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CLUSTER ANALYSIS OF COUNTRIES OF THE WORLD BY COMPETITIVENESS OF TOURIST DESTINATIONS

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ABSTRACT

This study provides a comprehensive analysis of the global tourism services market by clustering countries according to the Tourism Destination Competitiveness Index. The research examines four key indicators - international tourist arrivals, the Network Readiness Index, the Sustainable Development Index, and the Quality of Life Index - which together capture the essential aspects of tourism industry development and allow for an objective assessment of each country's attractiveness for tourists. Using both hierarchical clustering and k-means clustering methods on the statistical dataset, the study identifies four distinct groups of countries with varying characteristics. A discriminant analysis is additionally employed to quantify the impact of each factor on the probability that a country belongs to a specific cluster. The empirical results highlight the substantial unevenness in the global distribution of tourist flows and the significant disparities in digital infrastructure development, sustainability, and living standards. Notably, the third cluster emerges as the most competitive, comprising countries that combine high volumes of tourist arrivals with advanced infrastructure and robust sustainability standards. Based on these findings, the study underscores the importance of an integrated approach that simultaneously strengthens digital readiness, sustainability, and quality of life to enhance tourism competitiveness in the global market.

KEYWORDS

Global Tourism Services Market, Cluster Analysis, Discriminant Analysis, Tourism Destination Competitiveness, Tourism Attractiveness

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Introduction

The global tourism services market is recognized as one of the key drivers of economic development, accounting for a substantial share of gross domestic product in many countries, generating employment opportunities, and facilitating intercultural integration. In the context of intensifying global competition, rapidly evolving consumer preferences, and continuous technological advancement, the assessment and enhancement of tourism destination competitiveness have become increasingly important. Unlike traditional approaches that focus primarily on quantitative indicators of tourist flows, contemporary research emphasizes a comprehensive evaluation of digital readiness, sustainability, and quality of life as critical components of competitive advantage. The main challenge lies in the lack of a systematic approach to clustering countries worldwide based on tourism attractiveness indicators, which limits the potential for developing effective development strategies. The aim of this study is to establish clusters of countries using integrated indicators of tourism destination competitiveness and to identify the key factors influencing their positions in the global market. The rationale for this research is grounded in the need to develop robust analytical tools to support tourism industry management in the context of globalization and economic digitalization.

Research Problem

The competitiveness of tourism destinations is now recognized as an important intangible asset that influences the economic stability and development of countries in the global environment. In scholarly research, attention is mostly devoted to individual aspects of the tourism services market, such as tourist flow volumes or financial revenues, while a comprehensive assessment of the interrelationship among tourist numbers, digital readiness, sustainability, and quality of life often remains overlooked. The lack of a systematic approach to clustering countries based on the combination of these indicators limits the potential for designing effective development strategies in the tourism sector. Bridging this gap by developing an integrated cluster analysis model makes it possible to identify hidden patterns, determine similarities and differences among countries, and enhance the evidence base for managerial decision-making in the tourism industry.

Research Focus

This study focuses on analysing the global tourism services market through the clustering of countries based on an integrated indicator of tourism destination competitiveness. The analysis is conducted using data on 56 countries from different regions of the world, ensuring the representativeness of the sample for a comprehensive assessment of the factors influencing tourism attractiveness. The combination of tourist arrivals, the Network Readiness Index, the Sustainable Development Index, and the Quality of Life Index makes it possible to identify how these key variables jointly affect the positioning of countries within global tourism clusters. The study period captures current trends in digital transformation and the adoption of sustainability principles, which are becoming increasingly significant for strategic management in the tourism sector. The integration of these indicators provides a deeper understanding of similarities and differences among countries and lays the foundation for informed decision-making to enhance competitiveness in the tourism industry.

Research Aim and Research Questions

The purpose of this study is to provide empirical findings and to test whether there is a statistically significant impact of the number of tourists, the level of digital readiness, the Sustainable Development Index, and the Quality of Life Index on shaping the competitiveness of tourism destinations in the global tourism services market. This objective is specified through a set of research tasks, which include: assessing the relationship between the volume of tourist flows and the competitiveness of countries; analysing the role of digital infrastructure and sustainability as key factors; examining differences among country clusters; and providing practical recommendations for developing growth strategies and fostering international cooperation in the tourism sector.

Table 1. Variables, Definitions and Hypothesis.

Variables	Definition/measurement	Hypothesis
Tourism destination competitiveness	An integrated indicator based on the number of tourists, the Network Readiness Index, the Sustainable Development Index, and the Quality of Life Index.	Dependent variable
Number of tourists	Measured in thousands of people; reflects the actual tourist flow and the popularity of the country.	Hypothesis 1: The number of tourists has a statistically significant impact on competitiveness
Network Readiness Index	Assesses the country's level of digital maturity and the use of ICT in the tourism sector.	Hypothesis 2: The Network Readiness Index has a statistically significant impact
Sustainable Development Index	Indicates the country's ability to ensure economic growth without harming the environment.	Hypothesis 3: The Sustainable Development Index has a statistically significant impact

Source: UNWTO (2024), Portulans Institute (2024), Sustainable Development Report (2024), Numbeo (2024)

Literature Review

The competitiveness of tourism destinations is defined as the result of the interaction between tangible and intangible assets that are critical for a destination's attractiveness and for maintaining sustainable income flows (Gravili, Silvia, Iazzi, Antonio, & Rosato, Pierfelice, 2015). According to Dwyer, Forsyth, and Rao (2000), the development potential of the tourism industry depends on its ability to maintain competitive advantages in providing services to tourists. Researchers emphasize the importance of integrating digital technologies, which play a key role in creating value and convenience for tourists (Buhalis & Amaranggana, 2015). It is well established that the development of smart tourism relies on the creation of smart destinations, business ecosystems, and smart experiences supported by effective tourism data management (Gretzel, Sigala, Xiang, et al., 2015). Zhu, Zhan, and Li (2021) argue that the sustainable development of tourism destinations is closely linked to environmental competitiveness and requires adequate financial investment and management to ensure long-term growth. Hassan (2000) highlights that a detailed new model of competitiveness focuses on the factors of environmental sustainability in tourism destinations, emphasizing the importance of effective management, stakeholder engagement, and the preservation of unique comparative advantages to ensure long-term attractiveness and economic viability.

Numerous empirical studies confirm the interrelationship between tourism development, quality of life, and the level of sustainability (Băndoi, Jianu, Enescu, Axinte, Tudor, & Firoiu, 2020). Despite the fact that most earlier studies examined these factors separately, recent trends demonstrate a gradual shift towards a comprehensive analysis of the interconnections between tourism development and residents' quality of life at the global level (Hu, Li, Liu, & Chen, 2022). The application of cluster analysis in tourism has been widely explored to identify groups of similar destinations and to develop recommendations for destination management (Sarac, Sharma, & Hassan, 2021). Specifically, Dona and Popa (2013) note that most tourism destinations do not emerge naturally but are created through effective management of attractions, accessibility, and services within a given area, which enables the use of cluster analysis to identify rural areas with tourism potential and to develop destination management plans for their better promotion and utilization. At the same time, discriminant analysis makes it possible to evaluate the strength of the impact of such factors as air transport infrastructure, ICT, cultural resources, and price competitiveness on the probability of a country belonging to a particular tourism competitiveness group (Nastase, Cristache, Kardos, Gabor, & Petrariu, 2021).

Thus, recent studies confirm the necessity of an integrated approach that considers the number of tourists, digital readiness, sustainability, and quality of life as key determinants of tourism destination competitiveness, which substantiates the relevance of conducting a comprehensive cluster analysis to develop evidence-based managerial decisions and sustainable development strategies in the tourism sector.

Materials and Methods

The conceptual framework of this study includes four main variables: the dependent variable is the Tourism Destination Competitiveness Index, which is calculated based on four key indicators—the number of tourists, the Network Readiness Index, the Sustainable Development Index, and the Quality of Life Index. To ensure a comprehensive analysis and to avoid biased estimations due to the omission of relevant factors, discriminant analysis was additionally applied to assess the strength of each indicator's impact on the probability of a country belonging to a specific cluster.

To identify homogeneous groups of countries, two clustering methods were used: hierarchical clustering and the k-means method. The empirical analysis is based on data for 56 countries from various regions worldwide, including Africa, the Middle East, Europe, the Americas, and the Asia-Pacific region. The data were collected from publicly available statistical sources for the most recent period (2024).

Below are the discriminant functions for each cluster:

$$pG1 = -3{,}85763 - 0{,}61725\ X_1 + 2{,}37431\ X_2 + 1{,}38337\ X_3 + 2{,}51169\ X_4$$
$$pG2 = -1{,}80447 - 0{,}43907\ X_1 - 1{,}45822\ X_2 - 0{,}44519\ X_3 - 1{,}72852\ X_4$$
$$pG3 = -11{,}6077 + 5{,}0893\ X_1 + 2{,}0265\ X_2 + 3{,}3563\ X_3 + 3{,}4790\ X_4$$
$$pG4 = -10{,}6899 - 2{,}0221\ X_1 - 2{,}5847\ X_2 - 5{,}1259\ X_3 - 3{,}4055\ X_4$$

where X_1 is the number of tourists (thousand persons), X_2 is the Network Readiness Index, X_3 is the Sustainable Development Index, and X_4 is the Quality of Life Index.

All statistical calculations and cluster visualisations were performed using SPSS and Excel software, ensuring the reliability and reproducibility of the obtained results.

Results

For the analysis of the global tourism services market, clusters of countries were developed and examined in the context of the development of the tourism market. This research area is of particular importance in the context of increasing global competition and constant changes in tourist preferences. As countries work to improve tourism infrastructure, implement innovative services, and expand markets, it is crucial to investigate which countries possess the necessary characteristics to attract tourist flows, which segments of the tourism industry are leading in this process, and what potential directions of cooperation may emerge to achieve sustainable development and growth of the tourism sector.

Cluster analysis is widely used in scientific research, particularly in the study of the global tourism services market. This study aims to group countries according to their attractiveness and competitiveness in the tourism sector, taking into account the number of tourists, the Network Readiness Index, the Sustainable Development Index, and the Quality of Life Index. Cluster analysis makes it possible to identify similarities and differences among countries in terms of their contribution to the development of the tourism industry and serves as a basis for further analysis and the development of strategies for enterprises operating in the tourism sector.

The tourism industry plays a significant role in the global economy, stimulating the development of various sectors, including transport, accommodation, food services, and the cultural industry. It is important to note that the competitiveness of a country's tourism market is based on many aspects, including the availability of digital technologies, the level of sustainability, infrastructure readiness, and the overall quality of life in the country.

In-depth indicator analysis makes it possible to track patterns in tourist flows and to develop effective strategies for tourism enterprises to strengthen their positions in the global market. Key factors influencing the development of tourism services include the level of technological provision, the quality of infrastructure, environmental sustainability, and the comfort of tourists' stay in a country. Optimising these aspects contributes to enhancing countries' competitiveness, attracting investment in the sector, and ensuring sustainable growth of the tourism industry.

For conducting cluster analysis of the global tourism services market, two sets of input data were formed: statistical indicators and countries. The selected indicators for assessing the global tourism market include the number of tourists, the Network Readiness Index, the Sustainable Development Index, and the Quality of Life Index, which reflect the key aspects of the tourism industry's development and its attractiveness to travellers.

The number of tourists characterises the actual level of tourist flows and the popularity of the country as a destination for leisure or business travel. The Network Readiness Index assesses the level of a country's digital maturity and its ability to use information and communication technologies for economic development and social progress. For the tourism sector, a high level of network readiness means convenient access to online booking, developed mobile communication infrastructure, secure digital payments, and efficient navigation systems. The Sustainable Development Index reflects a country's ability to ensure economic growth without harming the environment and social welfare. In the tourism sector, sustainability implies the responsible use of natural resources, minimising negative impacts on the environment, and supporting local communities.

The Quality of Life Index reflects the standard of living of a country's citizens and the comfort of conditions for living and visiting. For the tourism industry, a high Quality of Life Index is an important factor, as countries with comfortable living conditions attract more visitors, encouraging their longer stays and positive tourism experiences.

The list of countries to be clustered according to these variables includes 56 states from different regions of the world, covering countries from Africa, the Middle East, Europe, the Americas, and the Asia-Pacific region. The African countries include the Republic of Kenya, the Kingdom of Morocco, the Republic of Mauritius, and the Republic of South Africa. The Middle East includes Israel, Jordan, Oman, and the Republic of Turkey. Europe includes the Republic of Albania, the Republic of Austria, the Kingdom of Belgium, Bosnia and Herzegovina, the Republic of Bulgaria, the Republic of Croatia, the Republic of Cyprus, the Republic of Finland, the French Republic, the Federal Republic of Germany, the Hellenic Republic, Iceland, the Italian Republic, the Republic of Latvia, the Republic of Lithuania, the Republic of North Macedonia, the Republic of Moldova, the Republic of Malta, the Portuguese Republic, Romania, Serbia, the Republic of Slovenia, the Kingdom of Spain, the Swiss Confederation, the United Kingdom of Great Britain, Montenegro, and Ukraine.

The Americas include the Argentine Republic, Canada, the Republic of Chile, the Dominican Republic, the United Mexican States, the United States of America, the Eastern Republic of Uruguay, and the Republic of Guatemala. The Asia-Pacific region includes the Commonwealth of Australia, the Kingdom of Cambodia, the Republic of India, the Republic of Indonesia, Japan, Malaysia, New Zealand, the Republic of the

Philippines, the Republic of Singapore, the Republic of Korea, the Democratic Socialist Republic of Sri Lanka, the Kingdom of Thailand, and the Socialist Republic of Vietnam.

In the process of selecting countries for analysis, several factors were taken into account. First, the study aims to assess the global tourism market; therefore, the sample includes countries representing different regions of the world, ensuring comprehensive analysis and comparability. Second, the selected countries demonstrate different levels of economic development, tourism activity, and infrastructure readiness, contributing to the representativeness of the sample. The countries included in the analysis have varying volumes of tourist flows, levels of digital and transport infrastructure, environmental indicators, and quality of life, which makes it possible to obtain a comprehensive understanding of their competitiveness in the tourism sphere. In addition, the availability of statistical data for the selected parameters was considered, which is why some countries with limited access to up-to-date information were not included in the analysis. This approach makes it possible to form a high-quality basis for further cluster analysis and the identification of trends in the development of the global tourism market (Table 2).

Table 2. Competitiveness indicators for tourism destinations, 2024

Region	Country	Number of Tourists, thousand people	Network Readiness Index	Sustainable Development Index	Quality f Life Index
Africa	Kenya	1670	47,06	62,17	101,34
	Morocco	15900	45,93	70,85	110,98
	Mauritius	1381,4	51,17	70,45	109,28
	South Africa	11728	47,8	63,44	151,71
Middle East	Israel	961,7	70,46	73,53	163,84
	Jordan	9698,7	47,04	69,06	124,17
	Oman	3890,246	53,52	66,11	211,8
	Turkey	52620	52,65	70,47	131,61
Europe	Albania	13,770	44,67	75,03	104,69
	Austria	43,560	66,05	82,55	191,68
	Belgium	16,159	65,88	80,04	130,17
	Bosnia and Herzegovina	1,945.5	43,20	73,99	133,88
	Bulgaria	13,352	53,15	75,54	143,47
	Croatia	17,381	51,96	82,19	173,44
	Cyprus	4,039	55,68	72,92	156,95
	Finland	2,904	75,76	86,35	204,36
	France	35,260	68,71	82,76	165,70
	Germany	37,330	73,54	83,45	190,46
	Greece	35,587	52,90	78,71	138,17
	Iceland	2,260	64,86	79,54	194,45
	Italy	71,060	63,60	79,29	150,72
	Latvia	1,569	57,68	80,99	164,41
	Lithuania	1,451	59,95	78,12	172,35
	North Macedonia	12,621	45,92	73,80	120,94
	Moldova	246,1	48,11	78,81	122,46
	Malta	3,545	59,75	76,95	132,80
	Portugal	19,317	67,73	80,22	167,49
	Romania	2,366	52,77	76,70	142,63
	Serbia	2,383	53,91	77,03	124,83
	Slovenia	6,566	59,38	81,34	178,50
	Spain	93,840	65,15	80,70	184,03
	Switzerland	21,430	73,71	79,30	205,67
	United Kingdom	12,510	73,57	82,16	173,59
	Montenegro	1,4498	49,58	73,05	146,04
	Ukraine	2,500	55,32	74,81	114,63

America	Argentina	6602	48,99	74,4	118,21
	Canada	29670	71,76	78,83	164,44
	Chile	9892	53,4	77,82	106,39
	Dominican Republic	8535	45,27	73,12	91,23
	Mexico	27050	50,32	69,28	125,69
	United States	70590	78,96	74,43	188,43
	Uruguay	15230	53,4	77,09	139,02
	Guatemala	2946	36,52	59,41	107,57
Asia-Pacific	Australia	8154	69,43	76,88	191,87
	Cambodia	6420	35,65	64,9	78,51
	India	9670	53,63	63,99	124,23
	Indonesia	13798	53,84	69,43	102,69
	Japan	36860	70,96	79,87	184,83
	Malaysia	25030	57,88	69,32	136,06
	New Zealand	3262	65,83	78,81	190,96
	Philippines	5946	49,93	67,47	97,58
	Singapore	16510	76,94	71,41	154,08
	South Korea	16361	74,85	77,33	146,2
	Sri Lanka	2053	42,12	67,43	77,07
	Thailand	35540	56,07	74,67	106,45
	Vietnam	17560	54,96	73,32	95,38

Source: Source: UNWTO (2024), Portulans Institute (2024), Sustainable Development Report (2024), Numbeo (2024)

Thus, for the clustering process, the following indicators were selected: number of tourists, Network Readiness Index, Sustainable Development Index, and Quality of Life Index. Based on the analysis conducted, a dendrogram was obtained (Figure 1).

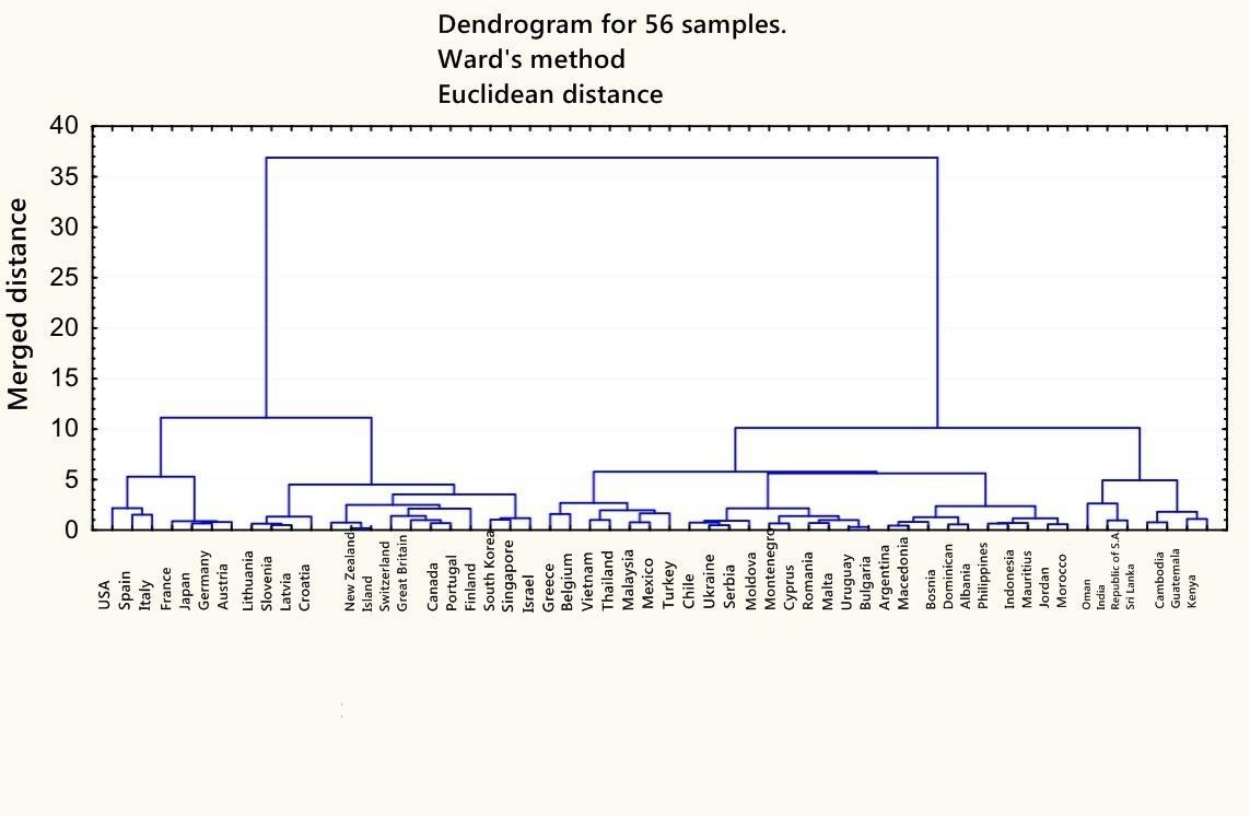

***Fig. 1**. Dendrogram of countries based on Ward's method*
Source: Prepared by the Authors based on the outputs of the STATISTICA statistical program

Figure 1 shows that the data can be divided into four main groups (a significant gap between branches at about level 10). There is an obvious uneven distribution of tourism destinations in terms of attractiveness.

The next step of the analysis is to evaluate the k-means by variables across each cluster (Figure 2).

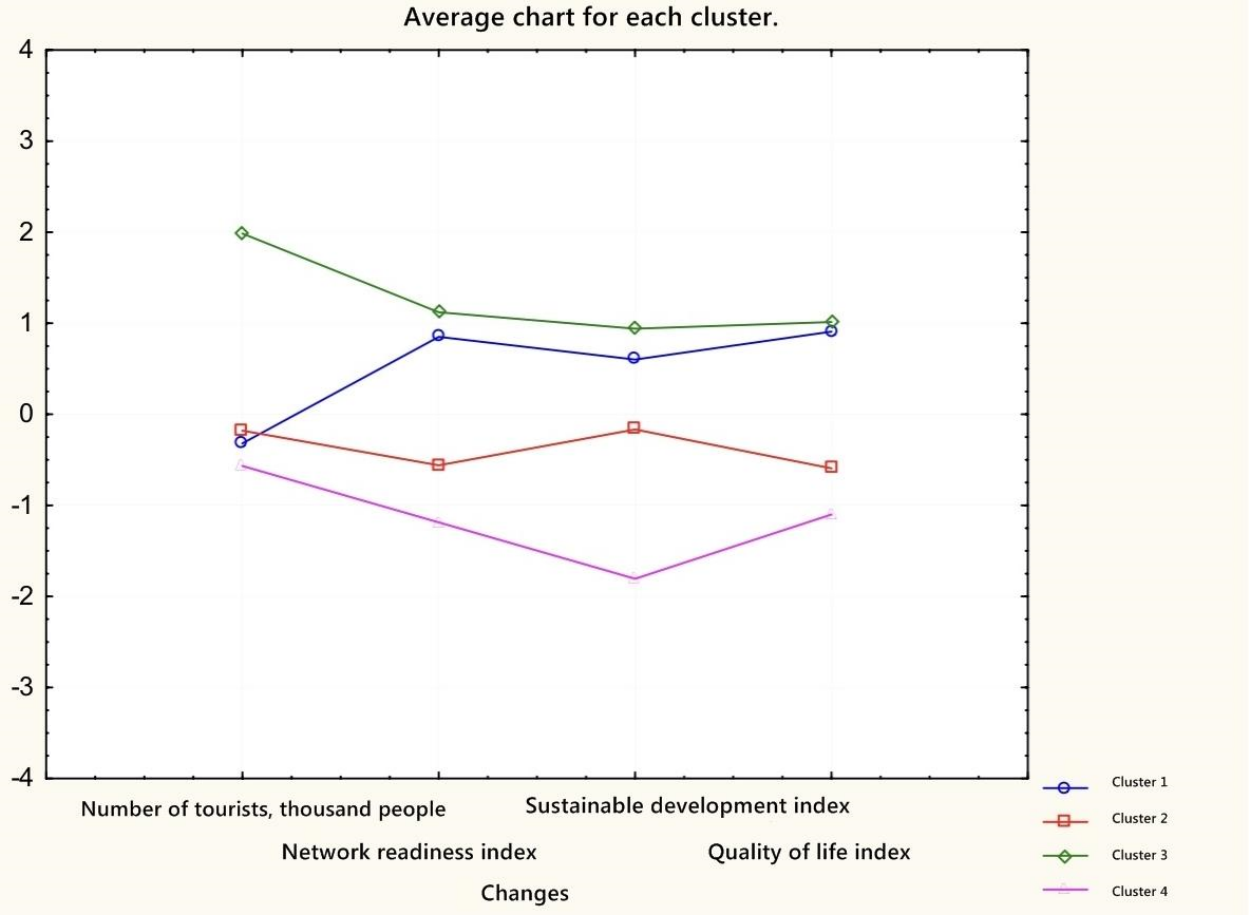

Fig. 2.*Visualization of k-means clustering by cluster*
Source: Prepared by the Authors based on the outputs of the STATISTICA statistical program

The k-means graph illustrates the differences among the four formed clusters in terms of each variable. Figure 2 shows that in terms of the number of tourists, all clusters except cluster 3 are at a similar level. In terms of the Network Readiness Index, clusters 1 and 3 demonstrate higher values, while clusters 2 and 4 have lower scores. The best results for the Sustainable Development Index are observed in clusters 1 and 3, whereas cluster 4 has the lowest level of sustainability. Regarding the Quality of Life Index, cluster 3 also holds leading positions, while cluster 4 shows the weakest performance.

Based on the confirmed adequacy of the country distribution across clusters and after determining the optimal number of clusters, the final distribution of the selected countries is presented (Table 3).

The developed countries with high quality of life and stable tourism infrastructure included in the first cluster are characterised by well-developed economies, high indicators of quality of life and digital readiness, and stable tourist flows, although they are not always leaders in the number of tourists, focusing on comfortable tourism (eco-tourism, urban tourism, business tourism).

Emerging tourist destinations form the second cluster, combining countries with moderate levels of tourism infrastructure that are actively developing their attractiveness to tourists. They have a lower level of digital readiness but are popular among travellers due to their historical, natural, and cultural features. They are characterised by seasonal dependence (e.g., beach or ski tourism).

Table 3. Cluster analysis of countries by tourism destination competitiveness index

Cluster 1 (developed countries with high quality of life and stable tourism infrastructure)	Cluster 2 (emerging tourist destinations)	Cluster 3 (leading global tourism leaders)	Cluster 4 (countries with low level of tourism infrastructure)
Israel, Oman, Belgium, Croatia, Finland, Iceland, Latvia, Lithuania, Portugal, Slovenia, Switzerland, United Kingdom, Canada, Australia, New Zealand, Singapore, South Korea	Morocco, Mauritius, Jordan, Turkey, Albania, Bosnia and Herzegovina, Bulgaria, Cyprus, Greece, North Macedonia, Moldova, Malta, Romania, Serbia, Montenegro, Ukraine, Argentina, Chile, Dominican Republic, Mexico, Uruguay, Indonesia, Malaysia, Thailand, Vietnam	Austria, France, Germany, Italy, Spain, USA, Japan	Kenya, South Africa, Guatemala, Cambodia, India, Philippines, Sri Lanka

The third cluster includes leading global tourism destinations with the highest number of visitors annually. They have well-developed tourism, transport, and digital infrastructure as well as a high level of sustainability. These countries offer excellent conditions for all types of tourism (urban, cultural, nature-based, gastronomic).

The fourth cluster includes countries with tourism potential but facing challenges such as a low level of digital infrastructure and a weak economy, which affects the quality of life. This region is characterised by high natural and cultural attractiveness, but tourism is mostly exotic (safari, eco-tourism, adventure tourism).

Conducting a cluster analysis of countries by tourism attractiveness forms the basis for further discriminant analysis, which serves as a foundation for developing a model to quantitatively characterise the impact of each indicator on the probability of a country belonging to the respective cluster (Table 4).

Table 4. Discriminant analysis of countries based on k-means clustering

Indicator	Cluster 1	Cluster 2	Cluster 3	Cluster 4
	G_1:1 - p=,30357	G_2:2 - p=,44643	G_3:3 - p=,12500	G_4:4 - p=,12500
Number of tourists (thousands)	-0,61725	-0,43907	5,0893	-2,0221
Network Readiness Index	2,37431	-1,45822	2,0265	-2,5847
Sustainable Development Index	1,38337	-0,44519	3,3563	-5,1259
Quality of Life Index	2,51169	-1,72852	3,4790	-3,4055
Constant	-3,85763	-1,80447	-11,6077	-10,6899

Source: Prepared by the Authors based on the outputs of the STATISTICA statistical program

Based on the developed data, a system of multiple regression equations is formed to determine the probability of belonging to a specific cluster in terms of tourism attractiveness based on quantitative factors:

pG1 = -3,85763 - 0,61725 X1+ 2,37431 X2 + 1,38337 X3 + 2,51169 X4
pG2 = -1,80447 - 0,43907 X1 - 1,45822 X2 - 0,44519 X3 - 1,72852 X4
pG3 = -11,6077 + 5,0893 X1+ 2,0265 X2 + 3,3563 X3 + 3,4790 X4
pG4 = -10,6899 - 2,0221 X1 - 2,5847 X2 - 5,1259 X3 - 3,4055X4

where *pG1* (*pG2*, *pG3*, *pG4*) denotes the probability of belonging to the first (respectively, second, third, or fourth) group of countries according to the Tourism Destination Competitiveness Index;

X_1 — number of tourists (thousands of people);

X_2 — Network Readiness Index;

X_3 — Sustainable Development Index;

X_4 — Quality of Life Index..

The analysis of these equations allows for the following conclusions:

- For cluster 1, the negative effect of the number of tourists (-0,61725) means that with an increase in tourist flows, the probability of falling into the first cluster decreases. The positive effect of the Network Readiness Index (+2,37431), Sustainable Development Index (+1,38337), and Quality of Life Index (+2,51169) indicates that countries with well-developed digital infrastructure, high living standards, and sustainability are more likely to belong to the first cluster.
- For cluster 2, all factors have a negative impact: number of tourists (-0,43907), Network Readiness Index (-1,45822), Sustainability (-0,44519), and Quality of Life (-1,72852), indicating that countries in this cluster have weaker digital and social characteristics, and their tourism attractiveness is less associated with high sustainability and quality of life indicators.
- For cluster 3, the largest positive effect is exerted by the number of tourists (+5,0893), indicating that this cluster includes the most popular tourist destinations. All other factors also have a positive impact (Network Readiness Index +2,0265, Sustainability +3,3563, Quality of Life +3,4790), confirming the high competitiveness of these countries in the tourism sector.
- For cluster 4, all factors have a negative impact (number of tourists -2,0221, Network Readiness Index -2,5847, Sustainability -5,1259, Quality of Life -3,4055), indicating that countries in this cluster have low scores for all criteria and are not popular tourist destinations.

Thus, the clustering of countries in terms of the Tourism Destination Competitiveness Index identified four clusters, each of which has its own specific characteristics in the tourism sector.

Discussions

Based on the results of the conducted cluster and discriminant analysis, the following conclusions can be drawn:

- The calculated coefficients of the discriminant functions indicate that the number of tourists has the strongest positive effect on the probability of a country belonging to the third cluster (leading global tourism destinations), which confirms Hypothesis 1. For other clusters, this factor has either a negative or moderate impact, reflecting the different development strategies of destinations.
- The Network Readiness Index demonstrates a significantly positive influence on the probability of countries belonging to the first and third clusters, underlining the importance of digital infrastructure for enhancing destination competitiveness and confirming Hypothesis 2. For Clusters 2 and 4, this factor has a negative effect, highlighting their lower level of digital maturity.
- The Sustainable Development Index also exerts a statistically significant positive impact for Cluster 3, which underscores the role of sustainability as a key determinant of competitive advantage (Hypothesis 3). In contrast, for Cluster 4, sustainability shows a pronounced negative effect, indicating a low level of environmental resilience.
- Finally, the Quality of Life Index shows a substantial positive effect on membership in the first and third clusters, which provides support for Hypothesis 4.

In summary, the study confirms that a comprehensive approach to assessing destination competitiveness—based on the number of tourists, the level of digital readiness, sustainability, and quality of life—makes it possible to identify clear patterns and develop well-grounded recommendations for the development of the tourism sector.

Conclusions and Implications

The conducted study demonstrates the effectiveness of applying cluster and discriminant analysis for evaluating the competitiveness of tourism destinations. The results obtained indicate that countries in the third cluster exhibit the highest levels of competitiveness due to the combination of large volumes of tourist flows, well-developed digital infrastructure, sustainable development practices, and a high quality of life. In contrast, countries grouped within the fourth cluster require improvements in both their digital and environmental components to enhance their attractiveness.

Therefore, the findings confirm the importance of adopting a comprehensive approach to designing sustainable tourism development strategies and managing destinations in the context of intensifying global competition.

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