

Transport Service as a Component of the Tourism Industry Development of Ukraine

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Abstract. The research on the impact of transport services on the development of the tourism industry has been carried out. For the selection of the most significant factors of the transport infrastructure quality and tourist demand, which can affect the effectiveness of development indicators of a tourist destination, the correlation analysis methods have been used. To determine the development level of countries according to the quality and demand indicators of the transport services, the methods of cluster analysis have been used, which confirm the established hypotheses concerning the connection between the formed groups of factors and the development of tourist destination.

1 Introduction

Tourism sector is connected with the activity of more than 50 industries, the development of which generally contributes to the employment generation, economy diversification, cultural and natural potential preservation and development. It also increases the level of innovativeness of the national economy, promotes harmonization of relations between different countries. Thus, according to the Tourism and Travel Annual Report, in 2017 the contribution of the tourism sector was about USD 7.6 trillion that constituted 10.2% of GDP; the growth of international tourist flows allowed creating 292 million jobs [1]. In Ukraine, in 2017, tourism and related industries gave the budget UAH 40 billion, which is only 1.5 % of GDP.

According to the results of the numerous studies, such a component as the transport service has a significant proportion in the structure of the tourist products cost. Thus, according to the Tourism Act of Ukraine, the tourism product includes a pre-designed tourist services complex that combines transportation services, accommodation services and other travel services that are not related to transportation and accommodation. As stated in various publications, the cost of the transport services can reach 60% or more of the tourist product value. The role of transport in the development of tourism is unconditional, as evidenced by the results of the Ukrainian and foreign scientists' researches and studies.

2 Theoretical development and hypotheses formulation

Transport infrastructure is very important to regional development and it is an important factor supporting economic activity. Transport becomes not only a means of transportation, ensuring accessibility of tourist resources, the factor of the industry development, but also acquires properties, functions of the tourist resource, attractor.

S. Page stated that transportation is one of the most important factors contributing to the success of the tourism industry [2].

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According to B. Lamb and S. Davidson, transportation is crucial in the tourism industry, since it directly connects the supply (production) and the demand (market) [3]. Transportation network and infrastructure is a significant factor affecting the success of tourism development [4]. D. Pearce argues that tourism growth is closely linked to advances in transport technology, which gradually facilitates access to the markets and destinations around the world [5]. Government plays a significant role in developing the infrastructure for tourist transportation [6].

T. Litman identified 12 transport factors that affect the accessibility of the destination, in particular: 1) transportation modes – the quality of transportation options, such as speed, comfort and safety; 2) transport network – density, communication routes or links between destinations; 3) fare or accessibility; 4) mobility – speed and distance, traffic performance or traveling time; 5) integration of the connections and modes into the transport system; 6) transport demand; 7) a user of information – the availability of reliable information about the possibilities of mobility and accessibility; 8) mobility substitutes – telecommunications and physical travel replacement services; 9) transport management; 10) factors of the land use; 11) priority of the tourism development; 12) the level of inaccessibility or isolation [7].

The results of Kenichi Shimamoto's researches in this area allow to identify the factors influencing the competitiveness of tourist destinations: the cost of experiencing the tourist destination; the disutility/utility of the tourist destination; the level of the destination's branding; the transportation fee; the costs related to traveling time; and the transportation means disutility/utility [8]. Jameel Khadaroo and Boopen Seetanaah stated that traveling income, distance, and relative prices are important ingredients of their own respect in the tourism demand equation [6].

The factor of transportation is also taken into account while calculating the Global Competitiveness Index (GCI), the Travel and Tourism Competitiveness Index (TTCI), which contains two groups of indicators of the transport infrastructure development, namely, the infrastructure of air and land transport. Thus, the paper objective is to determine the key transport factors that significantly affect the tourism industry of a certain destination. In the result of the study, two groups of factors have been distinguished: the factors of the transport infrastructure and the factors of the tourists' transport demand. Thus, the following hypotheses have been proposed:

Hypothesis 1. The development of a tourist destination depends on the quality of the transport infrastructure.

Hypothesis 2. The development of a tourist destination depends on tourist demand.

3 Results

Ukraine's transport infrastructure consists of different modes of transport. Each of them has its own specifics. In order to ensure the country's economy operation, all modes of transport should be interrelated and operate harmoniously. General transport network of Ukraine includes 21.0 thousand kilometres of railways, 159.4 thousand kilometres of highways with a hard surface, 1.6 thousand kilometres of operational river shipping routes with an access to the Azov and the Black Sea.

The research of the transport infrastructure factors should include the following indicators: the number of airports, the number of commercial aircrafts, the density of railways, the length of railways, the density of roads, the number of deaths on highways, etc.

While analysing the level of the transport infrastructure development according to the competitiveness index, it is necessary to note that in 2017, Ukraine took 79 place in terms of the development level of the aviation transport infrastructure and 81 place in terms of the development level of the land transport infrastructure. The main factors that negatively

influenced the level of the transport infrastructure development are Quality of air transport infrastructure (102 position), Airport density (117), Quality of roads (132) [1].

Among the indicators, which characterize the demand for transport services, the number of passengers carried by the various modes of transport, revenues from the passenger transportation should be taken into account. In recent years, in Ukraine there has been a general tendency to reduce the passenger transportation market by almost all modes of transport that indicates a decrease in demand for transport services. Some positive changes are observed in the air transport sector. It is in place here to mention that the main mode of transport in Ukraine, which is in great demand among the consumers, is automotive. While there is a completely different situation in the world. Thus, according to UNWTO in 2017, slightly over half of all overnight visitors travelled to their destination by air (57%), while the remainder travelled by surface transport (45%) – whether by road (37%), rail (2%) or water (4%) [9]. The trend over time has been for air transport to grow at a somewhat faster pace than surface transport, thus the share of air transport is gradually increasing.

To study the influence factors of tourism infrastructure and tourist demand on the tourist destination development, the following algorithm has been proposed.

Stage 1. The choice of the indicator of effectiveness of the tourist destination development.

Stage 2. The collection of information on the main indicators of tourism infrastructure and tourist demand that can affect the tourist destination development.

Stage 3. The calculation of the pair correlation coefficients between the indicator of effectiveness of the tourist destination development and the factors of influence, the determination of significant correlation coefficients according to the Student's criterion and clarification of the relationship nature between the relevant factors.

Stage 4. Grouping of the countries according to the level of the tourist destination development and transportation availability with the cluster analysis methods.

During *the first stage*, the tourist flows of European countries were selected as an indicator of effectiveness of the tourist destination development.

During *the second and the third stages* the indicators that have significant correlation coefficients (Table 1) were selected. Significance was estimated with the help of the Student's coefficient.

Table 1. Factors influencing the effectiveness of the tourist destination development that have significant correlation coefficients.

Factors of transport infrastructure quality	The value of correlation coefficient	Factors of tourist demand	The value of correlation coefficient
The commercial aircraft fleet, number Var 1	0.58	Passenger transportation by rail, number, Var 9	0.74
The commercial aircraft fleet with the useful lifetime less than 5 years, number	0.45	Passenger transportation by air, number, Var 10	0.55
Commercial airports (more than 15,000 passengers), number Var 3	0.82	Revenues from passenger transportation, mln. USD, Var 11	0.65
Air transport, registered take-offs, number	0.23	Transport expenses, mln. USD, Var 12	0.57
The length of railway tracks, km Var 5	0.73		
Deaths on highways, number	0.33		

At the fourth stage, based on the desirable level of the study detailisation, three clusters of countries were identified: with the high, medium and low quality of transport infrastructure and factors of tourist demand.

Based on the iterative method of clustering k-means, the following cluster results have been obtained (Fig. 3, Fig. 4).

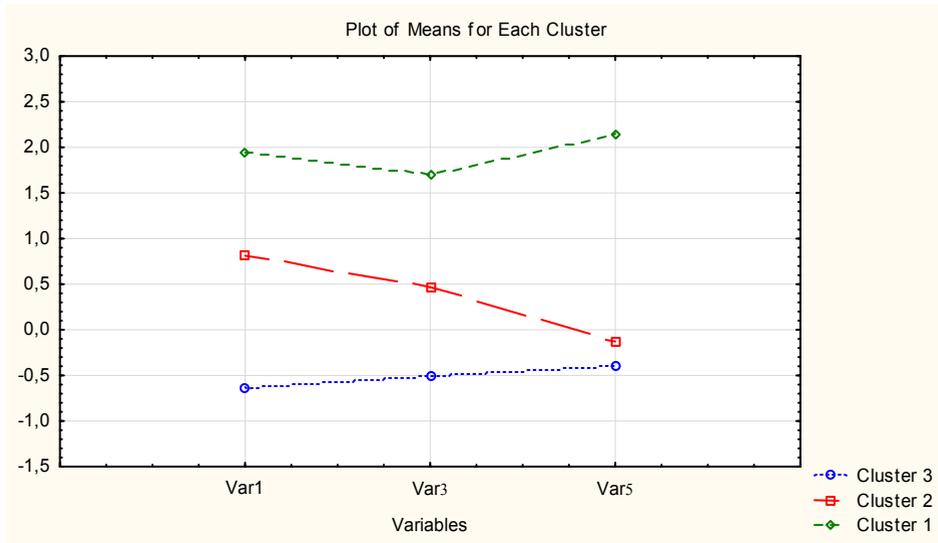


Fig. 3. Average means of transport infrastructure quality variables by clusters.
Source: Own research

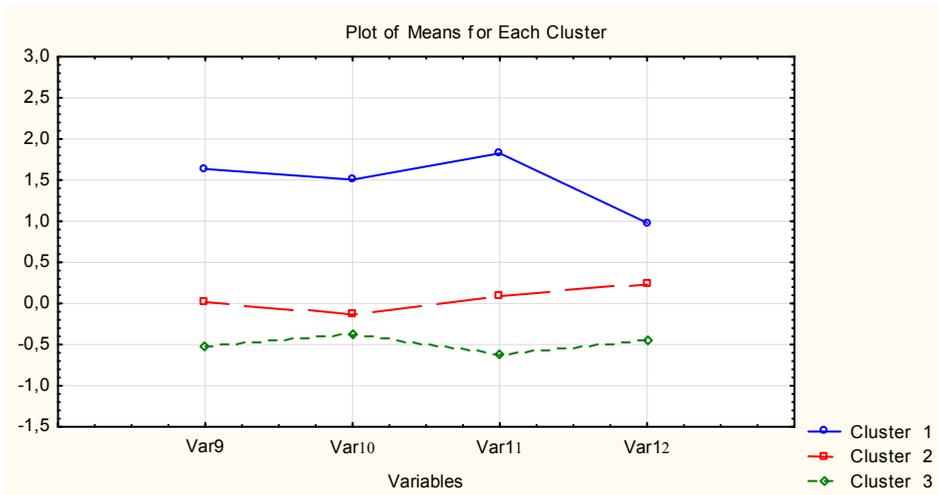


Fig. 4. Average means of tourist demand variables by clusters.
Source: Own research

The first cluster includes the countries with high indicators of the transport infrastructure quality and indicators that characterize tourist demand (Table 2). In addition, significant volumes of tourist flows characterize these countries.

Table 2. Members of Cluster 1 and Distances from Respective Cluster Centre.

Factors of transport infrastructure quality			Factors of tourist demand		
Case №	State	Distance	Case №	State	Distance
C_1	Germany	1.707896	C_1	Germany	0.845747
C_2	France	1.237087	C_2	France	0.930060
C_4	Spain	1.631217	C_4	Spain	0.668152
C_27	UK	1.376760	C_27	UK	0.843107
C_31	Turkey	0.672639	C_31	Turkey	0.906590

The second cluster includes the countries with the average indicators of the transport infrastructure quality and indicators that characterize tourist demand (Table 3).

Table 3. Members of Cluster 2 and Distances from Respective Cluster Center.

Factors of transport infrastructure quality			Factors of tourist demand		
Case №	State	Distance	Case №	State	Distance
C_3	Italy	0.783980	C_3	Italy	0.404520
C_5	Finland	0.311705	C_5	Finland	0.452581
C_6	Austria	0.326173	C_11	Greece	0.681613
C_9	Netherlands	0.244367	C_21	Denmark	0.287382
C_10	Portugal	0.493652	C_24	Poland	0.787039
C_12	Ireland	0.681203	C_26	Sweden	0.160468
C_24	Poland	1.070442	C_28	Switzerland	0.167171
C_21	Denmark	0.332759	C_24	Poland	0.787039
C_26	Sweden	1.257147			
C_28	Switzerland	0.224566			

The third cluster includes the countries with the lower indicators of the transport infrastructure quality and indicators that characterize tourist demand (Table 4).

Table 4. Members of Cluster 2 and Distances from Respective Cluster Centre.

Factors of transport infrastructure quality			Factors of tourist demand		
Case №	Distance	Distance	Case №	Distance	Distance
C_7	Slovakia	0.067171	C_7	Slovakia	0.067171
C_8	Belorus	0.164068	C_8	Belorus	0.164068
C_11	Greece	0.156566	C_9	Netherlands	0.156566
C_13	Lithuania	0.066646	C_10	Portugal	0.066646
C_14	Latvia	0.069404	C_12	Ireland	0.069404
C_15	Estonia	0.072214	C_13	Lithuania	0.072214
C_16	Slovenia	0.069191	C_14	Latvia	0.069191
C_17	Moldova	0.084050	C_15	Estonia	0.084050
C_19	Bulgaria	0.068108	C_16	Slovenia	0.068108
C_20	Czech Republic	0.188716	C_17	Moldova	0.188716
C_22	Croatia	0.063330	C_18	Ukraine	0.087582
C_23	Hungary	0.193069	C_19	Bulgaria	0.063330
C_18	Ukraine	0.287382	C_20	Czech Republic	0.193069
C_25	Romania	0.026193	C_22	Croatia	0.026193
C_29	Montenegro	0.097160	C_23	Hungary	0.097160
C_30	Macedonia	0.094974	C_25	Romania	0.094974
			C_29	Montenegro	0.164068
			C_30	Macedonia	0.156566

It should be noted that the structure of the second and the third clusters in the selected groups of factors is somewhat different. The reason for this is the close values of the

indicators of both factors, namely, the length of the railways and the number of passengers transported by air transport. This is due to the relatively equal size of the territory of the countries included in the specified clusters. However, the overall results for Ukraine remain the same: in both cases, Ukraine is in the cluster with such countries as Moldova, Bulgaria, Hungary, Latvia, Lithuania, Belarus, Bulgaria, Estonia, Romania, etc.

4 Conclusion

Thus, the research on the impact of certain groups of transport infrastructure quality factors and tourist demand for transport services make it possible to claim their influence on the tourist destination development. In addition, the cluster groups obtained on the basis of these indicators confirm the hypotheses established in the research.

Nowadays the transport sector of Ukraine as a whole satisfies only the basic needs of the population and the economy in the volume of traffic, but not in the quality, which also creates significant obstacles to the development of domestic tourism. The current state of the transport industry does not fully meet the requirements of effective implementation of the European integration course of Ukraine and the integration of the national transport network into the Trans-European transport network.

According to the Association Agreement with the EU [10], it is necessary to increase the efficiency and competitiveness of the transport sector, primarily by improving the legal mechanism of public-private partnership, strengthening the interaction between the public and private sectors, state authorities and local self-government bodies, carrying out the necessary reforms through coordinated initiatives of the state politics. The implementation of the appropriate measures should provide a solid basis for the sustainable development of the transport industry and create a free and competitive market for tourist services.

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