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Development of e-commerce in international trade in Eastern Europe and the Caucasus: New opportunities and regulatory challenges

Abstract. The relevance of this study is determined by the accelerated development of cross-border e-commerce in Eastern Europe and the Caucasus under conditions of digital transformation. This study aimed to identify the structural determinants and regulatory barriers affecting the development of e-commerce in the region under investigation. The methodology was based on a combination of comparative cluster analysis and the typologisation of the selected countries according to the level of digital development and the degree of integration into international digital trade networks. The research proved that digitalisation and market growth, together with regulatory development in this region, do not progress simultaneously. The leaders of digitalisation (Cluster A) use the principle of systemic integration of the platform environment, payment infrastructure, and customs service. The example of the countries in this cluster is a vivid example of a high degree of market saturation: 86% of consumers in Poland buy goods through marketplaces; 14.57% of companies in Romania, by contrast, engage in online sales. The clusters of the active catch-up economies (B) and the limited integration (C), on the other hand, showed the dynamics of transactions despite the lack or absence of regulation: cross-border imports of Moldova (EUR 530 million) indicate a structural imbalance in trade when companies from a given country can import but cannot export. The study has determined that the level of payment maturity is a better determinant of the type of cross-border integration, while in the cluster of active catch-up economies, the customs integration of countries into European Union standards is one-sided in the form of obligations rather than the implementation of facilitation tools. It can be determined that the regulatory regime in the region is characterised not only by the lagging behind of individual countries, but by the structural disintegration of the regulatory system as its components evolve without the necessary coordination between themselves. The practical significance of the study is to use its results by public authorities of the countries in question to design digital trade policies and, by international organisations, as a basis for the development of programmes aimed at supporting the digital integration of the markets of Eastern Europe and the Caucasus region

Keywords: cross-border trade; regulatory fragmentation; customs convergence; infrastructure; platform ecosystem

Introduction

The acceleration of the global economy's digitalisation and the increase in cross-border e-commerce after the COVID-19 pandemic have formed a fundamentally new configuration of international trade relations where the competitiveness of the country's markets is as much influenced by digital platforms, payment solutions and the regulatory environment as by other traditional elements. B2C e-commerce in Europe had an overall turnover of EUR 958 billion in 2024 (EuroCommerce, 2024). This is an increase by 8% compared to last year. Still, B2C e-commerce activity in Eastern Europe is highly unevenly distributed; it represents 1% of the European turnover, compared to 6% in Central Europe and over 70% in Western Europe.

For the countries of Eastern Europe and the Caucasus, this disproportion is of particular significance: the region combines markets with different levels of digital maturity, legal environment, and ability for integration into the international digital trade system. That makes the comparative analysis of the regulatory and institutional prerequisites of e-commerce development a relevant and current scientific objective.

Research on the development of e-commerce and its relationship with digitalisation processes has identified persistent patterns relevant to understanding the situation in the region under investigation. D. Ahern (2021) proved that the process of developing internet commerce

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in the conditions of digitalisation goes hand in hand with a change in consumer behaviour and business models, which is much more pronounced than the process of adapting to these changes in regulation. This is evident, first and foremost, in the asynchrony between the development of markets and their legal provision, typical of the majority of markets under consideration. O. Mazorenko (2021) proved that the COVID-19 pandemic was a structural accelerator of e-commerce development in Ukraine and in Europe, which led to an increase in the share of online sales in the total retail turnover and accelerated the process of digitalisation of small and medium-sized enterprises. The technological and operational aspects of e-commerce were examined in a number of connected aspects. For example, V. Ivanov (2021) studied the problems of delivery of goods within the scope of e-commerce and proved that the logistics infrastructure is a significant structural barrier to the growth of online trade, especially in the cross-border segment. V.L. Smiesova *et al.* (2021) focused on studying the relationship between digitalisation, project management and e-commerce, the result of which was a conclusion that the proper management of digital transformations is possible only if changes occur simultaneously in the technological, organisational and legal environments. T. Naumova *et al.* (2021) studied the issues of accounting in the system of e-commerce and concluded that there are significant loopholes in the regulation of the activity of online traders in terms of financial reporting, which directly affects the quality of e-commerce statistics in its official form.

The regulatory and customs aspects of the development of cross-border e-commerce have received particular attention in the academic literature. V. Lebid *et al.* (2021), who examined the effect of the simplification of customs formalities as a result of digitalisation, concluded that the automation of customs procedures is a necessary, but not sufficient condition for reducing the transaction costs of cross-border trade, and the decisive importance is the process of harmonisation of legal provisions of both countries involved in the mutual trade process. The authors noted that digitalisation of customs administration without regulation convergence only leads to an acceleration of the process of documents, but does not eliminate barriers to the exchange of goods in cross-border trade. T. Stroiko *et al.* (2022) in their research on the transformation of economic processes under the influence of digitalisation found that adapting to the needs of the digital economy in the regulatory sphere is an extremely complicated process of adapting the customs legislation, consumer protection and payment regulation, which are closely related. The authors concluded that partial adaptation of a certain component of the regulatory system without systematic adaptation of the whole system leads to a significant decline in the effectiveness of that element and contributes to the appearance of new barriers to cross-border trade due to the inconsistency of the regulatory environment of related areas of the regulatory system.

The interrelation of e-commerce development and Sustainable Development Goals has been examined in the macroeconomic dimension. O. Fedirko *et al.* (2021) studied the comparative analysis of the impact of e-commerce on sustainable development in Ukraine, Poland, and

Austria, and found that this impact depends on the level of institutional maturity in the respective countries, that under the conditions of the lack of effective regulation, the development of e-commerce can contribute to structural imbalance rather than its elimination. Thus, the authors found that, in the absence of appropriate regulation, the platforms' economy tends to accumulate income primarily among large operators, while small and medium-sized enterprises face a growing competitive asymmetry. In their study of multidimensional e-commerce impact on the Sustainable Development Goals and economic growth in European Union countries, C.G. Bocean *et al.* (2025) demonstrated that the maximum positive effect in the Sustainable Development Goals is achieved by the systematic inclusion of digital trade into the regulatory and institutional system of the state. They also showed that there is a significant variability of European Union countries in terms of the possibility of utilising the e-commerce potential in the interests of achieving the Sustainable Development Goals, which aligns with the typological differentiation found at the stage of the digitalisation leaders cluster.

Despite the substantial body of research, the existing academic literature has generally focused either on individual aspects of e-commerce development in specific countries or on general trends in the digitalisation of trade without conducting a systematic comparative analysis of regulatory determinants across groups of countries with different levels of digital maturity. Studies focusing on market dynamics have mostly omitted a comparative legal analysis of the regulatory environment, whereas legal studies, conversely, have rarely relied on verified market data to support their conclusions. These circumstances determined the subject matter and objective of this study, which was to carry out an integrated assessment of the relationship between the maturity of regulations and the opportunities for integration into the global digital trade space for the countries of Eastern Europe and the Caucasus in the comparative-cluster approach. This study aimed to identify the structural determinants and regulatory barriers affecting the development of e-commerce in the region under investigation during the period 2019-2024. The study pursued the following objectives: to conduct a comparative analysis of the dynamics and structure of e-commerce markets across three clusters of the countries under investigation; to identify systemic regulatory gaps between the clusters; and to assess the level of customs, payment, and logistics integration as structural determinants of crossborder trade.

Materials and Methods

The methodological basis of the research was the comparative method, combining quantitative and qualitative analysis. The quantitative analysis involved an assessment of the e-commerce markets and digital infrastructures of the 11 countries studied during 2019-2024. 2019 was chosen as the period before the exogenous shock of COVID-19, which allowed identification of the key features of the markets prior to the pandemic, and 2024 was the last period for which data are available with a guarantee of verification. The qualitative component consisted of an analysis of legal and regulatory acts, EU documents, and public policy strategies in order to assess regulatory

convergence. Cluster analysis methods were used to divide the 11 countries: Poland, Romania, the Czech Republic, Slovakia, Hungary, Bulgaria, Ukraine, Georgia, Armenia, Azerbaijan, and Moldova into clusters. The selection of these countries was determined by their location within or near the single market of the EU, or within it, and the representativeness of their models of digital integration. Key clustering parameters were the market size, growth rates, penetration of the market for online sales, share of enterprises conducting online sales, level of payment system maturity and share of cross-border e-commerce. As a result of the limited availability of data for some countries, a method of grouping by experts using threshold values was used. As a result, three clusters were identified: digitalisation leaders (A: Poland, Romania, Czech Republic; background countries – Slovakia, Hungary, Bulgaria), active catch-up economies (B: Ukraine, Georgia, Armenia), and countries with limited integration (C: Azerbaijan, Moldova).

The source base of the study was structured into four blocks in accordance with the logic of the analysis. The main selection criteria for all blocks were the reliability of primary sources, proximity to the analysis of barriers and uniformity of the approach. The first block is the regulatory framework of the EU, which is used as a comparative point of reference. This block included Directive 2000/31/EC (2024), Regulation (EU) 2022/2065 (2022), explanatory VAT notes (European Commission, 2020), decisions of the Council of the EU concerning customs duties (Council of the EU, 2025a), and the definition of the EU legal acquis – *acquis communautaire* (European Commission, n.d.). The provisions of these acts were used as benchmark indicators when assessing the degree of convergence of the national systems within Clusters B and C. The second block contained data relating to the cluster of digitalisation leaders (A), based on official statistics from Eurostat (n.d.) and a market review by Balkan eCommerce Summit (2026). These indicators were compared to identify internal differentiation and served as reference points for comparison with other groups of countries. The third block focused on the cluster of active catch-up economies (B). For Ukraine, the study utilised the Law “On Electronic Commerce” (Law of Ukraine No. 675-VIII, 2015), amendments to the Tax Code (Law of Ukraine No. 1998-IX, 2022), and the report of BRDO (2021). For Georgia, the study relied on the sectoral law (Law of Georgia No. 3110-XI06-X03, 2023), the guide published by ITA (2025), and data from ECDB (n.d.a). For Armenia, materials from the ITA (2023) and Statista (n.d.) were utilised. The fourth block is countries with weak integration (C). For Moldova, materials of the ITA (2024), AmCham Moldova (2025), Mordor Intelligence (2026), and decisions of the Council of the EU concerning association arrangements (Council of the EU, 2025b) were used. For Azerbaijan, the study used the report by AppLabx (2025). A common source for all clusters was the report by EU4Digital (2023). Source asymmetry, reflected in the smaller volume of available data for Azerbaijan, was interpreted as a consequence of the low statistical transparency of the market.

The study was conducted in three stages:

1. Comparative analysis of market dynamics and the regulatory environment according to the following

parameters: growth rates, platform configuration, payment maturity, last-mile logistics, customs regime (de minimis threshold), and the completeness of specialised legislation.

2. Construction of a positional matrix of regulatory maturity and integration potential using the method of two-dimensional positioning. The X-axis represented the integrated indicator of regulatory maturity (customs regulation, legal framework, and payment systems), while the Y-axis reflected integration potential (the share of cross-border e-commerce and the participation of national sellers in digital networks). The boundaries of the quadrants were drawn at the level of the average values in the sample.

3. Triangulation and verification. All conclusions were confirmed by cross-checking statistical data from international organisations, legal acts and independent analytical reports.

It is important to note that there was one constraint on the methodology: given the lack of harmonised quantitative data on cross-border exports for Armenia and Azerbaijan (identified in the EU4Digital reports as the result of mismatching the country reporting with the Eurostat standard), the cases were analysed using a qualitative approach based on comparison with the available primary source data.

Results and Discussion

Dynamics and structure of the e-commerce market in Eastern Europe and the Caucasus. An analysis of trade in Eastern Europe and the Caucasus indicated the need to divide the countries into three clusters, within which fundamentally different development trajectories were identified. The typology of the three clusters applied in this study is based on a combination of digital indicators and the degree of integration of national sellers into international digital trade networks. These criteria reflect the actual state of digital development in each country, irrespective of its formal geopolitical orientation.

Cluster A comprises the digitalisation leaders (Poland, Romania, and the Czech Republic). Poland represents the largest e-commerce market in the region in absolute terms. According to Eurostat (n.d.), 63.62% of Polish enterprises carried out sales on the Internet using marketplaces – a figure close to the highest of the countries under study. Romania, despite the existence of its legal system as an EU member and the common regulatory space with Poland and the Czech Republic, warrants a separate analysis. According to Eurostat (n.d.), as of 2024, 14.57% of Romanian enterprises carried out electronic sales, the lowest indicator in the European Union. This combination, alongside the dynamic growth of consumer demand, points to a structural asymmetry between supply and demand in the market. However, this does not alter Romania's status as a leader in terms of absolute growth rates within the region; according to data from the Balkan eCommerce Summit (2026), Romania consistently demonstrates double-digit growth rates in its e-commerce market. Romania falls under Cluster A mainly due to the presence of specific conditions, such as investment and infrastructure, and not because of the similarity of the market to that of Poland and the Czech Republic.

Cluster B comprises the active catch-up economies (Ukraine, Georgia, and Armenia). The dynamics of these

markets are characterised by rapid growth against the background of incomplete institutional and infrastructural maturity. Ukraine, the largest market within the cluster, ranked second in Europe in terms of e-commerce growth rates in 2019, according to the analytical and research centre BRDO (2021). The full-scale Russian invasion in 2022 created structural distortions in the Ukrainian e-commerce market, including disruptions to logistics and transport delivery as well as the costs thereof, and changes in consumer demand towards essential products, which limited growth. Still, this market is quite resilient. According to ECDB (n.d.b), in 2024, the volume of the Ukrainian e-commerce market amounted to USD 4.375 billion, showing growth of 5-10% compared to 2023. The market of Georgia is still at the stage of active development, albeit from a lower absolute level. According to estimates by ECDB (n.d.a), the market volume reached USD 127.2 million in 2024, with growth of 19.8%, representing one of the highest rates among the countries examined in the study. Its Compound Annual Growth Rate (CAGR) for the forecast period of 2024-2028 is estimated at 15.8%, implying a fairly stable trajectory of market growth.

Cluster C represents limited integration (Azerbaijan and Moldova). This cluster also features the markets where national players are less integrated into the system of international trade of digital services and have a larger share of the cross-border segment compared to the national one. Moldova shows solid growth rates as its market size in 2024, according to estimates by Mordor Intelligence (2026), amounted to USD 0.96 billion, with a CAGR to 2030 at 9.44%. The total volume of Moldovan consumer spending on foreign online markets in 2024 was about EUR 530 million, exceeding the volume of spending on domestic physical goods. Hence, in quantitative terms, the cross-border segment exceeds the domestic segment of Moldova's e-commerce market, which is typical for markets with a low level of development of their own platform ecosystem. Azerbaijan has other typical characteristics of Cluster C, namely, the formation of the payment infrastructure is developing much faster than the formation of a competitive national platform ecosystem. In 2024, the Azerbaijani e-commerce market size amounted to about USD 78 million (AppLabx, 2025). As in the case of Moldova, there is a structural dominance of the foreign trade segment (mainly on the marketplaces of Turkey and of global players), the volume of which significantly exceeds that of domestic online retailers. This confirms the functioning of the Azerbaijani market as a point of consumption in international networks, with a lower level of integration of national digital players into it.

The structure of the platform ecosystem in the region differs fundamentally from that of Western Europe. The markets of the regions under study are characterised by strong regional platforms that compete with global players on equal terms or even with a significant advantage. This characteristic is common to Clusters A and B, although the specific configuration of platform markets differs. Within Cluster A (digitalisation leaders), the Polish case is the most illustrative. According to the Balkan eCommerce Summit (2026), Allegro has over 30% of the Polish e-commerce market, 22 million active users, and more than 200 million monthly page views. In 2024, 86% of

Polish online shoppers made purchases via marketplaces, with Allegro serving as the primary starting point for most product searches. The key player of the Polish online market decided to strengthen its competitive position in the regional market by acquiring Mall Group in 2022, which operates on the Czech, Slovak, Hungarian, Slovenian and Croatian markets, creating a cross-border regional vertical in Cluster A and the neighbouring countries. On the contrary, international giants such as Amazon are forced to rent facilities from third-party infrastructure providers because they do not have points of receipt, which in many cases hampers their competitiveness, given that the main criteria for consumer choice are speed and ease of delivery.

Within Cluster B (active catch-up economies), Ukraine demonstrates a well-developed ecosystem of regional platforms that has emerged organically in response to the specific characteristics of the local market. According to the ECDB (n.d.b), Rozetka leads in Ukraine as a leader, with a share of 47.8% of the entire market, with an online turnover of USD 2.091 billion (2024). Leading platforms are not affiliated with global actors, which, on the one hand, helps to ensure a specific stability of the market, and on the other hand, complicates the possibility of integration across borders and standardisation. As of 2024, Georgia has not yet formed a dominant marketplace, the size of which could be compared to the size of either Allegro or Rozetka. The dominant segments in the online trade of Georgia are represented by global platforms and individual local stores, without a single aggregating marketplace (ECDB, n.d.a), as was typical for the country in the early stage of development of the market structures, when global actors can take a dominant position in the absence of any domestic competitors.

The Cluster C, which includes the group of countries with low levels of integration, has a qualitative difference in the structure of platforms in that the main domestic market players (Makler, 999.md) focus on the consumer-to-consumer (C2C) segments in Moldova, while the share of cross-border trade is dominant in monetary terms. According to Mordor Intelligence (2026), the Chinese platform Temu emerged as one of the key market players in 2024, largely due to free delivery services to Moldova, which placed significant pressure on the domestic market in the categories of clothing, footwear, and small household goods.

Conducting a comparative analysis of the structure of platforms of e-commerce markets made it possible to compare the findings with the conclusions of M. Pyra *et al.* (2024), examining the development of the e-commerce market in Poland in comparison with other European Union countries and D. Tolstoy *et al.* (2022), which analysed the mechanisms for internationalisation of small and medium-sized enterprises within conditions of uncertainty. M. Pyra *et al.* established that the Polish market is characterised by rapid growth in the period 2017-2023; however, in several indicators – particularly the share of enterprises engaged in online sales – it continues to lag behind EU leaders and are explained by the authors by the fact that there is a structural mismatch between demand and the offer of goods on the market, and not the existence of regulatory barriers. D. Tolstoy *et al.* argue that the effectiveness of the cross-border integration of small and medium-sized

enterprises depends on whether a firm has a competitive advantage in effective market creation, regardless of the presence or absence of a legal framework for it, if a well-established network platform system is not created. Conducted analysis demonstrates that both the aforementioned concepts are relevant to the study area while also helping to clarify the boundaries of their applicability. The imbalance between supply and demand in the Polish market that was detected by M. Pyra *et al.* is significantly magnified in Cluster B markets. In Cluster C markets at the same time, the mechanism of market formation for small and medium enterprises under uncertainty presented by D. Tolstoy *et al.* is structurally limited: non-functional interbank payment systems and non-compatible logistics standards preclude the prospect for market integration in general, which the authors treat as one of the key requirements for successful market formation.

The analysis of markets in Cluster C confirmed, at the same time, the results of K. Mammadova (2024) and E. Suleymanov & K. Ibrahimova (2018) examining e-commerce development in Azerbaijan under the resource curse and resource diversification, and the findings of Y. Chen *et al.* (2025) examined the significance of cross-border platforms for the global competitiveness of enterprises. In accordance with K. Mammadova, the structural dependence of the Azerbaijan economy on the resource sector results in an individual arrangement of digital development: a high pace of development in payment systems in the country is combined with a small number of diversifications of the supply of platforms and an insignificant presence of domestic business operators in the cross-border segment. At the same time, Y. Chen *et al.* note that while participation

in cross-border platforms is a key instrument in obtaining global market knowledge, the degree to which it is effective depends on the network position of the sellers. If market domination is exercised by foreign platforms, sellers in these markets remain in the periphery of buyer-seller relationships and do not benefit from the competitive advantage of crossborder platform participation. The presented analysis confirmed the validity of both the above ideas for Cluster C and clarified one of the key distinctions. While K. Mammadova is primarily looking for the specific configuration of the Azerbaijan market in the structural factor of resource rent, the current study shows that the same configuration occurs in Moldova, where there is no such resource. This implies the independent role of regulatory ambiguity and the absence of ecommercespecific law as a crucial structural determinant. And the idea of Y. Chen *et al.* on the market as the key barrier for competitiveness for sellers in peripheral positions provides the theoretical justification for the main result of this analysis, i.e. that in Cluster C markets, this is not just a delay in terms that can be overcome by accumulating experience of platform participation, but rather a structural dependence that reinforces itself if the market is dominated by platform operators from abroad and there is no legislation stimulating local business to participate in the cross-border segment of the platform industry.

In order to systematise the structural characteristics of the markets under study and to visualise differences between clusters, a qualitative typology was developed across four analytical dimensions: stage of market development, type of platform ecosystem, level of payment maturity, and the key structural barrier (Table 1).

Table 1. Typology of e-commerce market clusters in Eastern Europe and the Caucasus

Cluster/Countries	Market phase	Platform ecosystem	Payment maturity	Key structural barrier
A – digitalisation leaders: Poland, the Czech Republic, Romania	Mature market; consolidated structure with stabilised consumer behaviour	Regional dominant players combined with global operators; strong local platforms limit the entry of foreign platforms	High maturity: advanced instant payments; full compatibility with EU payment standards	Market saturation; slowdown in growth after the post-pandemic peak; pressure from lowcost platforms
B – catch-up economies: Ukraine, Georgia, Armenia	Active market growth; uneven development with differing rates and barriers across countries [within the cluster]	Heterogeneous structure ranging from dominant to fragmented ecosystems (Ukraine – strong independent ecosystem; Georgia – no dominant local platform)	Medium maturity: increasing use of cards and e-wallets	Regulatory incompleteness; partial harmonisation with international standards; geopolitical risks (Ukraine); lag in statistical methodologies
C – limited integration: Azerbaijan, Moldova	Emerging market; structurally immature; predominance of cross-border demand over domestic supply	C2C and cross-border platforms dominate; classifiedadvertisingoriented local platforms displace structured domestic e-commerce	Limited maturity: high share of foreign-issued cards; underdeveloped local payment solutions	Structural immaturity and data scarcity; lack of compatible statistical reporting (Azerbaijan); dependence on external platforms without mechanisms for protecting the domestic market

Source: compiled by the author based on data from Eurostat, ECDB, ITA, EU4Digital, Statista, national legislation of the countries under study, and regulatory documents of the EU (a detailed country-by-country list is provided in the Materials and Methods section)

The comparison of the four structural dimensions across the three clusters reveals not merely a hierarchical differentiation of development levels, but fundamental differences in the very logic underpinning the functioning of digital trade, which require interpretation at an institutional level. The analysis suggests that payment maturity

has the status of a key system forming factor, because all the parameters under consideration change in all clusters together and in the absence of exceptions, which allows interpreting the payment infrastructure not as an additional component of e-commerce, but as an institution which determines the conditions for accessing the external

digital market. Therefore, e-commerce development policies, focused only on the logistics and on regulation, appear incomplete without developing payment interoperability. The comparison of A and B clusters shows the non-linear connection between platform potential and international integration. The existence of a well-developed national platform ecosystem does not guarantee access to foreign markets: what matters is not the scale of the platform as such, but the strategic direction of its development. The choice of the strategy of the platform development – either focused on regional growth, or for satisfying the internal demand – depends not only on the market conditions, but also on regulatory and geopolitical factors. Cluster C, however, has a different qualitative configuration of digital trade, characterised by a high degree of imbalance of the cross-border flows. While maintaining a high level of transaction activity, it is not observed that export participation is only the import type of integration model. This means that the growth in the volumes of e-commerce in such conditions does not lead to greater competitiveness but leads to the reproduction of a dependent position in the international digital exchange. At the same time, a clear pattern emerges in the types of barriers in the different clusters: the nature of the factors hindering the development of the e-commerce market is quite different. In more integrated systems, market problems of saturation and competition arise; in transitional configurations, the dominant factors are regulatory and geopolitical; the least integrated systems are limited by institutional failures. This order of things proves that it is impossible to resolve shortcomings of the lower clusters only by means of self-regulation of the market, but that they require direct institutional-regulatory involvement.

The quantitative and digital infrastructure parameters analysis of three clusters allowed distinguishing three types of market development: stable consolidation and growth for clusters with advanced platform ecosystem and payment infrastructure (Cluster A), unstable and fast growth for clusters with immature infrastructure and institutions (Cluster B), and formation of demand-driven markets with a high level of import demand and high institutional barriers for international platform integration (Cluster C). Comparative analysis of the relationship between payment maturity and cross-border integration has enabled corroboration of these findings with those of J. Putrevu & C. Mertzanis (2024), who studied challenges and regulation of international spread of digital payments in emerging markets, and K. Hayakawa *et al.* (2023), who empirically studied the impact of e-commerce on trade resilience to negative external shocks. J. Putrevu & C. Mertzanis found that misalignment of payment standards and regulatory fragmentation create insurmountable hurdles to joining global digital payment networks, provided a technological capacity for such entry. It means that the problems of the payment system cannot be compensated for with other parts of the regulatory framework. K. Hayakawa *et al.* found an asymmetrical relationship between e-commerce and trade: an increase of digital trade in importers' countries affects resilience to shocks significantly, whereas the corresponding effect for exporting countries is much smaller or non-existent. The study conducted in this research proves that both of the abovementioned

mechanisms are valid for the studied region and adds some peculiarities for theoretical models. The finding by J. Putrevu & C. Mertzanis that interoperability of payment standards is a structural bottleneck is repeated without exception in all three clusters, while for Cluster C it becomes even more crucial: misalignment of payment systems with international payment networks does not only prevent participation in cross-border trade, but also fixes the position of the market as an economy primarily importing goods from abroad. For Cluster C, the asymmetry of the influence on imports and exports established by K. Hayakawa *et al.* has a different meaning than for a temporary trade shock. The situation in Cluster C represents a stable state where an increase in a country's participation in cross-border transactions fails to turn that into a higher international competitiveness in digital trade.

The findings on the non-linear relationship between platform capacity and the level of international integration were compared with the conclusions of A.A. Ahi *et al.* (2023) and H. Wen *et al.* (2023), who examined, respectively, the mechanisms of cross-border integration of small and medium-sized enterprises and the relationship between e-commerce policy and inclusive global economic development. H. Wen *et al.* confirmed that participation of small and medium enterprises in cross-border e-commerce leads to lower marginal costs of internationalisation and an increase in competitiveness, but this happens only if payment and logistics infrastructure is already in place and viewed as a necessary, but not a sufficient condition. According to A.A. Ahi *et al.*, inclusive e-commerce development is not a self-emerging process; rather, an inclusive digital economy requires deliberate development of formal institutions because market-led regulation is insufficient in markets with a low level of institutionalisation. Conducted research has demonstrated the validity of both approaches mentioned above in the region under study and further clarified the mechanism for each pattern. The lowering of the marginal internationalisation cost, described by H. Wen *et al.*, is effectively blocked in countries of Cluster C, not because of a lack of platform experience, but because of a lack of basic interoperability between payment systems as a prerequisite institutional condition. Thus, A.A. Ahi *et al.*'s argument that market self-regulation is not enough, supported here by different types of barriers, varying across the clusters, where the least integrated system is characterised by institutions, cannot be eliminated through experience alone. At the same time, the results identify a specific feature, not covered by both of the reviewed approaches, which is the following: the platform capacity and cross-border integration connection is not only determined by market size and the level of digital maturity in the studied area, but it is also determined by the way the development of platforms in this area is oriented under geopolitical and regulatory influences. This feature of the observed development patterns differentiates them from the cases, the empirical data on which both approaches were based, giving additional value to the cluster-based comparison.

In addition, the typology of structurally different market development patterns has found confirmation from the conclusions of M.M. Criveanu (2023), who investigated the correlation between digital intensity,

e-commerce and sustainable development of European Union countries. M.M. Criveanu proved that the digital intensity is a statistically significant explanatory variable for both sustainable development and economic growth, but in this case, the nature of the correlation is different depending on the initial level of digital maturity. In more mature systems, the effect is stronger and more systemic, whereas in less mature systems, it is partial and unstable. The study confirms that this result is also true for the broader regional context, outside the EU. The three structurally distinct trajectories identified through the cluster comparison reproduce the same logic of differentiated effects of digital maturity, albeit in a significantly more pronounced form, as the markets under study are positioned on different sides not only of the digital divide but also of the regulatory divide between the EU single market and adjacent jurisdictions.

Regulatory barriers and integration prospects in the global digital trade. In this regard, the analysis results indicate that e-commerce markets' development in the studied region has a fundamentally uneven character: the differences between the clusters are not only in the absolute value of the market, but also in the types of platform ecosystems, the nature of international flows, and the level of payment systems. At the same time, an analysis of Clusters B and C and Cluster A allows identification of a pattern that can neither be explained only by the market volume difference, nor by the level of population digitalisation in these countries: with a similar or even high growth rate of e-commerce markets, these countries are more distant from the integration into global digital trade. This suggests that in these areas, the main factor determining not the speed of market growth, but the quality and orientation of these markets, is the regulatory framework (customs regimes, e-commerce legislation, and payments interoperability).

The regulatory framework for cross-border e-commerce has undergone great changes over the studied time frame: the rate and depth of these changes are not the same for the studied clusters. For Cluster A, this is an important event in the institutional development of the market, which is the VAT change for the EU in the area of e-commerce (European Commission, 2020). The core components of this package, which matter most for the comparative analysis, include the elimination of national distance-selling thresholds in favour of a pan-European EUR 10,000 threshold for cross-border B2C transactions; the rollout of the VAT One Stop Shop (OSS) scheme, which permits traders to make a single VAT registration in one Member State to report VAT for the whole territory of the all countries; and the discontinuation of the VAT exemption for third-country goods with a value of up to EUR 22 and the introduction of the Import One Stop Shop (IOSS) scheme for imports valued up to EUR 150. In relation to the practical application of the IOSS scheme in the Member States of the EU, the majority of cross-border e-commerce parcels are low-value imports, which demonstrates the systemic importance of such a scheme. One may estimate the scale of the impact that further changes will have on the markets on the basis of how the 2021 VAT reform has worked: according to the research of C. Fang & S. Ma (2024), abolition of the VAT exemption on low-value

imports reduced online sales from third-country suppliers to the EU by almost 50%. Projecting this pattern onto the 2026 customs reform suggests that markets with a high share of cross-border low-value product imports will experience the greatest structural pressure. This market is especially relevant because its cross-border e-commerce, according to the data presented by AmCham Moldova (2025), totalled around EUR 530 million in 2024, and the introduction of an EUR 3 import fee for each shipment will result in an increase in the structural costs to that part of the demand basket, for which low-value goods are the key component; furthermore, there are no mechanisms that would be used to compensate for such a shock among the Cluster B or C countries.

The reforms will also have an indirect effect on Clusters B and C countries, as their suppliers will have to comply with the EU requirements, but their own domestic customs systems are significantly less advanced. According to Law of Ukraine No. 1998-IX (2022), Ukraine's customs tax-free limit for goods transported using the international postal and courier service is set at EUR 150. Meanwhile, in accordance with Law of Ukraine No. 2697-IX (2022), which is based on the 2022 Harmonised System and the EU Combined Nomenclature, the customs tariffs of Ukraine are established. Hence, Ukraine aligns its customs tariff system deliberately with that of the EU, while, at the same time, refraining from using the OSS/IOSS mechanisms that will be available to the Member States only.

Georgia utilises its own customs model, which establishes a threshold for low-value consignment at GEL 100, import taxes from 0% to 12% of customs value and 18% VAT, and a simplified customs procedure for deliveries up to 30 kg and up to GEL 1,000 (ITA, 2025). This makes the threshold considerably smaller than the EUR 150 that was established by EU countries for low-value consignments, creating specific prerequisites for cross-border trade in small consignments, increasing the load for individuals. Unlike the independent model with a threshold of *de minimis* of GEL 100, which was adopted in Georgia, Armenia (as a member of the Eurasian Economic Union (EAEU) since 2 January 2015) operates under the EAEU Customs Code and the external uniform tariff of this integration community, which forms a totally different pattern of institutional barriers. For individuals, the *de minimis* threshold of customs clearance of personal effects in Armenia is EUR 200 and/or 31 kg per month. The customs duty on goods in excess of the threshold is 15% of the excess value of the consignment (the standard VAT rate in Armenia is 20%) (ITA, 2023). Even though it has a higher *de minimis* than Georgia, Armenia does not have sovereignty in customs matters due to the EAEU membership, and the tariff parameters are set by the Eurasian Economic Commission, not the state's own authorities. This means that any adaptation of the customs regime to the requirements of the development of the e-commerce market is implemented at the supranational level of the EAEU, which structurally differentiates the Armenian case from the Georgian one and explains the lack of targeted reforms of the country in this area.

Moldova adopts a hybrid customs model that reflects its intermediate position between the EU market and an independent customs territory. Since 1 July 2016, the

Association Agreement between Moldova and the EU, including the Deep and Comprehensive Free Trade Areas (DCFTA), which establishes the obligation to gradually align the tariff levels to those of the EU, has been in force (Council of the EU, 2025b). At the same time, a new Customs Code of Moldova entered into force on 1 January 2024, abolishing customs clearance fees and introducing a mechanism for deferred payment of customs duties backed by a bank guarantee (ITA, 2024). Moldova's customs environment is formally aligning with EU standards, but at the same time, it remains qualitatively different, which explains the predominance of cross-border trade without the formation of a similar offer on the domestic platform.

One of the main issues facing the whole region is the decision of the EU to cancel the duty-free threshold for goods up to EUR 150. In November 2025, the EU Council approved the cancellation of the duty-free regime for the low-value goods, and as of 1 July 2026, it is planned to introduce a temporary fixed fee of EUR 3 for each consignment, which in November 2026 should be replaced by a separate processing fee (Council of the EU, 2025a). The state of regulation of e-commerce in the region under study is characterised by a range of convergence with the EU law, from its full integration in Cluster A, to the autonomous legislative systems in Cluster C. Cluster A has its legislative field fully aligned through the direct application of the *acquis communautaire* (European Commission, n.d.). As the basis still remains the Directive 2000/31/EC (2024), which was developed to set out rules on intermediary liability, disclosure and cooperation, and for online dispute resolutions. The main new legislation was the Digital Services Act (DSA) Regulation (EU) 2022/2065 (2022) on a single market for digital services (Digital Services Act, DSA), which was fully applied from February 2024, and provides specific requirements for platforms of all sizes such as the detection and takedown of unlawful content, transparency of algorithms, risk audit for very large online platforms having 45 million or more EU users.

In the case of Cluster B, the central document of legislation for Ukraine was adopted as the Law of Ukraine No. 675-VIII (2015), which had been amended 11 times as of 1 January 2024. It has been developed based on Directive 2000/31/EC (2024), and contains the legal bases for electronic agreements; provisions on electronic documents and signatures; and consumer rights in relation to e-commerce. The main goal of the document was to ensure that electronic agreements are legally enforceable to the same extent as traditional ones, a requirement that is central for any growing market. However, the situation is still far from being ideal, and the problem remains of a large portion of the market remains unregulated after amendments, alongside the need to develop other legislation that complements e-commerce law, in particular related to consumer protection and payments.

Both Georgia and Armenia, which form a group in Cluster B, are in the process of moving to a more organised legal framework after a long period of uncoordinated regulation. Georgia took a big step in overcoming the lack of legal basis by enacting the Law of Georgia No. 3110-XI86-X83 (2023). The Act is aimed at implementing Directive 2000/31/EC (2024) and sets requirements on transparency of online services, consumers' rights and rules for

intermediary liability. However, the EU4Digital report (2023) also draws attention to the incompleteness of data, as even if Georgia adapted its statistical methodology to Eurostat standards in 2020, the frequency of updates and the coverage of the corporate sector are still inadequate for adequate digitalisation monitoring. On the other hand, Armenia still does not have a specific, comprehensive law on e-commerce, as the sector remains covered by the general provisions of the Civil Code and consumer protection law (ITA, 2023). Moldova, which has signed a DCFTA agreement with the EU, does not have a standalone e-commerce law fully complying with Directive 2000/31/EC either (2024). The new provisions of the Customs Code in 2024 concern only customs and administrative issues and do not regulate the legal relations between participants in electronic trade (ITA, 2024). Finally, Azerbaijan follows an autonomous regulatory model that is not under any obligation to align with the EU *acquis*. As highlighted by EU4Digital (2023), the ITU methodology on the measurement of digital skills was adopted in Azerbaijan in 2023, but its corporate reporting system in the e-commerce sector is incompatible with the Eurostat methodology.

The analysis of the region's cross-border e-commerce regulatory environment has been corroborated and further elaborated by the research of C. Fang & S. Ma (2024) and M. Ylönen (2026). C. Fang & S. Ma empirically investigated the effects of the EU VAT reform in the e-commerce field, and noted that it resulted in a decrease in orders from third-country sellers to the EU, with a drop in orders exceeding 50%, indicating the presence of a direct dependency between the implementation of Cluster A's regulatory adjustments and the change in market participants' actions outside the cluster. M. Ylönen defined the "Brussels effect" as a process of a fundamentally one-way nature in which third countries change their legislation on the EU pattern and thereby take on new regulatory obligations without receiving an opportunity for reciprocal and symmetrical institutional access to the benefits of the internal market. The study has substantiated the existence of both of these mechanisms and further refined their theoretical underpinnings by taking into account the specific cluster configuration. C. Fang & S. Ma claim that there is a third-party market external dependence on EU regulatory changes is replicated in Cluster B in a more complex fashion: for catch-up economies, the effect of the implementation of regulations in Cluster A is also asymmetrical, not only indirect, because it imposes stricter requirements on local sellers when entering the EU market without granting them access to the simplifying mechanisms of OSS and IOSS, which are the exclusive prerogative of Member States. This explains the study's finding of one-sided customs convergence: Ukraine has chosen to align its tariff system and customs nomenclature with EU standards; however, it remains structurally excluded from the administrative mechanisms through which such convergence is actually implemented. M. Ylönen's hypothesis that the "Brussels Effect" is structurally one-way is empirically substantiated and supplemented by the findings of Cluster C: the lack of dedicated e-commerce rules in Moldova and Azerbaijan is not a chance omission, but rather a logical implication of a distinct regulatory path. In this path, the motivation for aligning with the EU model is not enough

since the level of economic engagement with the internal market is low, while the binding obligations regarding the digital law harmonisation are absent. At the same time, the results reveal a dimension not covered by any of the approaches mentioned: in the region under study, the regulatory gradient between clusters is determined not only by market incentives for convergence, but also by the qualitatively different nature of institutional ties with the EU, ranging from the direct application of the *acquis* in Cluster A to associate membership without access to EU digital mechanisms in Cluster B and autonomous models without harmonisation obligations in Cluster C, which gives the identified fragmentation a structurally stable rather than transitional character.

Logistic infrastructure is no less important than the legal basis for the development of e-commerce, and clusters are differentiated not only in quantitative but also in qualitative terms of the types of logistics operators and the degree of connection to regional networks. In Cluster A, the key logistics operator is InPost from Poland, which, according to Balkan eCommerce Summit (2026), had more than 25,000 lockers in 2024 and handled over 1 billion shipments, which is a 22% increase over the previous year. In Romania and Bulgaria, a similar function is performed by Sameday, a logistics company that has over 7,700 Easy-box lockers in the country. These are key competitive advantages for the local markets, where the developed delivery network for the so-called last mile significantly limits the market position of global platforms (for example, Amazon, in turn, is forced to rent capacity from third parties). In Cluster B, the largest private logistics operator is Nova Post, a Ukrainian company that has expanded its activities not only in Ukraine, but also into EU countries (Nova Post, ECDB, n.d.b). However, in 2022, as a result of the full-scale Russian invasion, significant damage was done to logistics infrastructure, port closures, loss of warehouse facilities, and violations of the routes of delivery of goods have led to an increase in logistics costs and a reduction in the reliability of delivery. Georgia and Armenia have no regional-scale domestic cross-border logistics operators and, therefore, rely on international courier services and Universal Postal Union postal operations for cross-border delivery. Such a structure structurally increases costs and lead times for deliveries in comparison with Cluster A, though Moldova in Cluster C is a member of PostEurop, an association that unites European postal operators to organise the exchange of goods (in digital environments as well). Nevertheless, according to the report of AmCham Moldova (2025), private courier operators handled less than 30% of e-commerce goods delivered in Moldova in 2024. Most e-commerce transactions are fulfilled by click-and-collect, as well as via self-delivery by online retailers. This points to the underdevelopment of the “last-mile” logistics services market and serves as a structural constraint on the development of e-commerce.

A comparative analysis of the logistics infrastructure as a structural factor affecting e-commerce enables drawing analogies and conclusions based on the studies of A. Seghezzi *et al.* (2022), in which the authors considered the comparative cost-effectiveness of parcel locker and home delivery in different geographical contexts and X. Qi *et al.*'s (2024) findings, which analysed the reciprocal

interaction of cross-border e-commerce and logistics infrastructure. A. Seghezzi *et al.* demonstrated that the use of parcel locker networks in comparison with home delivery resulted in significantly lower delivery costs, regardless of the type of settlement in question. The main advantage came from higher delivery density and fewer failed delivery attempts, thus making logistics infrastructure an independent determinant of competitiveness. According to X. Qi *et al.*, cross-border e-commerce and the development of logistics infrastructure are interrelated, not parallel processes: the absence of regional logistics operators of international scale increases the costs of cross-border delivery transactions and hinders the development of small and medium-sized enterprises as well as the effective development of the global digital value chain. These results, which are applicable in the context of the study of the region, are being further developed on the basis of cluster differentiation. The conclusion of A. Seghezzi *et al.* about the advantages of parcel locker networks as a factor of competitiveness is clearly evident in Cluster A due to the concentration of such networks operated by InPost and Sameday, reducing delivery costs and creating a qualitatively different competitive environment where large global marketplaces are forced to rely on third-party logistics operators and cannot overcome the competitive advantage of domestic players simply by entering the market. Meanwhile, the conclusion of A. Seghezzi *et al.*'s findings for early-stage e-commerce markets are particularly relevant to Cluster C. The lack of a developed “last-mile” delivery network is a barrier to the development of e-commerce in its own right, and not just a consequence of low demand. X. Qi *et al.*'s thesis about the correlation between e-commerce and logistics development is both substantiated and further elaborated with data from Cluster B: the massive 2022 Russian invasion, despite severely harming Ukraine's logistics infrastructure, did not cause the market to collapse; therefore, the logistics–trade relation is more stable than that suggested by X. Qi *et al.*'s model, built on stable-market conditions. The analysis further identified another aspect beyond both of these approaches: not only is the distribution of logistics in the studied region clustered quantitatively, but also in qualitative terms, regarding operator type and the level of inclusion in cluster networks. This shows that logistics is a non-equivalent structural factor that cannot be compensated merely by investing in infrastructure if one fails to develop a regulatory environment and to build an internal platform ecosystem. A matrix of positions was formed based on the data resulting from the comparative analysis of the regulatory environment, in which there are two axes: regulatory development and potential of inclusion in global digital trading networks (Table 2). Comparing the regulatory framework for cross-border trade between the three clusters in the studied region highlights that the differences are not just in slower development, but also in different paradigms of regulatory development that form unique sets of possibilities and constraints. The most important one is that the difference in regulation does not correlate with different rates of market development. Countries in Clusters B and C are developing despite a regulatory vacuum instead of in the interest of it; the current model of this development is not sustainable

because it relies on global platform conditions and trading, whose stability is not guaranteed for these countries by any bilateral institutional arrangements. In this sense,

expansion of the market without the regulatory base is not an indicator of effective integration, but a sign of postponed risk.

Table 2. Positional matrix of regulatory maturity and integration potential in digital trade networks

Integration potential/ Regulatory maturity	Low regulatory maturity	High regulatory maturity
High integration potential	No clusters with low regulatory maturity and high integration potential were identified in the studied region	Cluster A: digitalisation leaders; systemic digital integration (Poland, Czechia, Romania) The regulatory environment functions simultaneously as a condition and a mechanism of integration. The platform ecosystem, payment infrastructure and customs regime operate as a unified system
Low integration potential	Cluster C: limited integration; structural dependence without exit mechanisms (Azerbaijan, Moldova) The market functions primarily as an import-receiving system. The absence of dedicated e-commerce legislation, incompatibility of payment systems and limited logistics capacity block local actors' access to international networks	Cluster B: catch-up economies; asynchronous development – growth without systemic coherence (Ukraine, Georgia, Armenia) Characterised by strong growth and partial legal convergence; however, regulatory components evolve in an uncoordinated manner. The overall direction is defined, but the systemic consistency of reforms remains the key variable

Note: cluster positioning is based on: (1) the presence and completeness of the e-commerce legal framework; (2) customs compatibility with international standards; (3) payment interoperability; (4) the share of cross-border exports relative to imports within the structure of the e-commerce market

Source: compiled by the author based on data from Eurostat, ECDB, ITA, EU4Digital, Statista, national legislation of the countries under study, and regulatory documents of the EU (a detailed country-by-country list is provided in the Materials and Methods section)

The customs sector stands out for showing clear divergence between formal convergence and the actual content. Although some countries in the region have aligned their thresholds and tariff classifications to the EU standard, without the same access to corresponding facilitation procedures, such harmonisation is one-sided: it entails obligations, but does not give the same advantages. Such is the situation in the case of the recent reform of the EU customs regime for low-value consignments, which became effective in 2026. For Cluster A, it is an expected regulatory adaptation to a regulatory environment with which they are already familiar. Clusters B and C both constitute external shocks to which there is neither a mitigation instrument nor institutional representation in terms of designing it. Curiously, on a theoretical level, such reform provides an incentive to register local sellers within the framework of a simplified EU system; however, in practice, this incentive cannot be realised precisely due to a regulatory vacuum that needs to be eliminated to enable integration at all. Analogously to the cluster's approach, a similar pattern is observed when analysing legal convergence: the existence of a regulatory act does not mean a functioning regulatory model. The legislative activity on e-commerce in most of the analysed countries of Clusters B and C is at the stage of development, or simply does not exist. From the perspective of a prospective (foreign) investor or platform entering these markets, the legal uncertainty can be a de facto barrier to entry, even if the business prospects appear promising in the region. In turn, where online trade participants conflict with each other, the norms that regulate traditional commercial activity create gaps in system terms, such as platform liability, protection of personal data, and the ability of a

consumer to return goods, which is a direct factor of the barriers for market entrants.

At the institutional level, countries under review play a very limited role in global e-commerce regulation (outside of Cluster A). The main global e-commerce diplomacy structures, from multilateral negotiations to sector-specific initiatives, are developed without the direct participation of non-EU countries in the region. The upshot is that the rules of international e-commerce development for at least the next ten years will be made without taking into account the interests of these markets. The countries will have the opportunity to join the agreements if, in fact, they will do so, but will only act as recipients of existing standards. In summary, the regulatory landscape of the region is characterised not so much by simple lagging development as by structural fragmentation: customs thresholds, e-commerce legal frameworks, payment interoperability, and participation in international digital trade diplomacy are evolving without systematic coordination. In this way, integration into the global system of digital trade of Clusters B and C, in the end, will depend not so much on the speed of individual reforms but on the potential to achieve a systemic approach to these reforms. If coordination is not possible, market growth will remain a prerequisite for entry to this market, but it will never be the result.

Despite all these challenges, the clusters' comparison allows identification of some clear vectors for deeper integration of the markets under review in the global systems of digital trade, which can be pursued if there is a more systematic approach to the regulatory framework. The first of these is the strong growth dynamics of Cluster B markets, which provide a sufficient market base for

institutional investment. According to the ECDB (n.d.a), Georgia shows the highest e-commerce growth in the analysed countries. In 2024, this indicator amounted to 19.8% and is estimated at 15.8% for the period 2024-2028, indicating, as an assumption for further development, the existence of consumer demand to support corresponding regulatory and payment systems in this direction. Although due to the consequences of the full-scale invasion, Ukraine (ECDB, n.d.b) has maintained a market valued at USD 4.375 billion, the market in the country maintains 5-10% growth rate in 2024, which, due to the accession negotiations with the EU, creates an opportunity to harmonise the legal basis and the customs regime of the country with the *acquis communautaire* in anticipation. The other opportunity is the potential of the reform of the EU customs regime in 2026 to accelerate regulatory convergence. It should be noted that the introduction of a unified charge of EUR 3 will encourage local sellers from Clusters B and C to use simplified EU regimes (such as the IOSS), which will reduce the transaction costs for exports to Member States. According to the European Commission (2025), in 2024, the number of operators using the IOSS system increased by 6%, and the VAT charged with the help of this system increased by 62%, i.e. the sum amounted to EUR 6.3 billion. This confirms that the mechanism has real potential and is working for users with access to it. The practical implementation of this incentive for Clusters B and C, however, is blocked precisely by the regulatory vacuum; its elimination is a prerequisite for integration. It is simply impossible in the absence of general e-commerce legislation in Armenia, Moldova, and Azerbaijan to create the institutional framework necessary for the large-scale entry of local sellers into foreign platforms. Thus, the 2026 reform simultaneously represents a threat to consumer imports, while at the same time having the potential to become a catalyst for the reorientation of exports, but only if this requires a purposeful regulatory initiative.

Based on the comparative analysis of the regulatory environment of e-commerce in crossborder trade in the region, the author of this article relates the findings to the conclusions of M. Vásquez Callo-Müller & K. Kugler (2023), who examined the interconnection of digital trade and development with inequality, given the context of the formation of global rules, as well as F. Deane *et al.* (2023), who examined the trade agreements on digital trade, which solve problems associated with the fragmentation of the regulatory environment. Thus, M. Vásquez Callo-Müller & K. Kugler state that the participation of countries in determining the content of the international digital trade regime is structurally limited by the fact that the rules developed within these bilateral agreements reproduce the asymmetry between the producers and the recipients of the rules, while the formal requirement for access to digital markets does not equal the lack of a regulatory voice in these processes of regulation itself. In F. Deane *et al.*'s assessment, fragmentation of the world's governance system for digital trade does not result from a lack of time for the establishment of rules, but rather from a structural issue resulting from the development of divergent regulatory models without coherent planning and coordination between them. They maintain that agreements that aim to overcome fragmentation are only useful to states that

were party to their design. Both approaches, therefore, can be applied to the region analysed, and the former may be used to better define and refine their theoretical framework with respect to the qualitative difference between different types of fragmentation. While the conclusion drawn by M. Vásquez Callo-Müller & K. Kugler regarding the differences in the power of rule-makers and standard-takers is valid for the three clusters analysed, their significance is substantially different: in Cluster A, it is neutral in institutional terms because of the membership of these states in the EU; in Cluster B, it is unilateral because these states adjust the structure of their tariff levels and the legal framework according to EU standards, but bear obligations without acquiring access to facilitation tools; and in Cluster C, it is total, since no commitment to harmonisation is established even in formal terms, and there is no possibility to be part of the standard-setting process. The thesis proposed by F. Deane *et al.* regarding the fragmentation of regulation of digital trade is a structural rather than transitory one: in the region analysed, the setting of thresholds for customs purposes, the legal framework applicable to e-commerce, the establishment of conditions for payment interoperability, and participation in international diplomacy for the development of digital trade have been occurring without coordinated planning, thus making fragmentation a structural factor of the market configuration rather than a temporary governance issue.

M. Burri & K. Kugler (2024) studied safety mechanisms for regulatory autonomy in the digital trade agreements, where a contradiction between commitments of convergence and the true extent of regulatory autonomy of the third countries is observed. They argue that the new generation digital trade agreements have structural consequences that maintain the role of the recipient of a third country: while they can accede to these agreements, they do not have access to determine their content, their levels of obligations, or their margins of possible divergence from the agreed standards. The study confirmed the validity of this conclusion in the studied area and highlighted an additional dimension, which will deepen the theoretical framework of these authors: in Clusters B and C, the question of regulatory autonomy is not important (due to its limitations by international obligations) simply because the corresponding institution, where this question could be raised and protected, does not exist. The e-commerce growth in these countries takes place without engaging in the creation of the rules of the game in this area, and this growth is, thus, not a symptom of successful integration, but rather a symptom of a delayed regulatory risk, proportional to the rate of growth of this market. The identified trajectories of development do not have any analogues compared on the basis of market parameters; it is important to note that in the comparative literature, there are no instances in which a significant e-commerce development takes place simultaneously with a general absence in the participation in the global digital trade diplomacy and a lack of a regulatory regime in relevant nearby areas.

Conclusions

The study conducted a comparative analysis of e-commerce market development in Eastern Europe and the

Caucasus countries and regulation on international digital trade in 11 countries from 2019 to 2024. The results reveal that e-commerce market development occurs under conditions of structural asynchronicity between the dynamics of e-commerce growth and the maturity of regulatory institutions. Such asynchronicity defines the nature of all the identified integration barriers and cannot be resolved by isolated changes in individual legal acts, if the coordination does not occur among customs administration, e-commerce legislation, payment interoperability and participation in global digital trade diplomacy. Thus, the cluster of digitalisation leaders proves to be a systemic type of integration where a combined model consisting of a platform ecosystem, payment infrastructure and customs regime forms a single whole, supported by the single regulatory space of the European Union. In turn, the regulatory space serves both as a prerequisite and as the mechanism of this integration. In contrast, the group of actively catching-up economies is characterised by fragmented convergence, where individual elements of the regulatory system move towards the European Union standards, however, without having access to the same tools of facilitation, such that this convergence is one-sided and does not involve other system-forming elements. It is notable that in the two clusters, B and C, no country has all 4 system-forming elements at the same time. That is the main analytical feature of these countries, not a country-level lag in the index level of any of the specific elements in the cluster.

It was found that the index of maturity of payments is the most accurate indicator, which predicts the nature of cross-border integration, as across all three clusters, this index changes in parallel with the degree of participation of national sellers in global digital networks. For instance, in Cluster B, it was found that, although Ukraine is the largest market in the cluster with online sales reaching USD 4.375 billion in 2024 and growth of 5-10%, Georgia shows USD 127.2 million of online sales in 2024 and

growth of 19.8%. This discrepancy in growth rates and differences in the market volumes reflect not only a discrepancy in market sizes, but also a difference in payment maturity and infrastructure for logistics, which together determine the growth ceiling for the markets in each case. This means that the payment ecosystem can be defined not only as a technical component of integration, but rather as an institutional tool that defines the possibilities for integration into global digital networks for the country.

Special attention needs to be focused on the external regulatory shock, the reform of the EU Customs regime for low-value items that is due to enter into force on 1 July 2026. For instance, the 2021 reform of VAT has led to a decline of online sales to the EU from third countries by 50%, according to the available data. For markets in B and C, which do not have access to the IOSS system and other institutional mechanisms that facilitate adaptation to external regulatory shocks, the impact of the 2026 reform on e-commerce cannot be considered as a regulatory adjustment, but rather a structural risk to the countries in these clusters. Future research opportunities in this area include an empirical study of the participation of small and medium-sized enterprises in international e-commerce in these countries; a comparative analysis of the efficiency of different models of regulatory convergence with European Union standards; and an assessment of the impact of the 2026 European Union Customs reform of low-value items on the structure of cross-border e-commerce flows in the region.

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