11381,1	10664,4	14,2	-22,4	-6,7

Source: generated based on TRADE MAP [2025]

According to statistical data, global imports of commodity group 72 "Ferrous Metals" declined from 2022 to 2023. In 2020, the import value stood at USD 339,534.7 thousand, rising to USD 555,102.4 thousand in 2021 and reaching a peak of USD 592,272.4 thousand in 2022. However, in 2023, the value decreased to USD 497,523.4 thousand, followed by a further decline to USD 296,293.8 thousand in 2024. These figures indicate that global imports of ferrous metals experienced steady growth up to 2022, followed by a downward trend in 2023 and a continued decline in 2024.

The distribution of the top 15 global importers of commodity group 72 "Ferrous Metals" for the period 2020–2024, ranked by import volume, is shown in Figure 4.

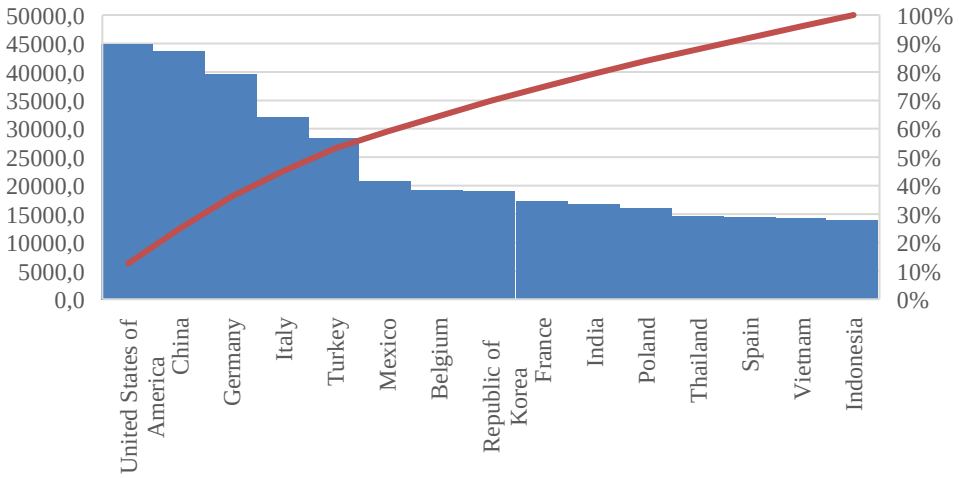

Figure 4. Distribution of Data in Descending Order, Pareto Chart with a Secondary Axis Showing Cumulative Percentage, Top 15 Global Importers of Commodity Group 72 "Ferrous Metals," 2020–2024

Based on the presented Pareto chart (Figure 4), which illustrates the activity of the top 15 global importers of commodity group 72 "Ferrous Metals" over the period 2020–2024, several key conclusions can be drawn. The leading importers are the United States, China, and Germany, which together account for approximately 50% of global ferrous metal imports. This indicates a high level of dependency on imports in these markets. The

United States is the largest importer, likely due to high domestic consumption combined with insufficient internal production. Medium-level demand is observed in Italy, Turkey, Mexico, and Belgium. These are industrialized markets with developed metallurgical sectors, but possibly with smaller production capacity than the top three. At the bottom of the ranking are Spain, Vietnam, and Indonesia, each contributing less than 5% to global imports. Nonetheless, their share remains economically significant on a global scale.

The cumulative percentage is shown by the orange curve, indicating that the top five markets account for around 70% of total imports. After the tenth market, the decline becomes less steep — this reflects a typical Pareto distribution, where 20% of the players generate 80% of the outcome. Ferrous metal imports are clearly concentrated in a small number of key markets, highlighting their strategic importance in the global economy.

The data also reveal that approximately 70–75% of total imports are concentrated within the top five markets, with the top ten accounting for over 90%. This reflects a clear instance of disproportionate distribution, where a limited number of countries absorb the vast majority of global import volumes.

These findings are valuable for market participants in the ferrous metals sector — exporters, logistics providers, and traders — as they enable more effective targeting of key markets and forecasting of demand dynamics.

It is evident that the war in Ukraine has impacted global ferrous metal imports due to the sharp decline or halt in domestic production. This has led to instability in the global market for commodity group 72 "Ferrous Metals" and resulted in declining import volumes among the top 15 leading importer countries.

The next section analyzes the dynamics of Ukrainian exports of commodity group 72 "Ferrous Metals" over the period 2020–2024 (Table 4).

Table 4. Dynamics of Ukraine's Exports of Ferrous Metals (Commodity Group 72) in 2020–2024

Import Markets	Export Volume, USD					Deviation		
	2020	2021	2022	2023	2024	2022/ 2021	2023/ 2022	2024/ 2023
World	7690,6	13950,1	4559,6	2647,7	3095,9	-206,0	-72,2	14,5
Poland	376,8	1391,3	1274,6	1064,1	751,8	-9,2	-19,8	-41,5
Bulgaria	251,9	527,9	464,1	372,2	549,0	-13,7	-24,7	32,2
United States	554,3	912,3	264,7	67,6	379,5	-244,6	-291,8	82,2
Italy	932,4	2040,7	309,9	177,0	219,3	-558,4	-75,1	19,3
Turkey	927,3	1974,3	379,6	99,2	179,7	-420,0	-282,8	44,8
Egypt	198,6	199,1	89,9	11,0	178,1	-121,4	-717,8	93,8
Romania	153,8	247,9	241,0	140,6	174,4	-2,8	-71,4	19,4
Moldova	48,3	86,2	70,2	75,1	105,7	-22,9	6,6	28,9
Greece	38,6	94,2	32,3	41,4	92,9	-191,6	22,0	55,4
Dominican Republic	81,8	357,0	62,5	28,2	53,8	-470,9	-121,8	47,6
Germany	87,3	126,5	77,4	47,1	52,0	-63,3	-64,4	9,4

Israel	104,7	171,3	29,1	4,0	34,0	-489,6	-629,3	88,3
Czech Republic	37,2	91,3	39,4	34,3	30,2	-131,7	-14,9	-13,6
Slovenia	1,1	15,6	3,6	10,1	27,0	-333,7	64,5	62,6
Serbia	36,9	55,3	14,5	26,3	25,6	-280,9	44,9	-2,7

Source: generated based on TRADE MAP [2025]

An analysis of the global export dynamics for commodity group 72 "Ferrous Metals" from 2020 to 2024 shows that export volumes peaked in 2021. This was followed by a sharp decline in 2022–2023, which can be attributed to the full-scale war in Ukraine, related geopolitical and economic disruptions, logistics challenges, and a significant drop in domestic production. However, in 2024, early signs of recovery appeared, with nearly a 100% increase in export value compared to 2023.

An examination of import volumes by Ukraine's partner countries shows that Poland demonstrated substantial growth between 2020 and 2021, peaking in 2022. Since then, there has been a steady decline, with a 41.5% drop in 2024 compared to 2023. Nevertheless, Poland remains a key importer of Ukrainian ferrous metals.

Bulgaria's import dynamics have been more volatile, yet in 2024 there was a notable increase of 32.2%. This could indicate a potential rise in demand or a redirection of supply routes.

The U.S. market saw a steep decline in imports of Ukrainian ferrous metals after 2021, falling from 912,000 to just 67,000 in 2023. A partial recovery took place in 2024 (+82.2%), although volumes remain well below pre-war levels.

Italy's market experienced a dramatic collapse in import volumes in 2022, with a minor recovery in 2023–2024 (+19.3%).

Turkey followed a similar trend, with increased import volumes in 2021, followed by a decline. However, a 44.8% increase in 2024 signals renewed interest, which could encourage Ukraine to boost exports to this market in 2025.

The Egyptian market experienced a drastic drop in 2023 — down over 700% — but rebounded in 2024 to nearly pre-war levels. Meanwhile, the Israeli market saw imports drop to near zero in 2023, with some recovery in 2024.

The markets of Romania, Moldova, and Greece showed relatively stable trading with fluctuations. The Moldovan market has shown a steady growth trend, which is a positive signal for Ukrainian businesses, while the Greek market experienced a recovery in import activity in 2023–2024 (+55.4%).

The Dominican Republic emerged as an atypical importer of Ukrainian ferrous metals, demonstrating a significant spike in 2021. However, following the outbreak of war in Ukraine, import volumes sharply declined. In 2024, Ukrainian enterprises resumed export activity, resulting in almost a twofold increase in exports of commodity group "72 Ferrous Metals" to this market.

Markets such as Germany, the Czech Republic, Slovenia, and Serbia also responded to the war in Ukraine with a general decline after 2021. Notably, the Slovenian market showed substantial growth in 2023–2024 (almost +60%).

Summarizing the results of the analysis of Ukraine's ferrous metal exports (commodity group 72) for the period 2020–2024, we can conclude that the war in Ukraine

has had a significantly negative impact on the country's international trade. The year 2021 marked a peak in exports, followed by a collapse due to the war and other geopolitical and economic challenges, logistics disruptions, and blocked ports. In 2024, the first signs of stabilization appeared, reflecting the flexibility of Ukrainian exports: the decline in certain markets was accompanied by growth in others (e.g., Moldova, Slovenia, Greece).

For stakeholders in the ferrous metals market — importers, Ukrainian exporters, logistics companies, and traders — it is essential to take these findings into account to avoid missing opportunities for timely entry into new markets.

Pareto chart showing the frequency distribution and cumulative percentage on a secondary axis, for the TOP-15 importers of commodity group "72 Ferrous Metals" from Ukraine, 2020–2024 (Figure 5).

Based on the analysis of the TOP-15 importers of commodity group "72 Ferrous Metals" from Ukraine, the Pareto chart reveals that the TOP-5 importing markets — Poland, Bulgaria, Turkey, Italy, and the USA — account for over 80% of Ukraine's total exports in this group.

Poland is the clear leader, with import volumes exceeding $1.2 million (≈ 40–45% of Ukraine's total exports of commodity group "72 Ferrous Metals"). Bulgaria ranks second, with nearly half the volume of Poland, yet remains a stable importer of Ukrainian ferrous metals.

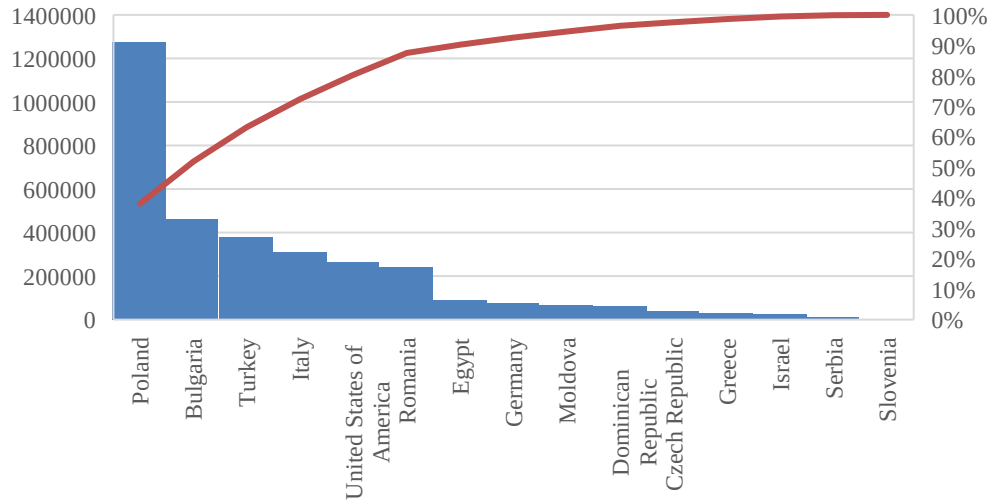

Figure 5. Frequency Distribution, Pareto Chart, with the Cumulative Line as a Percentage of the Total Value, TOP-15 Importers of Product Group "72 Iron and Steel" from Ukraine, 2020–2024

The Turkish market is important for Ukrainian businesses due to its strategic location and proximity. The Italian market demonstrates potential for expanding cooperation, while the U.S. market, despite the logistical distance, remains among the key buyers.

Thus, a cumulative effect (Pareto analysis) is observed, where the top five importing partner markets account for over 80% of all exports of product group "72 Iron and Steel" from Ukraine. This confirms the Pareto principle (80/20) — a small number of countries represent the majority of export volume.

The second half of the list (markets such as the Czech Republic, Greece, Israel, Serbia, and Slovenia) contribute a minimal share (up to 5%) but is essential for risk diversification. To reduce risks and sustain revenue from cooperation with these markets, Ukrainian exporters should explore new niches among less active importers, taking into account geopolitical shifts, transport infrastructure, and customs policies in target countries.

Next, we identify potential import markets for Ukrainian "72 Iron and Steel" products based on the overlap between the top 15 global importers and the top 15 importers of Ukrainian steel goods.

By identifying markets that are simultaneously major global importers of "72 Iron and Steel" and show high demand for such products, we can accurately form a list of potential export destinations for Ukrainian steel goods. These include: China, Mexico, India, South Korea, Belgium, France, Vietnam, Spain, Thailand, and Indonesia.

For developing a marketing adaptation mechanism for Ukrainian enterprises under wartime geopolitical and economic challenges, it is critical to analyze convergence conditions for these potential markets: China, Mexico, India, South Korea, Belgium, France, Vietnam, Spain, Thailand, and Indonesia.

Assessing the convergence of potential import markets makes it possible to identify similarities in business conditions, which may be useful for Ukrainian industrial enterprises exporting product group "72 Iron and Steel." The results will indicate opportunities to intensify the foreign economic activity of domestic industrial enterprises in new markets and will support the adaptation of Ukrainian businesses to the conditions of war amid geopolitical and economic challenges.

To assess the geopolitical and economic challenges faced by Ukrainian exporters, digital platforms such as TRADE MAP and Global Economy were utilized to analyze data on competitors and the internal and external market environment. This approach enabled the monitoring of market development trends, the identification of new export opportunities, and the exploration of pathways for adaptation to geopolitical and economic disruptions, including wartime conditions. Furthermore, it facilitated the organization of analytical information into user-friendly and accessible formats for stakeholders. The development of tabular analytical reports, infographics, and data visualizations will assist Ukrainian industrial enterprises in making informed and strategic decisions regarding business development on international markets. This methodology will enable enterprises to effectively respond to the convergence of potential markets, identify opportunities to enhance foreign economic activity, and adapt to complex economic conditions.

By selecting a set of indicators, we will evaluate the convergence of international markets — China, Mexico, India, South Korea, Belgium, France, Vietnam, Spain, Thailand, and Indonesia — for Ukrainian businesses (see Table 5). This set of indicators will help identify the geopolitical and economic challenges faced by Ukrainian exporters

of product group "72 Iron and Steel" during wartime and will support the development of mechanisms for adaptation to these conditions.

Table 5. Assessment of geopolitical and economic challenges faced by Ukrainian exporters of product group "72 Iron and Steel" during wartime, 2023

Indicator / international market	China	Mexico	India	Korea	Belgium	France	Spain	Thailand	Indonesia
Logistical Capabilities for Supplying Products to a New Market									
Average distance of supplying countries, km	5,492	7,274	5,983	2,572	3,314	1,324	3603	3,842	5,257
Distance from importer country to Ukraine, km	5943	10772	5235	7543	2248,2	2692,3	3719,0	7208	9533
Concentration of competitors/suppliers in the market, %	0,27	0,17	0,07	0,27	0,09	0,15	0,08	0,24	0,15
Quality of port infrastructure (score)	4,5	4,3	4,5	5,5	5,6	5,2	5,4	4,1	4,3
Quality of railway infrastructure (score)	4,5	3,3	4,4	5,9	4,1	5	5,40	2,8	4,7
International Trade and Investment									
Trade openness: export plus import as % of GDP, 2023	37,32	73,16	45,92	87,94	168,93	70,56	72,19	129,14	41,32
Economic Structure									
Value added by sector as a percentage of GDP / share of industry	38.28	31.56	25.03	31.59	18.53	18.47	20.12	32,89	40.22
Legal system, regulations that may affect the activities of the exporting enterprise									
Political stability index	-0,51	-0,63	-0,64	0,61	0,4	0,34	0,29	-0,28	-0,4
Restrictions on international trade									

Source: generated based on Global Economy [2025]

Analyzing the geopolitical and economic challenges faced by Ukrainian exporters of HS group 72 "Iron and Steel" during wartime has allowed for the identification of key factors influencing export to potential international markets such as China, Mexico, India, South Korea, Belgium, France, Vietnam, Spain, Thailand, and Indonesia.

Let us consider the logistics capabilities of Ukrainian businesses when delivering products from HS group 72 to new international markets. The distance from Ukraine to

potential markets such as Mexico (10,772 km) and Indonesia (9,533 km) significantly complicates logistics. Furthermore, the quality of port and rail infrastructure in these countries varies. For example, South Korea scores high in port infrastructure quality (5.5), while Thailand's rating is lower (4.1).

Due to the blockade of major Ukrainian ports in the Black and Azov Seas, exporters were forced to reroute cargo through ports in neighboring countries, particularly Poland and Romania. This led to a fivefold increase in the distance to shipping ports and a three- to fourfold rise in delivery costs.

The supplier (competitor) concentration in markets like India and Spain stands at 0.07% and 0.08%, respectively, indicating relatively low competition. In contrast, China and South Korea show higher levels — 0.27% — making market entry more challenging.

Countries with high trade openness indicators, such as Belgium (168.93% of GDP) and Thailand (129.14%), may offer more favorable export conditions.

Indonesia (40.22%) and China (38.28%) have a significant share of industry in GDP, which may indicate a strong demand for iron and steel.

South Korea (0.61) and Belgium (0.4) demonstrate relatively high political stability, fostering a safer business environment. Conversely, Mexico (-0.63) and India (-0.64) show lower scores, potentially posing additional risks for exporters. Russian attacks on Ukraine's energy infrastructure have caused power supply disruptions, increasing production costs for Ukrainian enterprises.

Sanctions imposed by the United States and the United Kingdom on Russian metals have caused an increase in global metal prices, potentially affecting the competitiveness of Ukrainian exporters.

Ukrainian exporters of ferrous metals face a wide range of challenges related to logistics, competition, market economic structures, and political stability. To successfully enter new markets, it is necessary to consider these factors and adapt strategies to the specific context of each market.

Exporters of ferrous metals (commodity group "72") are facing numerous geopolitical and economic challenges, especially in the context of war.

In order to assess the effectiveness and adaptability of logistics under conflict conditions, it is essential to examine infrastructure quality indicators, which serve as a strategic foundation for evaluating an enterprise's readiness to withstand crisis situations and endure various challenges.

To assess the global convergence indicators of new international markets for Ukrainian producers of commodity group "72 – Ferrous metals," all indicator values were converted into a unified scoring system. The use of a scoring method helps normalize the data and simplifies market comparison. A scoring method was applied to align the range of indicator values into a common numerical scale. This allows for an objective comparison of the level of convergence across international markets and enables informed decision-making regarding Ukrainian producers' engagement with those markets.

Table 6. Normalized Data and Comparison of New International Markets for Ukrainian Producers of Commodity Group "72 – Ferrous metals" Using a Scoring System

Indicator / international market	China	Mexico	India	Korea	Belgium	France	Spain	Thailand	Indonesia
Logistical Capabilities for Supplying Products to a New Market									
Average distance of supplier countries, km	5	2	5	2	5	4	5	2	2
Distance from importer countries to Ukraine, km									
Concentration of competitors/suppliers in the market, %	3	4	5	3	5	5	5	4	5
Quality of port infrastructure (score)	3	3	3	4	4	4	4	3	3
Quality of railway infrastructure (score)	3	2	3	5	3	4	4	1	3
Trade openness: export plus import as % of GDP, 2023	1	2	1	2	3	2	2	3	1
Value added by sector as a percentage of GDP / share of industry	2	2	3	2	4	4	4	2	2
Political stability index	2	2	2	5	4	4	4	2	2
Total Score	19	17	22	23	28	27	28	17	18

Based on the results of research into potential sales markets for Ukrainian businesses, as well as assessments of their trade policies, economic trends, logistical capabilities for delivering products to new markets, and legal systems, valuable information has been obtained for exporters. The most promising markets for Ukrainian ferrous metal producers are Belgium, France, and Spain. These markets are relatively close geographically and have high-quality infrastructure, strong trade openness, and political stability. However, current logistical constraints must be taken into account, and alternative export routes should be explored due to the blockade of Black Sea ports and the destruction of transportation infrastructure. Logistical flexibility is a key factor in restoring the volume of Ukraine's exports in the ferrous metals group (HS Code 72) in 2025.

It is crucial for Ukrainian enterprises to maintain flexible and adaptive logistics processes to ensure the effective transportation of goods, especially during times of conflict and uncertainty. By increasing the flexibility of their logistics operations, companies can quickly respond to changes in international demand for ferrous metals, supply chain disruptions, and shifts in trade routes.

Regarding the marketing adaptation mechanism, Ukrainian enterprises may need to reassess their market positioning, target segments, and promotional strategies to better align with evolving consumer preferences and market dynamics driven by geopolitical tensions and economic challenges. The use of digital marketing tools, conducting market research, and fostering strategic partnerships can help Ukrainian businesses adapt to this changing environment.

Overall, the integration of flexible logistics and an adaptive marketing approach can enhance the resilience and competitiveness of Ukrainian enterprises amid the complex challenges they face in today's geopolitical and economic landscape.

4. Conclusion

Ukrainian enterprises are facing significant challenges in restoring and maintaining their competitiveness amid war and geopolitical instability. Developing an effective marketing adaptation mechanism is a crucial step toward ensuring successful operations under such conditions. Crafting strategies and applying marketing tools can help Ukrainian companies adjust to new realities and ensure their resilience and success in a complex environment.

Given the instability of the current environment, strategic flexibility becomes a critical factor. Therefore, it is important to continuously analyze market trends, identify emerging risks, and enable companies to swiftly realign their marketing strategies in response to sanctions, market changes, and other disruptions, ensuring timely and adaptive reactions to evolving conditions.

In response to the ongoing transformations in today's business landscape driven by rapid changes in the economic environment, it is important to implement modern methods of marketing adaptation. Globalization, technological progress, shifts in consumer demand and competition, as well as the need to adapt to wartime conditions and geopolitical and economic challenges, present serious hurdles for enterprises. However, through comprehensive market analysis, strategic marketing development, the use of innovative approaches, and flexibility in decision-making, businesses can adapt successfully and thrive in a competitive environment.

Building an effective logistics management system within enterprises is essential in the context of current geopolitical and economic challenges. Efficient management of logistics potential enables resource optimization, cost reduction, improved customer service quality, and increased profitability. Moreover, a well-structured logistics system contributes to better production processes and enhances competitiveness in the market. In a fast-paced world driven by technological development and growing competition, effective logistics management becomes a key tool for adapting to market changes, optimizing supply chains, increasing customer satisfaction, and responding to complex challenges.

To adapt successfully to wartime conditions and geopolitical and economic pressures, Ukrainian enterprises must focus on several critical aspects. First, it is essential to thoroughly study and analyze the current political and economic situation, forecast possible consequences, and respond quickly and effectively to changes. Second, companies

should develop risk management strategies to mitigate potential negative impacts in case of conflict.

Applying optimal response strategies to economic difficulties through marketing approaches allows companies to reduce risks and expand their customer base. This supports sustainable growth amid economic instability, optimizes company costs, and enables effective responses to changes in both internal and external environments.

During the period of adaptation of Ukrainian enterprises to wartime conditions and geopolitical and economic challenges, it is important to conduct Target Market Analysis (TAM). This type of analysis provides deeper market insights, enabling companies to make data-driven strategic decisions aligned with their business growth goals. Understanding the market size helps businesses identify potential opportunities for their products and services. Clear knowledge of their target market is crucial for successful operation in a competitive business environment.

Assessing the commodity markets in Ukraine that have suffered the most during the war has helped to identify supply and demand dynamics, and the competitive landscape, and to formulate strategies for the development of enterprises producing goods in the "72 Ferrous Metals" group. The application of a marketing adaptation mechanism has made it possible to recommend ways for Ukrainian companies to tailor their products in challenging, unstable conditions, thereby ensuring competitiveness and resilience during military conflict and geopolitical tension.

Summarizing the results of the analysis of the export dynamics of ferrous metal products from Ukraine for 2020–2024, it can be concluded that the war has had a negative impact on the country's foreign economic activity. The year 2021 marked a peak in exports for this product group, followed by a sharp decline due to the war and other geopolitical and economic challenges, logistics disruptions, and blocked ports. However, by 2024, the first signs of stabilization have emerged, demonstrating the flexibility of Ukrainian exports: while exports of ferrous metals decreased in some markets, they increased in others (such as Moldova, Slovenia, and Greece).

For stakeholders in the ferrous metals market — importers, Ukrainian exporters, logistics companies, and traders — it is essential to take into account the research findings in order not to miss timely opportunities to enter new markets.

Assessing the convergence of identified potential markets — China, Mexico, India, South Korea, Belgium, France, Vietnam, Spain, Thailand, and Indonesia — has revealed similarities in business conditions that may benefit Ukrainian industrial enterprises exporting products in the "72 Ferrous Metals" group. The most promising markets for Ukrainian producers are Belgium, France, and Spain. These markets offer relatively close proximity, high infrastructure quality, significant trade openness, and political stability. However, current logistical constraints must be taken into account, and alternative export routes should be explored due to the blockade of Black Sea ports and the destruction of transport infrastructure. Flexible logistics remains a key factor in restoring the volume of Ukraine's exports of "72 Ferrous Metals" in 2025.

The results provide insight into opportunities for activating foreign trade operations of domestic industrial enterprises in new markets and support their adaptation to wartime conditions amid geopolitical and economic challenges.

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