Strategic positioning of Ukraine in the context of developing the export potential of the European agricultural sector

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- **The Purpose of research.** This study aims to provide a theoretical substantiation of an approach to determining Ukraine's strategic position within the European agricultural space. To achieve this aim, the study examines the interrelationships between Ukraine's resource and production capabilities, the structural characteristics of the European agricultural market, the competitiveness requirements applicable to agri-food products, and the strategic directions for developing Ukraine's export potential.

- **Methods:**

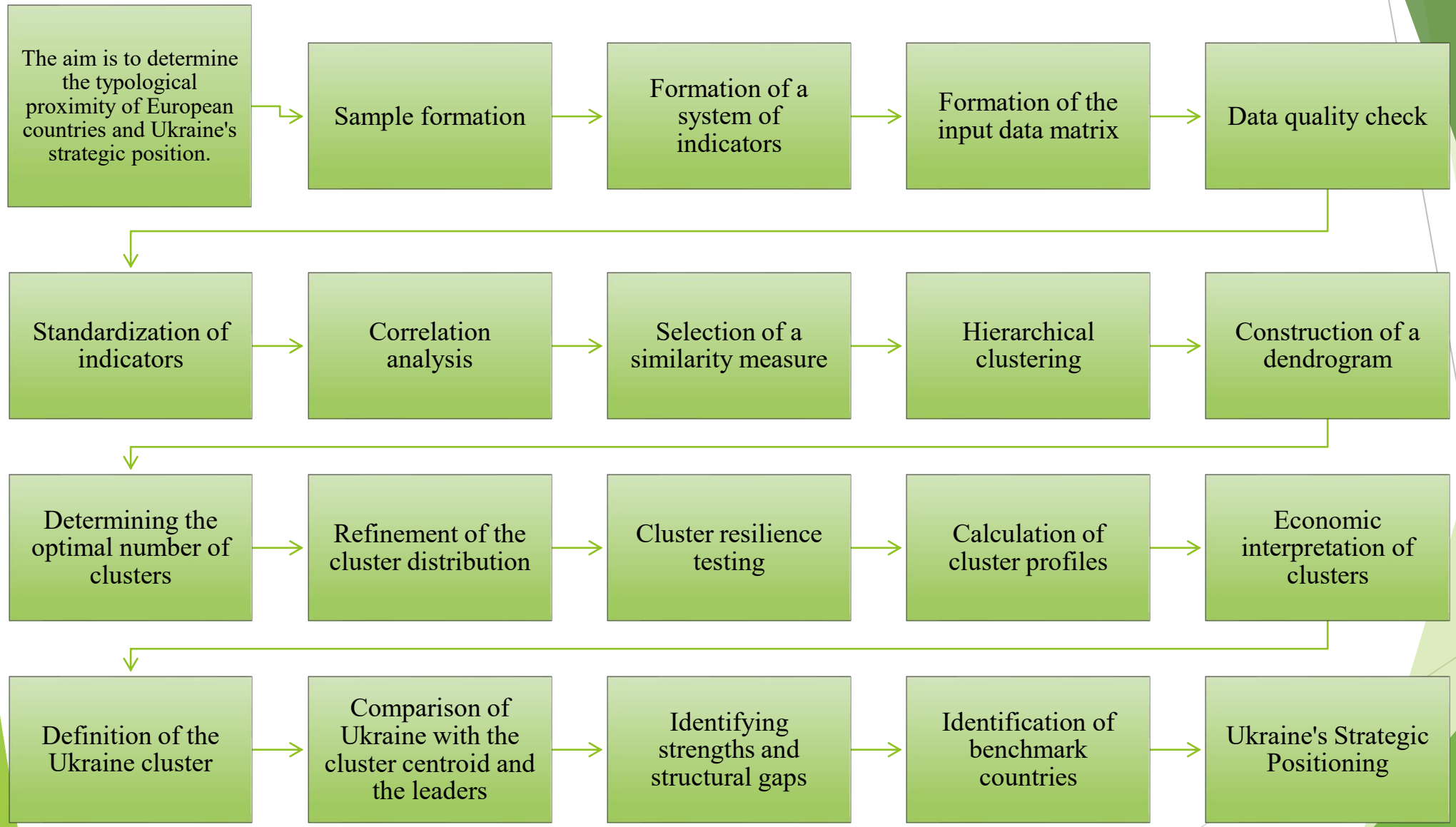
- ✓ systems approach;
- ✓ structural-functional analysis;
- ✓ comparative analysis;
- ✓ cluster analysis;
- ✓ case study;
- ✓ logical-structural modeling

Comparison of Methodological Approaches to Assessing the Competitiveness and Export Potential of the Agricultural Sector *

Approach	Object of Assessment	Advantages	Limitations
RCA	Product specialisation and competitive advantages	Simplicity, international comparability, and the ability to identify product-level advantages	Does not account for the full range of factors influencing development
Composite Index	Overall level of competitiveness	Enables countries to be ranked	Information on the structural similarity of countries is lost
Taxonomic Analysis	Level of development based on a set of indicators	Comprehensive assessment and the ability to aggregate indicators	Primarily produces a ranking rather than a typology
PCA	Identification of key latent factors	Reduces the dimensionality of the indicator system	Does not independently generate economically interpretable country groups
Cluster Analysis	Classification of countries based on a set of characteristics	Identifies homogeneous groups and structural similarities between countries	Requires a well-justified selection of indicators and clustering method
PCA and Cluster Analysis	Classification based on principal components	Combines dimensionality reduction with the formation of homogeneous groups	Requires a more complex computational procedure

*Source: developed by the authors

Algorithm for Determining Ukraine's Strategic Position through the Clustering of European Countries by the Level of Agricultural Sector Development and Export Potential *



*Source: developed by the authors

Exports of Crop and Livestock Products by European Country, 2021–2024, USD bln

Country	2021	2022	2023	2024	
Albania	0,16	0,25	0,27	0,29	
Austria	16,07	16,76	17,76	18,26	
Belgium	50,67	55,00	60,12	62,42	
Belarus	6,29	6,04	2,18	1,87	
Bulgaria	6,77	8,20	8,14	6,94	
Bosnia and Herzegovina	0,53	0,54	0,54	0,59	
United Kingdom	27,12	30,01	29,45	29,88	
Greece	8,75	9,12	10,25	10,62	
Denmark	17,83	18,02	19,04	19,26	
Estonia	1,43	1,78	1,82	1,95	
Ireland	15,83	17,44	17,40	18,33	
Iceland	0,13	0,12	0,12	0,13	
Spain	63,44	64,47	69,07	74,30	
Italy	58,73	60,41	64,93	70,53	
Latvia	3,56	4,62	4,91	4,30	
Lithuania	6,09	7,12	7,33	6,74	
Luxembourg	1,54	1,64	1,85	1,86	
Malta	0,11	0,12	0,13	0,16	
Moldova	1,40	1,89	1,70	1,59	
Netherlands	**113,92**	**119,85**	**125,75**	**133,90**	**max**
Germany	86,98	91,70	98,51	102,21	
Norway	1,16	1,29	1,29	1,21	
North Macedonia	0,66	0,67	0,72	0,80	
Poland	40,44	46,20	52,02	53,84	
Portugal	8,56	9,25	10,13	11,00	
Romania	11,16	11,62	12,03	10,23	
Serbia	4,92	4,97	4,95	5,45	
Slovakia	4,15	5,06	5,43	5,46	
Slovenia	3,05	3,43	3,89	3,70	
Hungary	11,27	12,40	13,08	13,34	
Ukraine	***26,45***	***23,32***	***21,76***	***24,36***	
Faroe Islands	0,07	0,12	0,11	0,12	
Finland	2,30	2,39	2,47	2,56	
France	75,61	82,25	82,68	83,45	
Czechia	10,00	11,35	13,37	14,16	
Montenegro	**0,07**	**0,07**	**0,10**	**0,11**	**min**
Switzerland	10,93	10,57	10,88	11,30	
Sweden	7,13	7,37	7,47	7,50	

*Source: systematized by the authors according to FAO, 2026.

System of Indicators for Clustering European Countries by the Level of Agricultural and Export Potential *

Dimension	Indicator	Design
Resources	Agricultural land area, million hectares	(X_1)
	Agricultural land per capita, ha/person	(X_2)
	Share of agricultural land in total land area, %	(X_3)
Production	Value of agricultural production, USD billion	(X_4)
	Gross value added in agriculture, USD billion	(X_5)
	Agricultural value added per person employed, th. USD/person	(X_6)
	Share of the agricultural sector in GDP, %	(X_7)
Export	Agri-food exports, USD billion *	(X_8)
	Agri-food exports per capita, USD/person	(X_9)
	Share of agri-food exports in total exports, %	(X_{10})
	Country's share in global agricultural exports, %	(X_{11})
Innovation	Research and development expenditure, % of GDP	(X_{12})
	Global Innovation Index	(X_{13})
Resource and Economic Efficiency	Land resource productivity	(X_{14})

* - including live animals

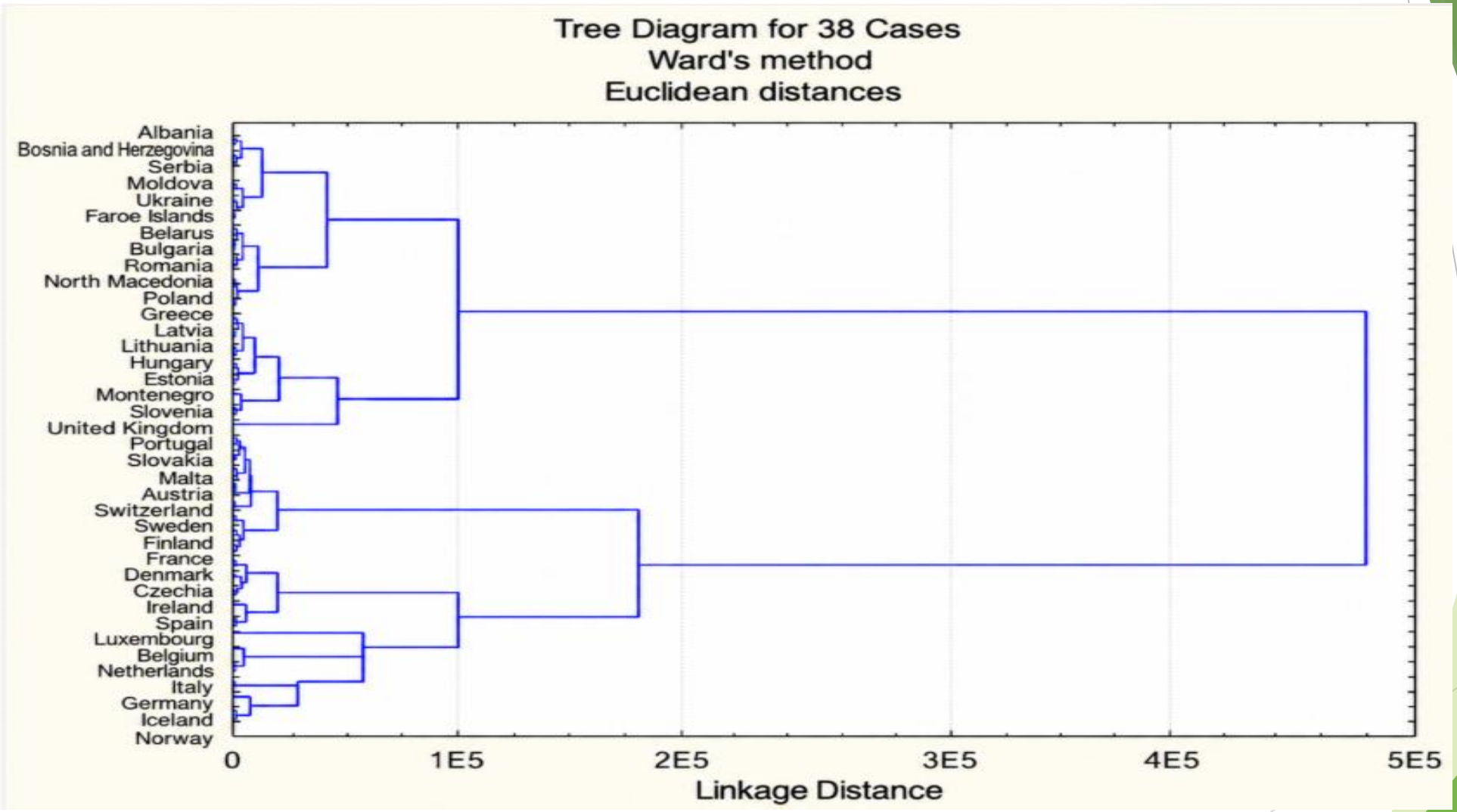
Source: developed by the authors

Pairwise Correlation Matrix of Indicators X1–X14

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14
X1	**1,00**	-0,02	0,42	0,79	0,77	-0,06	0,05	0,47	-0,26	0,18	0,47	-0,03	0,06	-0,18
X2	-0,02	**1,00**	-0,01	-0,18	-0,19	0,28	0,17	-0,25	0,32	0,27	-0,25	-0,12	-0,23	-0,25
X3	0,42	-0,01	**1,00**	0,31	0,25	-0,31	0,08	0,26	0,01	0,14	0,26	-0,29	-0,24	-0,29
X4	0,79	-0,18	0,31	**1,00**	0,99	0,14	-0,16	0,77	-0,12	-0,12	0,77	0,23	0,28	-0,09
X5	0,77	-0,19	0,25	0,99	**1,00**	0,21	-0,18	0,77	-0,13	-0,17	0,77	0,27	0,33	-0,06
X6	-0,06	0,28	-0,31	0,14	0,21	**1,00**	-0,41	0,39	0,59	-0,34	0,39	0,69	0,68	0,15
X7	0,05	0,17	0,08	-0,16	-0,18	-0,41	**1,00**	-0,27	-0,26	0,63	-0,27	-0,55	-0,50	-0,18
X8	0,47	-0,25	0,26	0,77	0,77	0,39	-0,27	**1,00**	0,37	-0,21	1,00	0,42	0,40	0,06
X9	-0,26	0,32	0,01	-0,12	-0,13	0,59	-0,26	0,37	**1,00**	-0,12	0,37	0,40	0,28	0,09
X10	0,18	0,27	0,14	-0,12	-0,17	-0,34	0,63	-0,21	-0,12	**1,00**	-0,21	-0,54	-0,42	-0,11
X11	0,47	-0,25	0,26	0,77	0,77	0,39	-0,27	1,00	0,37	-0,21	**1,00**	0,42	0,40	0,06
X12	-0,03	-0,12	-0,29	0,23	0,27	0,69	-0,55	0,42	0,40	-0,54	0,42	**1,00**	0,84	0,09
X13	0,06	-0,23	-0,24	0,28	0,33	0,68	-0,50	0,40	0,28	-0,42	0,40	0,84	**1,00**	0,20
X14	-0,18	-0,25	-0,29	-0,09	-0,06	0,15	-0,18	0,06	0,09	-0,11	0,06	0,09	0,20	**1,00**

*Source: calculated by the authors

Clustering of European countries by level of agricultural export potential



*Source: built by the authors

Distribution of European Countries by Cluster Based on the Results of K-means Clustering (K = 4) and Economic Characteristics of the Identified Cluster *

Cluster	Cluster model	Countries	Key characteristics
1	High-Productivity, Innovation-Driven and Export-Oriented	Belgium, United Kingdom, Iceland, Netherlands, Norway, Sweden	High agricultural productivity, innovation capacity, export intensity, and efficient land use; strong capacity to generate value-added agri-food products.
2	Large-Scale Production, Resource Endowment, and Export Potential	Austria, Denmark, Ireland, Spain, Italy, Luxembourg, Germany, Finland, France, Czechia, Switzerland	Substantial production and resource base, significant agricultural output, and strong integration into international trade flows.
3	Agricultural Specialization with Moderate Export Potential	Bulgaria, Greece, Estonia, Latvia, Lithuania, Malta, Portugal, Slovakia, Slovenia, Hungary, Montenegro	Relatively high structural importance of agriculture and agri-food exports, combined with moderate production scale, productivity, and innovation activity.
4	Resource-Based Agricultural Potential with Insufficient Realization of Productivity and Innovation Capabilities	Albania, Belarus, Bosnia and Herzegovina, Moldova, North Macedonia, Poland, Romania, Serbia, **Ukraine**, Faroe Islands	Significant agricultural resource endowment and specialization, but insufficient realization of productive, innovative, and export capabilities.

*Source: developed by the authors based on the results of K-means clustering (k=4)

Thank you for your attention!