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Vdovichen Anatolii, Vdovichena Olha, Losheniuk Iryna*, Chaplinskyi Yurii and Losheniuk Oksana

Department of Management, Marketing and International Logistics,
Chernivtsi Institute of Trade and Economics of State University of
Trade and Economics,
Tsentralna Square 7, Chernivtsi, 58002, Ukraine
Email: vdovichen_anatolij@ukr.net
Email: danpol@ukr.net
Email: losheniuk@gmail.com
Email: Uran802007@gmail.com
Email: olosheniuk@gmail.com
*Corresponding author

Abstract: A better understanding of regional market structure influenced by international market trends can be used to determine the characteristics and concentration of local retail markets, as well as retailers' reactions to import-export relations and changes influenced by cross-border factors. The purpose of the research is to develop and analyse a model of the impact of the internal and external indicators on the structure and state of the domestic regional market with the use of the structural equation modelling analysis. Analysis determined that retail domestic trade is the main source of household income of the Ukrainian part of the Carpathian area. The development of the economic level of households is important for the development of the domestic trade structure and ensuring further economic integration of Ukraine into the EU. The results of our study provide a practical opportunity to predict possible scenarios and key factors of such integration.

Keywords: retail trade; regional market; structural equation model; border regions; import-export relations.

Biographical notes: Vdovichen Anatolii is the Director at the Chernivtsi Institute of Trade and Economics of Kyiv National University of Trade and Economics. He received his Doctoral in Economics and Management of the National Economy. He is a member of the methodological and scientific councils of Chernivtsi Trade and Economic Institute KNUTE, a member of the editorial board of the University Bulletin. His scientific interests include international investment, regional economy, and tourism.

Vdovichena Olha is an Associate Professor in the Department of Marketing, Digital Economics and Entrepreneurship at the Chernivtsi Trade and Economic Institute KNUTE. She completed her Master's in Marketing at Chernivtsi Trade and Economic Institute KNUTE 2010 and Master's in Management in 2019. She received her Doctoral in Development of Productive Forces and Regional Economy at Uzhgorod National University. Her scientific interests include marketing, management, trade, economic development of the state and regions.

Losheniuk Iryna is an Assistant Director for educational and pedagogical work, organisation and support of the educational process, Associate Professor in the Department of Marketing, Digital Economics and Entrepreneurship. She received his PhD in Engineering in 1991. She completed her Master's in Marketing at Chernivtsi Trade and Economic Institute KNUTE in 2019. Her scientific interests include researching the development of marketing activities and increasing the competitiveness of enterprises in the market.

Chaplinskyi Yurii is an Associate Professor in the Department of Marketing, Digital Economics and Entrepreneurship. He received his PhD in Economics and Management of Enterprises at the Kyiv National University of Trade and Economics in 2009. He conducts research in the field of marketing, strategic marketing, management, tourism, regional development, and consumer behaviour.

Losheniuk Oksana completed her Master's in Economics education majoring in International Economics at the Chernivtsi Trade and Economic Institute KNUTE in 2014 and Master's in Economics education majoring in Organisational Management and Administration in 2016. She received her PhD of World Economy and International Economic Relations in 2018. She is an Associate Professor in the Department of Marketing, Digital Economics and Entrepreneurship in Chernivtsi Trade and Economic Institute KNUTE.

1   Introduction

The globalisation processes, which cause influence on the retail enterprises' strategy choice to interact with other market participants, encompass many interrelated components of the market environment. International trade is one of the most important factors in the retail trade development as it determines the formation, capacity and concentration peculiarities of the retail network, supply, product range management, choice of store format and branding. These processes facilitate the presence of large retail chains in certain markets, regardless of their economic development, that have a significant impact on the formation of efficient supply chains and the introduction of trade innovations (Reinartz et al., 2011).

The growth of export-import operations volume produces an ambiguous impact on the retail enterprises' activities in the regional market, making it difficult to compare the processes benefits with their negative impact on financial results. However, it should be noted that entering foreign markets does not require retailers to significantly change their business model, and they may even use the same suppliers and business network partners as in their domestic market. At the same time, a key factor holding back the international

activities of retail firms is whether and how they may benefit by spreading their retail operations within and across regional boundaries (Oh et al., 2015).

Integrative processes, economic and geopolitical events significantly affect the structure of Ukrainian domestic and foreign trade turnover as a whole and concerning individual regions of the country, which contributes to the formation of an appropriate business environment and the level of consumers' purchasing power. The study of the trade turnover volume and structure is the basis for the population living standards analysis, its material well-being, the degree of demand satisfaction for certain goods.

The geographical location of the Ukrainian border regions and their close proximity to the European Union (EU) make it possible to assess the degree of correlation of import-export relations with EU countries with the structure of domestic regional trade turnover. When planning their strategic development, it is important for retail enterprises in the western border regions of Ukraine to understand how closely household incomes are related to import-export relations with EU countries, and whether their development will increase the volume and profitability of domestic trade turnover by its current structure.

2 Literature review

The driving forces issues of regional retail trade are relevant in the economy. Thus, such factors include learning, corporate branding, business configuration and networking capabilities. In addition, the marketing management of such firms in local foreign markets is being actively studied (Ghauri et al., 2016).

In the context of globalisation, an important issue for the companies' long-term effective functioning in the market is the choice of the retail strategy when interacting with other market participants whilst entering the international market. For example, the choice between 'global integration' or 'local response' strategies are controversial (Swoboda et al., 2014).

To better understand the structure of the regional market under the influence of trends in international markets, information on municipalities is used to identify local retail markets and calculate the local market concentration based on the number of stores in each local market (Meinen and Raff, 2018), and the reaction of retail sellers to consumer goods import changes is studied under the influence of geographical factors (Holmes and Singer, 2017).

Studying regional development and regional marketing in Slovakia, Jánošová and Labudová (2020) found a significant impact of globalisation, but at the same time the main influencing factors are economic strategies formed at the above-regional European level, which are seen as the only way to solve regional problems and forecast development. Gong and Soyoung (2018) examine the effects of regional versus global integration on the regional business. The main empirical results proved that strong and similar common global linkages have significant positive effects on the synchronisation of regional business cycles, and regional trade integration has a positive effect on the regional business cycle, whereas regional financial integration has a negative effect. Exactly, regional trade integration is most important in Central and Eastern Europe. At the same time, an important factor concerning feasibility of imported goods presence in the structure of retail market trade turnover is the excess of sales, profits of retailers who

import goods over the relevant indicators of domestically sourcing firms (Meinen and Raff, 2018).

Analysing the structure and identifying the geographical scope of the regional retail market, it should be understood that the localisation of retail markets is also a consequence of the fact that consumers prefer outlets that are at relatively short distances as they typically do not travel long distances to go shopping (Maican and Orth, 2017). Combinations of pricing, product selection, location and store format strategies are important for retailers in determining the source of profitability in a complex retail structure. Classification of strategies based on the strategy implementation by retailers allows to determine the profitability source, to narrow potential problems in case of failure, which is dictated by its approach similarity to implementation at certain levels (Kumar et al., 2017).

Despite the unclear relationship between local income and the retail trade structure, research results allow to suggest that consumers have the same preferences and are evenly distributed in space. An in-depth analysis of the conditions described by the term 'retail deserts' is related to the study of whether low-income areas have less access to a variety of retail goods and services (Schuetz et al., 2012).

The dynamic structural model for assessing the consequences of local market entry regulations impact on retail productivity among many aspects focuses on the need to take into account such regulations impact on labour productivity when assessing the service production function. In addition, these rules are a kind of incentive for retail stores to change their productivity depending on the current level of productivity and local market conditions, which, in its turn, affects their future productivity against competitors. Particular attention within the model is paid to the need to differentiate the regulations impact on labour productivity from demand shocks, such as market growth or structural changes in customer behaviour, which, in its turn, ensures that such shocks are not treated as changes in productivity. According to the model, the problems of input data selection simultaneity should be considered with other standard problems – choice in assessing the function of service production and potential problems of endogeneity as to the strictness of Maican and Orth's (2015) rules.

Thus, the modern scientific literature reflects the research results on definition and substantiation of separate factors of the enterprise functioning environment influence on the formation of external and internal regional markets' interrelation. The list of tools defined by the authors in combination with the introduction of innovative information technologies has a direct impact on changing the productivity of retail enterprises in both foreign and domestic markets. This contributes to changing the structure of retail trade turnover, including in the EU border regions. At the same time, the strength of the described factors influence on the regional market structure is different, which necessitates the analysis and construction of a structural model of significant direct relationships between them.

The post-socialist conversion in Eastern Europe and the former Soviet Union is an open-ended process whose results can be better understood as an evolutionary process including the misalignment of different levels and parts of innovation and economic systems (Radosevic, 2021). The fall of the communist regimes in the Eastern European countries supposed a radical transformation in their economic systems. The economic transition, coupled with the major impact from the EU cohesion policy and global investors, has meant a change in their regional market that needs to be diagnosed from a global comparative approach to really evaluate the actual transformation of Eastern

Europe post-communist countries (Garcia-Ayllon, 2018). The retail sector in post-communist countries is extremely attractive to big retail companies, globalisation is happening very quickly in it (Machek, 2012). Globalisation of economic processes in the EU also has an impact on the trade development and the trade turnover structure of certain regional markets of Ukraine.

In Ukraine, the Carpathian economic region borders the EU, which is located in the western part of Ukraine, close to the centre of Europe, on the border of its Eastern and Central parts. The area includes the territory of four regions (Lviv, Ivano-Frankivsk, Transcarpathian, Chernivtsi), and borders with the EU countries (Poland, Slovakia, Romania, Hungary) and Moldova.

Geographical location together with historical and cultural ties contributes to the existence of stable relations in the economic sphere. At the same time, the gross regional product of the Carpathian region per capita is much lower than the average in Ukraine. Moreover, this indicator is two times lower than the Ukrainian average in Chernivtsi and Transcarpathianregions (Kyfyak et al., 2017).

These and a number of other issues allow us to develop and analyse a model of the internal and external indicators impact on the structure and state of the domestic regional market on the example of the Ukrainian part of the Carpathian area.

So, our model analysis involved testing the following hypotheses that have not been investigated yet:

H1 The trade turnover structure and household incomes of the western border regions of Ukraine are partly related to import-export relations with the EU countries.

H2 The trade turnover structure of the Ukrainian western border regions is significantly related to the income of their households.

H3 The development of import-export relations with the EU countries can have an impact on the current structure of domestic trade of the western border regions of Ukraine.

3 Methods and data

Analysis of the impact of the internal and external indicators on the structure and state of the domestic regional market was made with the use of structural equation modelling (SEM). The use of SEM to analyse relationships between variables is premised on path analysis, regression analysis, and the assumption that variables are measured without error (Owolabi et al., 2020). SEM analysis includes five logical steps: model specification, identification, parameter estimation, model evaluation, and model modification. Validation of the SEM analysis results is used to improve the reliability and stability of the model and can be made on the basis of common programs for SEM applications are often equipped with intuitive manuals (AMOS, Mplus, LISREI, Lavaan (R-package), piecewise, SEM, etc. (Fan et al., 2016).

Domestic turnover indicators of the following regions of Ukraine have been used for analysis: Transcarpathian, Lviv, Ivano-Frankivsk, and Chernivtsi. Data were selected quarterly for 2015–2019 and partially taken into account for 2020. Thus, the analysis involved 20 internal and external indicators from the public site of the State Statistics Service of Ukraine (SSSU, 2020).

Table 1 Correlation coefficients, skewness and kurtosis values

Measurement variable		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Exports of goods to EU countries	1																			
2	Imports of goods from EU countries	0.893**	1																		
3	Imports of services from EU countries	0.550**	0.457**	1																	
4	Exports of services to EU countries	0.764**	0.955**	0.372**	1																
5	Food and soft drinks	0.673**	0.547**	0.295*	0.497**	1															
6	Alcoholic beverages, tobacco products	0.835**	0.735**	0.311*	0.655**	0.920**	1														
7	Clothes and footwear	0.702**	0.503**	0.364*	0.433**	0.941**	0.844**	1													
8	Housing, water, electricity, gas and other fuels	0.465**	0.336*	0.147	0.299*	0.911**	0.810**	0.851**	1												
9	Household items, household appliances and current housing maintenance	0.640**	0.333*	0.329*	0.213	0.794**	0.701**	0.909**	0.741**	1											
10	Healthcare	0.247	0.178	−0.004	0.22	0.859**	0.681**	0.756**	0.901**	0.576**	1										
11	Transport	0.549**	0.421**	0.173	0.427**	0.898**	0.809**	0.856**	0.826**	0.693**	0.860**	1									
12	Communication	0.502**	0.375**	0.138	0.352*	0.955**	0.839**	0.867**	0.913**	0.733**	0.926**	0.893**	1								
13	Recreation and culture	0.700**	0.650**	0.195	0.609**	0.887**	0.853**	0.847**	0.744**	0.712**	0.715**	0.758**	0.827**	1							
14	Education	0.374**	0.171	0.22	0.118	0.781**	0.601**	0.751**	0.729**	0.711**	0.786**	0.727**	0.853**	0.663**	1						
15	Restaurants and hotels	0.280*	0.172	0.027	0.185	0.841**	0.660**	0.775**	0.865**	0.610**	0.942**	0.878**	0.890**	0.705**	0.733**	1					
16	Various goods and services	0.756**	0.570**	0.339*	0.502**	0.957**	0.908**	0.978**	0.860**	0.896**	0.750**	0.875**	0.873**	0.883**	0.708**	0.765**	1				
17	Non-consumer total expenditures	−0.115	−0.168	−0.2	−0.183	0.490**	0.345*	0.329*	0.581**	0.227	0.733**	0.473**	0.643**	0.400**	0.547**	0.642**	0.330*	1			
18	Payment for housing, utilities	0.454**	0.378**	0.106	0.369**	0.880**	0.783**	0.825**	0.983**	0.704**	0.875**	0.796**	0.871**	0.740**	0.671**	0.831**	0.834**	0.491**	1		
19	Remuneration of households	0.612**	0.658**	0.141	0.694**	0.860**	0.845**	0.747**	0.775**	0.513**	0.791**	0.847**	0.861**	0.827**	0.663**	0.744**	0.774**	0.389**	0.797**	1	
20	Income from business activity and self-employment	0.571**	0.208	0.309*	0.073	0.692**	0.638**	0.754**	0.596**	0.846**	0.502**	0.683**	0.644**	0.539**	0.656**	0.572**	0.777**	0.239	0.504**	0.378**	1
	Skewness	0.79	1.32	3.69	1.78	0.61	1.013	0.59	0.36	1.19	0.74	1.21	0.76	0.86	1.61	0.93	0.74	2.01	0.37	1.29	1.68
	Kurtosis	−0.39	1.38	16.67	3.53	−0.56	0.4	−0.59	−1.17	1.24	−0.29	1.29	−0.27	0.05	3.03	0.25	−0.22	5.01	−1.19	1.77	2.59

Note: *$p < 0.05$, **$p < 0.01$.

The collected data were organised as a 20 × 20 spreadsheet and imported into SPSS 12.0 for testing the validity, reliability and analysing the Mahalabonis distance. Table 1 shows the final data on correlation coefficients, skewness, and kurtosis values.

The correlation coefficients are significant for most measurement variables at the alpha level (p-value) less than 0.01 and 0.05. Weak correlation of individual variables will be taken into account when constructing the final SEM. Confirmation of the assumption on the multivariate normal distribution of the data for SEM is that the absolute skewness is less than 3 and the kurtosis values are less than 10, according to the recommendations of Kline (2015).

The statistical model of the hypotheses was implemented in the form of SEM using the environment AMOS 6.0. For the assumption of multivariate normality, reduce measurement error and minimise the overweight of a particular variable, item parcels were used (Kishton and Widamn, 1994; Sass and Smith, 2006). The Tucker-Lewis index (TLI) and comparative fit index (CFI) were tested by using AMOS 6.0. So, for a priori model measurement the indicator data is: TLI = 0.78; CFI = 0.809. The value of TLI and CFI is acceptable for the statistical goodness of fit (Yu and Muthén, 2002). Thus, the statistical model of the hypotheses is fit with the input data.

4 Results

Table 2 presents the path analysis for the proposed structural model. The modelling did not confirm the connection with the 'export services to EU' and 'communication' parameters. It is also consistent with the data in Table 1. Therefore, these parameters are not included in the SEM (see Figure 1).

Figure 1 Structural model of significant direct relationships with standardised regression weights
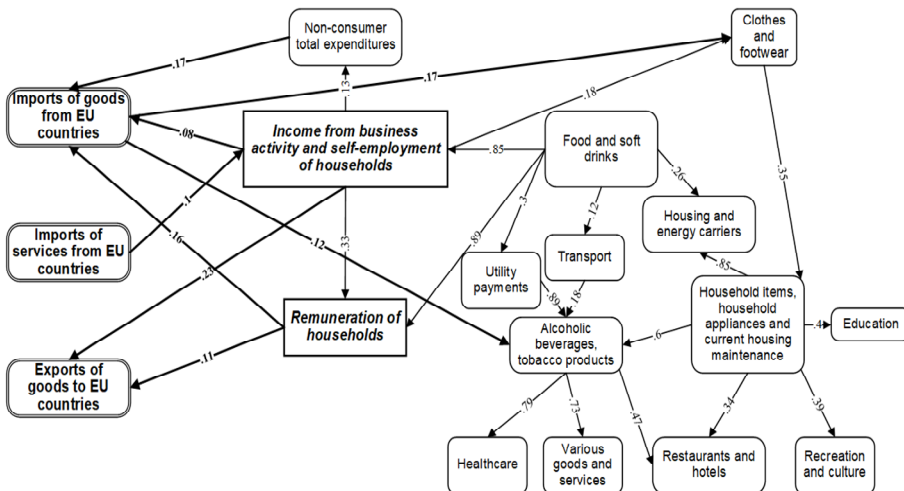
So, the SEM results indicated the confirmation of all proposed hypotheses. Import-export relations with EU countries are partially influenced and determined by the structure of domestic trade of the Carpathian regions of Ukraine, which confirms hypothesis H1. Also

established a relationship between household income and commodity relations of the Carpathian area with the EU (see Table 2).

Table 2   Path analysis for the Hypothesis H1

Variables	Path	Variables	Standardised regression weights	Conversion rate	P
Clothes and footwear	←	Imports of goods from EU countries	0.17	3.996	***
Alcoholic beverages, tobacco products	←	Imports of goods from EU countries	0.159	6.353	***
Imports of goods from EU countries	←	Income from business activity and self-employment	0.08	3.335	< 0.025
Imports of goods from EU countries	←	Remuneration of households	0.16	5.452	***
Imports of goods from EU countries	←	Non-consumer total expenditures	0.17	3.617	< 0.025
Income from business activity and self-employment	←	Imports of services from EU countries	0.1	1.344	< 0.025
Exports of goods to EU countries	←	Income from business activity and self-employment	0.23	3.232	***
Exports of goods to EU countries	←	Remuneration of households	0.11	3.821	***

Note: ***p < 0.001.

Table 3   Path analysis for the Hypothesis H2

Variables	Path	Variables	Standardised regression weights	Conversion rate	P
Income from business activity and self-employment	←	Food and soft drinks	0.85	7.530	***
Non-consumer total expenditures	←	Income from business activity and self-employment	0.13	1.825	< 0.025
Clothes and footwear	←	Income from business activity and self-employment	0.18	7.403	***
Remuneration of households	←	Income from business activity and self-employment	0.33	3.888	***
Remuneration of households	←	Food and soft drinks	0.89	10.506	***

Note: ***p < 0.001.

The significant interaction of domestic trade individual indicators with household income confirms Hypothesis H2 (see Table 3).

The development of trade relations with the EU will have a positive impact on the trade structure in the Carpathian regions of Ukraine due to the presence of direct and indirect effects (see Table 4), which confirms Hypothesis H3.

Table 4 Direct, indirect and total effects for the Hypothesis H3

Construct	Effect	Clothes and footwear	Alcoholic beverages, tobacco products	Household items, household appliances and current housing maintenance	Various goods and services	Restaurants and hotels
Imports of goods from EU countries	Direct	0.17	0.12	0	0	0
	Indirect	0	0	0.35	0.73	0.47
	Total	0.17	0.12	0.35	0.73	0.47
Imports of services from EU countries	Direct	0	0	0	0	0
	Indirect	0.18	0	0	0	0
	Total	0.18	0	0	0	0

5 Discussion

International trade and the development of global interdependence have an influence on the economic progress of different countries. However, there is an opinion that international trade cannot have a significant impact on economic growth in developing countries due to their lack of capacity for import and export of goods and services (Parežanin et al., 2021). The SEM analysis results revealed the formed structure of household retail turnover in the Carpathian area of Ukraine. The structure is based on three supporting components: 'food and soft drinks', 'alcoholic beverages and tobacco products' and 'household items, household appliances and current housing maintenance'. Most types of household retail turnover are associated with these supporting components. Thus, the analysis revealed a strong correlation between the expenses on 'alcoholic beverages and tobacco products' and 'healthcare'; the expenses on 'food and soft drinks', 'alcoholic beverages and tobacco products' and 'utility payments', etc. However, only the key component 'Food and soft drinks' has a considerable impact on household income and actively contributes to the economic development of the Carpathian area of Ukraine. This is confirmed by the fact that the studied areas have a developed production base of food and non-alcoholic products. Other supporting components of the retail trade structure are economically inactive in the development of household income.

The results of Parežaninet al. (2021) have shown the impact of economic change on trade between the countries of South-Eastern Europe (SEE), regardless of whether they are EU member states or non-EU countries. This study found out that imports of goods and services from EU countries affect the structure of retail trade in the neighbouring countries. In regions of the Ukrainian Carpathian area, there is a direct impact on the commodity groups 'clothing and footwear' and 'alcoholic beverages and tobacco products', and an indirect impact on other components of the structure. At the same time, the SEM analysis does not confirm a significant influence of imports of goods and services from EU countries and the turnover of 'food and soft drinks'. Thus, the EU

countries have not yet determined the structure of food turnover in the regions of the Carpathian area of Ukraine. The empirical results of Meinen and Raff (2018) indicate that increased consumer goods imports are negatively related to the number of retail firms, A greater welfare impact for an advanced economy can be expected to come from lower import prices, as retailers turn to imports instead of domestically sourced goods, and from the trade-induced shift of market share towards the bigger retailers and retail chains that import directly.

It was found that household income ('income from business activity and self-employment of households' and 'remuneration of households') affects the amount of goods imports from EU countries. However, imports from EU countries bring neither additional income to households nor the contribution to their economic development.

Household income ('income from business activity and self-employment of households' and 'remuneration of households') affects 'Exports of goods to EU countries'. However, the export of goods from the regions in the Carpathian area of Ukraine to EU countries is not directly related to the existing structure of trade. Thus, the internal isolation of the retail trade structure in terms of participation in export relations with EU countries is established. Also, the SEM analysis does not confirm the impact of imports from EU countries on household incomes. Such results correlate with the research of Antošová et al. (2021), who studied the role of income inequality in the importing country as a determinant of export unit value and product quality. Their findings show that income inequality is a determinant of import demand which ultimately induces quality and unit value differentials across markets.

As mentioned by Kang and Ahn (2021), SEM is a method of data analysis that is widely used in various fields of study as has many advantages. Using of SEM as a multivariate statistical technique to test relationships between variables gave an opportunity to analyse the EU international trade impact on regional retail markets of neighbouring countries (on the example of the Ukrainian part of the Carpathian area). According to the results of Owolabi et al. (2020), the use of SEM analysis can also be useful in minimising measurement errors and in enhancing the reliability of constructs. The authors suggested that SEM should be applied to test the relationship between variables since it can explore complex correlations among variables such as direct, indirect, spurious, hierarchical and non-hierarchical.

6   Conclusions

The research results proved, that in the western border regions of Ukraine a formed stable structure of domestic retail trade, which based on three components: 'food and soft drinks', 'alcoholic beverages and tobacco', 'household items, household appliances, and current housing maintenance'. According to SEM analysis, retail domestic trade is the main source of household income. This result confirms the strong tendency of the economy in neighbouring regions to the field of trade services. Therefore, trends in the development of domestic trade project the economic development facilitation in the Ukrainian part of the Carpathian area.

It is established that the structure of domestic trade in the western regions of Ukraine is partly connected with the EU by import relations. Only some components of the structure are projected to develop due to imports. This fact confirms the significant

unrealised potential of import interaction of Ukraine's border regions with its western European neighbours.

The level of household income significantly affects the import levels from EU countries. Therefore, the economic development will predictably cause the increase in the level of goods imports from EU countries. A similar result is set for the level of exports of the western regions of Ukraine to the EU. This fact confirms that the economic activity of households is projected to focus on the development of exports to EU countries.

Thus, the results of the SEM analysis revealed that the structure of the domestic trade turnover in the regions of the Carpathian area of Ukraine is connected with export-import relations. In particular, it depends on the level of household income. That is why the development of the economic level of households is crucial both for the structure of domestic trade and for ensuring the further economic integration of Ukraine into the EU.

European integration processes in Ukraine will determine the implementation of the strategy of strengthening import-export relations with EU countries. The results of our study provide a practical opportunity to predict possible scenarios and key factors of such integration. Another result of the research sustains the fact that the reduction of border trade restrictions is beneficial for the system of domestic trade of the regions in the Carpathian area of Ukraine.

Beyond these findings, the obtained results allow further analysis of Ukraine's trade system and assessment of its ability to mutually beneficial integration into the EU.

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