Quality Components of the Tourist Industry and Development of a Toolkit for their Integrated Assessment

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Abstract--- According to the World Tourism Organization, the average pace of tourism development is 2-2 times higher than the average annual growth rate of national economies as a whole. For many countries, foreign, that is inbound, tourism turned into a primary or, at least, significant source of export income. In the current context of increased competition and globalization of business when the producer market is replaced by the consumer market it is especially important for tourism organizations to ensure competitiveness of their services. It largely depends on quality of services themselves but quality determined by consumer demand. In this connection, the issue of introducing of a toolkit for integrated assessment of quality components of the tourist industry takes on particular significance. The paper examines the main components of the tourist industry quality that characterize the ability of a country's tourist industry to render quality tourist services. It identifies the structural components of the tourist industry quality index and quality index calculation methods as a set of the infrastructure and resources quality sub-index, multi-purpose tourist product consumer satisfaction sub-index, and safety security sub-index.

Keywords--- Tourist Industry, Quality Index, Infrastructure Quality, Consumer Satisfaction Sub-Index, and Safety &Security Sub-Index.

I. Introduction

• Problem statement

The tourist industry is one of the promising lines of development of world economic relations, and improvement of performance of this sector becomes particularly relevant amidst transformation of the Ukrainian economy. Economic transformation occurring now in Ukraine attracts attention of scholars and practitioners to problems of improving quality of providing services at the tourist industry enterprises.

Providing high-quality tourist services to consumers in the domestic and international markets should promote Ukraine's image as a country with unique tourism opportunities.

• Recent Research and Publications Analysis

A significant contribution to studying the theoretical and practical foundations of tourist services quality has been made due to works by such scholars as Apilat, O. V., Bedradina, H. K., Bihdan, M. H., Butko, M. P., Valentiuk, I. V., Hamov, V. H., Herasymenko, V. H., Dekhtiar, H. M., Diadechko, L. P., Kyfiak, V. F., Rubanova, I. N., Sydorenko, I. O., Starychkov, N. V., Tkachenko, T. I., Shvets, I. Yu., Augustyn, M., Haghkhah, A., Rajaram, S., Shahbazipour, M.A., and Ulrike Kuhnhenn.

Analysis of research studies and scientific methodological works carried out by Apilat, O. V., Bakhov, I., Baumgarten, L. V., Bykovskyi, V. V., Opolchenov, Ye. V., Meilanova, I. A., Shvets, I. Yu., Altuntas, S., Mhamdi, S., and Teodorescu, N. enabled to identify the main components characterizing the ability of a country's tourist industry to deliver quality tourist services.

At the same time, a large part of issues relating to the declared subject remain unaddressed by researchers and needs further development, calculation and classification.

II. Proposed Methodology

The paper's purpose is to identify and calculate the main components of the tourist industry quality index. Pursuing this purpose necessitates solving the following problems: identification of the structural components of the tourist industry quality index; quality index calculation methods as a set of the infrastructure and resources quality sub-index, multi-purpose tourist product consumer satisfaction sub-index, and safety & security sub-index.

III. Result Analysis

Sustainable development of tourism in Ukraine and its enhanced competitiveness in the world tourism market are due not only to improved operation of tourism enterprises but also to activities of all actors of the tourist industry involved in delivering a quality multi-purpose tourist product, the state of infrastructure and tourism resources, its environmental compatibility and safety& security.

An analysis of Ukraine's tourist industry conducted based on quality criteria and indicators showed that tourism infrastructure is out of keeping with its resource potential and needs modernization and upgrade of transportation infrastructure, a faster pace of development of housing infrastructure and information and communication technology. Inadequate environmental quality and the low level of environmental sustainability and tourism safety &security in Ukraine impede an effective use of recreational natural potential and slow down inbound tourism in Ukraine.

Alongside unsatisfactory indicators and criteria, which do not ensure Ukraine's ability to render quality tourist services, we note its low rank in terms of its competitiveness in tourism and travels (78th place among 140 countries in the World Economic Forum Index), low rating and point-based indicators in sustainable development, recognition by the state of priority of the tourist industry and tourism price competitiveness.

In order to monitor the ability of the tourist industry to provide quality tourist services, we suggest a toolkit for assessing the tourist industry quality in a country based on the methods for assessing the quality index calculated as an aggregate indicator consisting of three sub-indices – infrastructure and resources quality, consumer satisfaction, and travel safety security (Fig. 1).

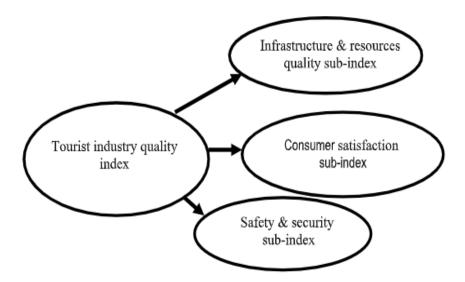


Figure 1: Tourist Industry Quality Components

The sub-index for quality of the infrastructure and resources of the tourist and travel industry was calculated based on analysis of the indicators presented in Fig. 2.

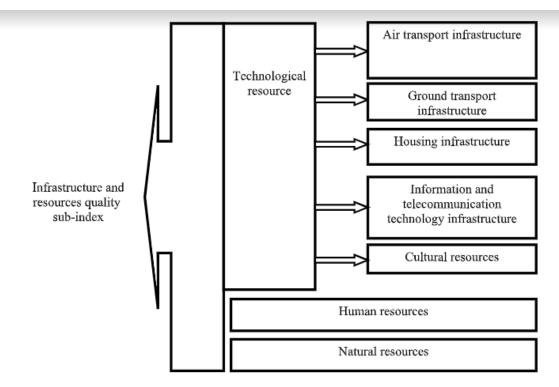


Figure 2: Constituent Indicators of the Sub-Index for the Tourist Industry Infrastructure and Resources Quality

Quality indicators include both technological and human resources [1-3]. Technological resources determining quality of tourist services provision can involve air and ground transport infrastructure, housing infrastructure, telecommunications services infrastructure in the tourist industry, and cultural resources.

Point-based indicators of the Travel & Tourism Competitiveness Index 2019 served as a source of information for calculation of the sub-index for quality of the tourist industry infrastructure and resources [4].

The following dependence was suggested to calculate the sub-index for the tourist industry infrastructure and resources quality:

Qir = Ati + Gti + Hi + ICt + Hr + Nr + Cr (1) where:

Qir – sub-index for the tourist industry infrastructure and resources quality;

- Ati -- air transport infrastructure quality indicator;
- Gti ground transport infrastructure quality indicator;
- Hi housing infrastructure quality indicator;
- ICt information telecommunication technology infrastructure quality indicator;
- Hr indicator characterizing human resources;
- Nr indicator characterizing natural resources;
- Cr indicator characterizing cultural resources.
- Ati = Atic/Atil; (2) where
- Atic indicator of quality (in points) of air transport infrastructure countrywide;

Atil – indicator of quality (in points) of air transport infrastructure in the country-leader of the World Economic Forum index.

Gti = Gtic/Gtil; (3) where:

Gtic - indicator of quality (in points) of ground transport infrastructure countrywide;

Gtil; - indicator of quality (in points) of ground transport infrastructure in the country-leader of the World Economic Forum index.

Hi = Hic/Hil; (4) where:

Hic -- indicator of quality (in points) of housing infrastructure countrywide;

Hil -- indicator of quality (in points) of housing infrastructure in the country-leader of the World Economic Forum index.

ICt = ICtc/ICtl; (5) where:

ICtc - indicator of quality (in points) of information telecommunication technology infrastructure countrywide;

ICtl – indicator of quality (in points) of information telecommunication technology infrastructure in the country-leader of the World Economic Forum index.

Hr = Hrc/Hrl; (6) where:

Hrc - indicator (in points) characterizing human resources of a country;

Hrl -- indicator (in points) characterizing human resources of the country- leader of the World Economic Forum index.

Nr = Nrc/Nrl; (7) where:

Nrc - indicator (in points) characterizing natural resources of a country;

Nrl – indicator (in points) characterizing natural resources of the country-leader of the World Economic Forum Index.

Cr = Crc/Crl; (8) where:

Crc - indicator (in points) characterizing cultural resources of a country;

Crl – indicator (in points) characterizing cultural resources of the country- leader of the World Economic Forum Index.

The figures for calculation of the sub-index for quality of Ukraine's tourism infrastructure and resources are presented in Table 1. Thus, it is possible to calculate the sub-index for quality of the tourist industry infrastructure and resources:

Qir = <u>Ati + Gti + Hi + ICt + Hr + Nr + Cr</u> == 0.419+0.537+0.661+0.552+0.807+0.490+0.317 = 0.54 (9)

In the dependence cited the sub-index for quality of tourism infrastructure and resources ranges from 0.01 to 1. The sub-index for tourism infrastructure and resources quality below 0.5 is described as low; that from 0.51 to 0.7 is characterized as mean; that of 0.71 to 0.8 is considered as above the mean, while that of 0.81 to 1 - as high (Table 1).

 Table 1: Calculation of the Indicators Characterizing the Ability of Ukraine's Infrastructure and Resources to Ensure

 Providing Quality Tourist Services

Indicator	Indicator in p Economic Fo	points (as calculated by the World prum)	Sub-index value calculation		
	Ukraine	Country-ranking leader	Dependence	Sub-index value	
Air transport infrastructure	2.80	6.67	$\begin{array}{c} A_{ti} = A_{tic} \\ /A_{til} \end{array}$	0.419	
Ground transport infrastructure	3.52	6.55	$\begin{array}{c} G_{ti} = G_{tic} \ / \\ G_{til} \end{array}$	0.537	
Housing infrastructure	4.63	7.00	$H_i = H_{ic} / H_{il}$	0.661	
Information and communication technology infrastructure	3.13	6.00	$IC_t = IC_{tc} / IC_{tl}$	0.552	
Human resources	4.93	6.11	$H_r = H_{rc} / H_{rl}$	0.807	
Natural resources	3.03	6.18	$N_r = N_{rc}$ / N_{rl}	0.490	
Cultural resources	2.08	6.57	$C_r = C_{rc} / C_{rl}$	0.317	

The calculations made show that the sub-index for Ukraine's tourism infrastructure and resources quality constitutes 0.54 and ranges within mean values. For comparative analysis of the indicators characterizing the ability of the country's infrastructure and resources to ensure rendering quality tourist services, the sub-indices for quality of the tourist and travel industry infrastructure and resources of Germany, Switzerland, the Russian Federation, Moldova, and Denmark were calculated.

Point-based indicators of the Travel & Tourism Competitiveness Index 2019 [4] served as a source of information for calculation of the sub-index for quality of the tourist industry infrastructure and resources. The calculation data are presented in Table 2.

 Table 2: Indicators Characterizing the Ability of Infrastructure and Resources of European Countries to Ensure

 Providing Quality Tourist Services

	Values of the Qir sub-index of European countries						
Indicator	Russian Federation	Germany	Moldova	Switzerland	Denmark	Albania	Macedonia
		_					
A _{ti}	0.645	0.810	0.314	0.809	0.674	0.378	0.330
G _{ti}	0.516	0.947	0.412	0.977	0.885	0.494	0.489
H _i	0.700	0.814	0.414	0.957	0.800	0.524	0.614
IC _t	0.702	0.900	0.533	0.933	0.933	0.418	0.567
H _r	0.753	0.900	0.736	1.0	0.934	0.836	0.787
Nr	0.696	0.761	0.324	0.809	0.566	0.461	0.453
Cr	0.654	0.959	0.213	0.944	0.746	0.304	0.335

The chart of the sub-indices for quality of tourist infrastructure and resources of European countries is presented in Fig. 3.

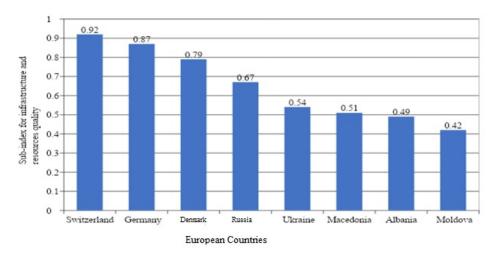


Figure 3: Sub-Indices for quality of Tourist Infrastructure and Resources of European Countries

IV. Discussion

The sub-index for quality of tourist infrastructure and resources of Switzerland and Germany are defined as high; that of Denmark is described as above the mean; those of the Russian Federation, Ukraine and Macedonia are interpreted as mean, while those of Albania and Moldova – as evidencing a low level of development.

In the Travel & Tourism Competitiveness Index, Macedonia ranks higher than Ukraine, but Ukraine's tourist infrastructure and resources enable it to have a higher position in the ranking.

Point-based indicators of the Travel & Tourism Competitiveness Index 2019 [3] served as a source of information for calculation of the safety security sub-index. Standardized indicators of the World Health Organization for 2019 [5] were used to calculate the infectious disease mortality rate.

Environmental compatibility and safety& security are two of the major criteria of a service quality [6-8]. Safety& security is considered as an indicator of quality of a multi-purpose tourist product [7, 9], therefore the

safety& security sub-index was assessed when calculating the tourist industry quality index. The safety& security sub-index was calculated on the basis of analysis of the indicators presented in Fig. 4.

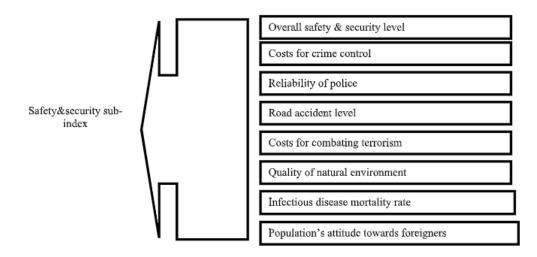


Figure 4: Constituent Indicators of the Safety& Security Sub-Index

The following dependence was suggested to calculate the safety& security sub-index:

 $Si = \underline{S + Cc + Rp + Ra + Ct + Qn + Inf + Af}$; (10) where:

Si - safety& security sub-index;

S - indicator of the overall safety& security level;

Cc - indicator characterizing costs for crime control;

Rp - indicator characterizing reliability of police;

Ra - indicator characterizing the road accident level;

Ct - indicator characterizing costs for combating terrorism;

Qn - indicator characterizing quality of natural environment;

Inf - indicator characterizing the infectious disease mortality rate;

Af -- indicator (in points) characterizing population's attitude towards foreigners.

S = Sc/Sl; (11) where:

Sc - indicator (in points) of a country's overall safety& security level;

Sl-indicator (in points) of the overall security level of the country-leader of the World Economic Forum index.

Cc = Ccc/Ccl; (12) where:

Ccc – indicator (in points) characterizing costs for crime control in a country;

Ccl – indicator (in points) characterizing costs for crime control in the country-leader of the World Economic Forum index.

Rp = Rpc/Rpl; (13) where:

Rpc – indicator (in points) characterizing reliability of police in a country;

Rpl – indicator (in points) characterizing reliability of police of the country-leader of the World Economic Forum index.

 $Ra=Ral/Rac \times 2.5$; (14) where

Rac - indicator (in points) characterizing the road accident level in a country;

Ral – indicator (in points) characterizing road accident level in the country-leader of the World Economic Forum index.

Ct = Ctc/Ctl; (15) where:

Ctc - indicator (in points) characterizing costs for combating terrorism in a country;

Ctl - indicator (in points) characterizing costs for combating terrorism in the country-leader of the World Economic Forum index.

Qn = Qnc/Qnl; (16) where:

Qnc - indicator (in points) characterizing quality of natural environment of a country;

Qnl – indicator (in points) characterizing quality of natural environment of the country-leader of the World Economic Forum index.

Inf= Inf(min)/Inf(score); (17) where:

Inf(min) – standardized infectious disease mortality rate, in the country with the minimum mortality rate in this group of diseases;

Inf(score) -- standardized infectious disease mortality rate, in a country.

Af = Afc/Afl; (18) where:

Afc - indicator (in points) characterizing population's attitude towards foreigners in a country;

Afl – indicator (in points) characterizing population's attitude towards foreigners in the country-leader of the World Economic Forum index.

The figures for calculation of the sub-index for tourism safety& security in Ukraine are presented in Table 3.

Thus, it is possible to calculate the sub-index for tourism safety& security in Ukraine:

Si = S + Cc + Rp + Ra + Ct + Qn + Inf + Af =

0.723 + 0.818 + 0.455 + 0.209 + 0.925 + 0.567 + 0.295 + 0.824 = 0.6(19)

For comparative analysis of the indicators characterizing tourism safety & security in Ukraine, the sub-indices for tourism safety & security in Germany, Switzerland, the Russian Federation, Moldova, and Denmark were calculated.

Point-based indicators of the Travel & Tourism Competitiveness Index 2019 [4] served as a source of information for calculation of t tourism safety& security sub-index. To calculate the infectious disease mortality rate, standardized indicators of the World Health Statistics for 2019 [5] were used. The calculation results are presented in Table. 4.

Table 3: Calculation of the Indicators Characterizing Tourism and Travel Safety& Security in Ukraine

	Indicator in	points (as estimated by the World	Calculation of	the sub-index
Indicator	Economic Fo	orum)	Value	
	Ukraine	Country-leader of the index	Dependence	Sub-index
				value
Overall safety&security level	4.7	6.5	$S = S_c / S_1$	0.723
Costs for crime control	5.4	6.6	$C_c = C_{cc} / C_{cl}$	0.818
Reliability of police	3.0	6.6	$R_p = R_{pc} / R_{pl}$	0.455
Road accident level	21.5	1.8	$R_a = R_{al} / R_{ac} x$	0.209
			2,5	
Costs for combating	6.2	6.7	$C_t = C_{tc} / C_{tl}$	0.925
terrorism				
Quality of natural	3.8	6.7	Qn = Qnc / Qnl	0.567
environment				
Infectious disease mortality	61	18	$I_{nf} =$	0.295
rate			$I_{nf(min)}/I_{nf(score)}$	
Population's attitude towards	5.6	6.8	$A_{f} = A_{fc} / A_{fl}$	0.824
foreigners				

It is problematic to rank countries in terms of the safety& security level in the dependence cited. In European countries, tourism is traditionally regarded as having a higher safety& security level than in countries of other regions. (See Table 4).

For comparison purposes, therefore, we assessed the tourism safety& security sub-index in Mexico, Pakistan, and Egypt. (See Table 5).

Point-based indicators of the Travel & Tourism Competitiveness Index 2019 [4] served as a source of information for calculation of the safety security sub-index in these countries. To calculate the infectious disease mortality rate, standardized indicators of the World Health Organization for 2019 were used. The calculation results are presented in Table 5.

Indicator	Values of the sub-index S _i in European countries						
	Russian Federation	Germany	Moldova	Switzerland	Denmark	Albania	Macedonia
S	0.600	0.924	0.755	0.970	0.863	0.755	0.819
C _c	0.687	0.885	0.809	0.931	0.794	0.718	0.763
R _p	0.422	0.889	0.467	0.964	0.934	0.602	0.647
R _a	0.175	0.762	0.303	0.933	0.750	0.330	0.663
Ct	0.698	0.862	0.921	0.906	0.817	0.832	0.832
Q _n	0.507	0.881	0.567	0.970	0.820	0.522	0.612
Inf	0.254	0.818	0.281	0.947	0.875	0.346	0.621
A _f	0.732	0.893	0.893	0.952	0.835	0.878	0.981

Table 4: Indicators Characterizing Tourism Safety& Security in European Countries

Table 5: Indicators Characterizing Tourism Safety& Security in Countries with a LOW Safety & Security Level

Indicator	Values of the sub-index S _i in countrie				
	Mexico	Pakistan	Egypt		
S	0.570	0.478	0.416		
C _c	0.442	0.473	0.458		
R _p	0.422	0.452	0.527		
R _a	0.225	0.175	0.100		
Ct	0.698	0.460	0.460		
Q _n	0.552	0.552	0.597		
Inf	0.247	0.045	0.137		
A _f	0.937	0.775	0.922		

According to statistical indicators of the World Health Organization, Egypt and Pakistan show high infectious disease mortality rates [10]. The standardized rate is of 131 for Egypt and 403 for Pakistan. Malaria incidence and mortality are an issue for tourists. The death rate from malaria in European countries does not traditionally rise beyond zero. In Pakistan, the death rate from malaria is of 0.8, while in Egypt -10 [5].

Figure 5 shows a comparative chart of the sub-index for tourism safety & security across the world.

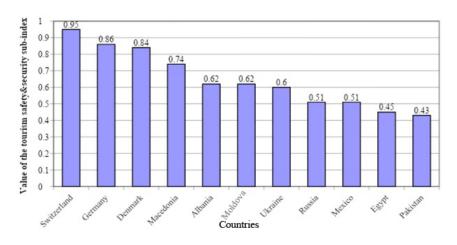


Figure 5: Chart of the TOURISM Safety& Security Sub-Indices by Countries

In the dependence cited, the tourism safety security sub-index ranges from 0.01 to 1. The tourism safety security sub-index up to 0.55 is characterized as low; that from 0.56 to 0.7 as mean; and that upwards of 0.71 - as high. In safety security terms, Ukraine ranks higher than the Russian Federation, which shows better indicators as to the tourism infrastructure and resources sub-index. However, such European countries as Albania, Moldova, and Macedonia display a higher tourism safety security sub-index.

The International Standard ISO 9004:2018 Quality management. Quality of an organization. Guidance to achieve sustained success specified that quality policy should be customer-focused. Such a focus provides for studying the service consumer satisfaction level and determines that tracking information on consumer's (customer's) perception of the level of his requirements satisfaction is one of the quality management system performance indicators [11, 12].

Tourist product consumer satisfaction was analyzed based on feedback from foreign citizens on travels to Ukraine in 2018-2019. Feedback from tourists on their travels to Ukraine in such websites as Jestor/live journal; Friend feed; Columbus 2; Travel blogger sunite.com; Utr- group.live journal; and Travel.ru/letters/Ukraine served as a source of information.

The survey findings are presented in Table 6. The following dependence is suggested to calculate the satisfaction sub-index (Is):

Is = å Pf x 2 + å Nf/n, (20) where:

Pf – amount of positive feedback on travels to Ukraine;

Nf - amount of neutral feedback on travels to Ukraine;

n-amount of analyzed feedback on the Internet.

We gave 2, 1, and zero points to tourists' positive, neutral, and negative feedback on travels to Ukraine respectively.

In the calculations performed, the satisfaction sub-index ranges from 0 to 2. The satisfaction sub-index up to 1.0 is defined as a low level of travel satisfaction; that within 1.1-1.5 is seen as a mean one, while that above 1.51 - as a high one.

Calculations show that the level of satisfaction of foreign citizens who travel as organized tourists makes up 0.97 while the satisfaction level of those who visited Ukraine as private tourists amounts to 0.965. So, the foreign tourists' level of satisfaction from travels to Ukraine shows low values.

For comparative analysis purposes, we assessed the sub-index for satisfaction of tourist product consumers characterizing a subjective perception by foreign tourists of travels to the Russian Federation, Switzerland, Germany, Moldova, Denmark, Macedonia, and Albania. The feedback analysis findings by countries are presented in Table 6.

Thus, the sub-indices for tourists' satisfaction from travels to Ukraine, the Russian federation, and Moldova are low.

	Total feedback	Feedback description			
Country		Positive	Neutral	Negative	Ss
Germany	60	47	11	2	1.75
Switzerland	46	38	7	1	1.80
Denmark	35	27	5	3	1.69
Russian Federation	75	27	25	23	1.05
Moldova	41	9	13	19	0.76
Macedonia	22	13	7	2	1.50
Albania	24	15	6	3	1.50

Table 6: Calculation of the Sub-Index for Tourists' Satisfaction (Ss) from Travels to European Countries

Calculation of the major sub-indices characterizing the tourist industry quality in a country (infrastructure and resources sub-index; tourism safety& security sub-index and tourist product satisfaction sub-index) enables to compute an overall tourist industry quality index (Table 7).

	Sub-index			Tourist industry quality index		
Country	Q _{ir}	Si	Is	(Q _{it})		
Ukraine	0.54	0.60	0.97	2.11		
Germany	0.87	0.86	1.75	3.48		
Switzerland	0.92	0.95	1.80	3.67		
Denmark	0.79	0.84	1.69	3.32		
Russian Federation	0.67	0.51	1.05	2.23		
Moldova	0.42	0.62	0.76	1.80		
Macedonia	0.51	0.74	1.50	2.75		
Albania	0.49	0.62	1.50	2.61		

Table 7: Calculation of the Tourist IndustrY Quality Index of European Countries

The following dependence is suggested to calculate the tourist industry quality index (Qit) of a country:

Qit = Qir + Si + Is; (21) where:

Qit – tourist industry quality index;

Qir - sub-index for tourism infrastructure and resources quality;

Si - tourism safety& security sub-index;

Is – tourist product consumer satisfaction sub-index.

According to the World Economic Forum index, in 2018 Ukraine ranked 76^{th} – between Macedonia and Albania. In terms of the tourism infrastructure and resources sub-index, our country has better indicators than the abovementioned countries. As to the calculated index of the tourist industry quality, Ukraine's position is much worse than the indicators of Macedonia and Albania.

Such a situation is due to the relatively moderate indicators of tourism safety& security and low indicators of tourist product consumer satisfaction. This could be one of the factors leading to the outbound tourism flow's excess over the inbound tourism flow, which gives rise to an increase in the negative balance of financial accounts under item "Travels" and reduction in government revenues.

V. Conclusion

The study identified the structural components of the tourist industry quality index; methods for calculating the quality index as a set of the infrastructure and resources quality sub-index, multi-purpose tourist product consumer satisfaction sub-index, and safety& security sub-index.

Comparative analysis of a number of European countries in terms of the tourist industry quality index evidences low indicators of the sub-index for satisfaction of foreign consumers with a multi-purpose tourist product owing to lack of professionalism of employees of tourist enterprises and other entities of the tourist industry.

Our analysis of Ukraine's tourist industry in terms of quality criteria and indicators showed that tourism infrastructure is out of keeping with its resource potential and needs modernization and upgrade of transportation infrastructure, a faster pace of development of housing infrastructure and information and communication technologies. Inadequate environmental quality and the low level of environmental sustainability and safety& security of tourism in Ukraine impede an effective use of recreational natural potential and slow down inbound tourism in Ukraine, which necessitates further research, development and implementation of a quality management system in the country's tourist industry.

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