"Assessment of the relationship between the tourism sector development and other sectors of economy"

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ASSESSMENT OF THE RELATIONSHIP BETWEEN THE TOURISM SECTOR DEVELOPMENT AND OTHER SECTORS OF ECONOMY

Abstract

An assessment of a relationship between aggregated and partial indicators of the tourist sector development on one hand and other sectors of economy and society on other hand are investigated in the paper. Indicators are expressed in both direct monetary terms and rating scales. The study covers 149 countries in 2016. The results of the study indicate a positive relationship between the development of the tourist sector and the level of economic welfare of the country. This is explained by fact that tourist goods and services are subject of a second necessity and demand for they increases significantly with growth of income level. Found that there is a positive correlation between indicators of tourism sector development and indicators of quality of socio-economic environment. This may be due to fact that, on one hand, high quality socioeconomic environment stimulates visits to country; on other hand, travels stimulate growth of economy and welfare of citizens who live in territory that visited. Further analysis of aggregate of countries, divided into 4 groups by income, showed mixed results. Thus, a stronger correlation between all analyzed indicators is observed in low and high-income countries, weakening in transition to averages by a sample of values. However, such a weak relationship for some countries may be a consequence of a small share of the tourism sector in the economy. This paper differs from previous researches by focusing on a large sample of countries and reveals the relationship between tourism sector development indicators and socioeconomic environment indicators. One can speak of objectivity of results obtained, since they are confirmed both using Spearman's correlation coefficient and Kendall's Tau correlation.

Keywords	tourism, tourism sector, GDP, global indeces
JEL Classification	A13, C13, F62, O11

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ОЦІНКА ВЗАЄМОЗВ'ЯЗКУ МІЖ РОЗВИТКОМ ТУРИСТИЧНОГО СЕКТОРУ ТА ІНШИМИ СЕКТОРАМИ ЕКОНОМІКИ

Анотація

Досліджено взаємозв'язок між агрегованими та частковими показниками розвитку туристичного сектору, з одного боку, та іншими секторами економіки та суспільства, з іншого. Показники виражаються як в грошовому еквіваленті, так і в рейтингових шкалах. Дослідження охоплює 149 країн у 2016 році. Результати дослідження вказують на наявність позитивного зв'язку між розвитком туристичного сектору та рівнем економічного добробуту країни. Це пояснюється тим, що туристичні товари і послуги є предметом другої необхідності, і попит на них збільшується при зростанні рівня доходу. Виявлено, що існує позитивна кореляційна залежність між показниками розвитку туристичного сектора і іншими секторами економіки та суспільства. Це може бути обумовлено тим, що, з одного боку, соціально-економічне середовище високої якості стимулює відвідування країни, з іншого - подорожі та поїздки стимулюють зростання економіки і добробуту громадян території, яку відвідують. Подальший аналіз сукупності країн, розподілених на 4 групи за рівнем доходу, показав неоднозначні результати. Так, більш сильний взаємозв'язок між усіма аналізованими показниками спостерігається в країнах з низьким та високим рівнем доходу, послаблюючись при переході до середніх по вибірці значень. Однак такий слабкий взаємозв'язок для деяких

країн може бути наслідком невеликої частки сектора туризму в економіці. Ця стаття відрізняється від попередніх досліджень тим, що аналіз базується на широкій вибірці країн, і показує взаємозв'язок між показниками розвитку туристичного сектору та показниками соціально-економічного середовища. Можна говорити про об'єктивність отриманих результатів, оскільки вони підтверджені як за допомогою коефіцієнта кореляції Спірмена, так і Тау Кендалла.

INTRODUCTION

The desire of people to travel, to learn national features of other peoples' existence, to participate in cultural events or to produce products and goods with ancient production technologies has increased in conditions of information overloading of society. Tourism plays a significant role as an instrument of formation of tolerance, benevolence, and people's mutual support in development of a multicultural society.

Besides, there is evidence of impact of tourism development on country's economic growth in modern scientific literature. The increase in tourist flows attracts foreign investors and private companies to the country, respectively it contributes to the improvement of foreign economic activity and financial relations. Foreign exchange earnings stimulate the development not only the tourism industry, but also a number of interconnected industries that produce tourism products. The impact of tourism on the labor market, employment and household incomes is also significant as tourism development activates the creation of jobs directly or indirectly related to this area. Thus, the share of employment in the tourism sector in countries which have a first ranks in international ranking of tourist arrivals is: in France is 4.2%, in United States is 3.8%, in Spain is 5.2%, in China is 2.9%. This is the reason why the issue of determining the relationship of tourism with the socio-economic sphere of society becomes relevant.

1. LITERATURE REVIEW

Many studies have been researched to analyze the relationship between tourism and economic growth in the long- and short-term periods. The research results are contradictory. A strong relationship between economic growth and tourism has been established in some studies; in other cases, the results are very different across countries and regions.

Based on the results of the panel cointegration analyses, Govdeli and Direkci (2017) found that the increase of tourism revenues had a positive impact on long-term economic growth. They analyzed for 34 OECD countries using panel cointegration tests for the period between 1997 and 2012. Results of them study showed that a 1% increase in tourism revenues increased the economic growth on average at a rate of 1.06%. Chang, Khamkaev and McAleer (2010) explored the importance of tourism specialization for economic development. The results of empirical research for 159 countries showed a positive relationship between economic growth and tourism for the period from 1989 to 2008. Nevertheless, tourism growth does not always contribute to considerable economic growth. The findings of de Mello-Sampayo and de Sousa-Vale (2010) of European countries from 1988 to 2010 proved that tourism stimulates economic growth in certain countries. There is solid evidence of a panel cointegration relation between tourism and GDP in the European countries and tourism development has a higher impact on GDP in the South than in North. Shakouri, Yazdi, Nategian and Shikhrezaei (2017) have established evidence for the existence of a tourism-led growth hypothesis for Iran from 1980 to 2014. The empirical results showed that Iran's economic growth, tourism is cointegrated. The result of study of Bayramoğlu and Arı (2015) showed that a strong unidirectional causal relationship from the expenditures of foreign tourists visiting Greece between 1980 and 2013 to the growth of Greece at 1% level of significance are exist. Because of a study of a sample of countries from 1980 to 2002, Sequeire and Nunes (2008) concluded that tourism-specialized countries grow more than others. They found that tourism is a positive determinant of economic growth both in a broad sample of countries and in a sample of poor countries. However, tourism is not more relevant in

small countries than in a general sample. Balli, Shahzad and Uddin (2018) found that global economic policy uncertainties influence tourism demand in various levels for different countries. The effect is on peak and stay longer in certain periods; such as GFC or 9/11.

Research results show that the degree of correlation between tourism and GDP fluctuates depending on the analyzed territories. Kaur and Sarin (2016) investigated the causality between economic growth and Tourism busing on indicators such as real gross domestic product, tourism foreign exchange earnings, foreign tourist's arrival and FDI. The study provides the evidence of long-run unidirectional causality from tourism activities to economic growth of the country from 199I to 2014. As far as India is concerned tourism and foreign direct investment is not showing any causal relationship with GDP. Caglayan, Sak and Karymshakov (2012) got mixed results of the study for 135 countries over the period 1995-2008. A bi-directional causal relationship between tourism revenues and gross domestic product in Europe was discovered because of a study. However, there is a unidirectional causal relationship from GDP to income from tourism in America, Latin America & Caribbean and in the world. Although in the case, the reverse direction of causality was found of East Asia, South Asia and Oceania. They did not find causal relationship in Asia, Middle East and North Africa, Central Asia and Sub Saharan Africa. Wang and Xia (2013) concluded that there is a positive impact between tourism and economic development. By using ADF unit root test, they confirm that there is a long-term stable relationship between the tourism revenues and GDP of Gaochun district from year 2001 to 2011. Lee (2008) found contradictory results on the contribution of tourism to economies in Singapore. Long-run relationship between GDP and tourism is not found using the bounds test developed by Pesaran. The standard Granger causality test revealed the presence of a short-run unidirectional Granger causality from GDP to tourism. Menyari (2018) found for a period from 1980 to 2010 the ambiguous impact of international tourism on per capita income, which varies depending on the assessment of tourism used (flow or revenue). Harasarn and Chancharat (2014) indicated that the long-term relationship between tourists' arrivals and income exists for five important countries related to Thailand tourism for annual data from 1981 to 2012. Korean tourists have the fastest speed of adjustment, the most loyalty to Thailand tourism, while Chinese tourists have the slowest one. England has a bidirectional relationship and there was no causality relationship with Malaysia. A unidirectional relationship growth leads tourism in Japan and Korea. In contrast, tourism leads growth in China. Che Chou (2013) considered causal relationships between tourism expenditures and economic growth in 10 transition countries from 1988 to 2011. They found that there is causal direction between tourism spending and economic growth for Bulgaria, Romania and Slovenia. The growth hypothesis holds for 3 from 10 transition countries. The feedback hypothesis holds for Czech Republic, Poland, Estonia and Hungary. Lee and Chang (2008) determined that tourism development has a stronger impact on GDP in non-OECD countries than in OECD countries for the 1990-2002 period. Causality from tourism development to economic growth is unidirectional in the long run in OECD countries and it is bidirectional in non OECD countries. Alhowaish (2016) assessed the contribution of tourism to economic growth in Gulf Cooperation Council countries and showed that most of countries have a one-way Granger causality from economic growth to tourism from year 1995 to 2012 with the exception of Bahrain (reverse hypothesis) and Oman (there is no causal relationship). Ekanayake and Long (2012) detected no evidence to support the tourism-led growth hypothesis. They found for the 1995-2009 period that the income from tourism makes a positive contribution to economic growth in developing countries.

On the whole this industry has brought USD 7.6 trln in the world economy (10.2% of global GDP) and generated 292 mln jobs (1 in 10 jobs on the planet) in 2016. 1 International arrivals followed suit, reaching 1.2 bln in 2016, 46 mln more than in 2015 (according to UNWTO). The majority of developed economies consider tourism a fundamental industry for their economic growth because it depends on other productive sectors making the infrastructure of a zone and cycling its economic wheel.

2. AIMS

The aim of this research is to identify the relationship between the tourism sector and the socio-economic sphere of society development.

3. METHODS

We propose to use the calculation of correlation to identify the relationship between the tourism and travel sector and the socio-economic sphere of society in the article. The Pearson (product-moment) correlation, the Spearman's rank correlation and Kendall's Tau correlation were calculated to identify the relationship between the main indicators which characterize these spheres.

4. RESULTS

Hypothesis 1. Tourist flows have a positive relationship with socio-economic development of country.

In order to study the relationship of tourism and economic development of the country, the GDP indicator was selected as the main indicator of an economic development. 149 countries are covered to analyze the problem. For the primary analysis, Pearson correlation was chosen, since the data are expressed in nominal scales.

In general, the formula for calculating the Pearson correlation coefficient is as follows:

$$\text{r} = \frac{\sum_{i=1}^{n}(X_i - \overline{X}) \times (Y_i - \overline{Y})}{n \times \sigma_x \times \sigma_y}, \qquad (1)$$

where: X_i, Y_i – compared quantitative traits; $\overline{X}$, $\overline{Y}$ – selective arithmetic averages; n – a number of compared observations; σ_x, σ_y – standard deviations in the databases compared; $(X_i - \overline{X}) \times (Y_i - \overline{Y})$ – product of moments.

The relation analysis of GDP and the main indicators of the tourism sector development (number of arrivals, number of departures, receipts, expenditures) of 2016 confirmed the results of previous researches regarding the existence of a correlation between them (Table 1).

Table 1. The correlation between GDP and tourist flows (Pearson correlation)

Variable	ITNA IT, number of arrivals	ITND IT, number of departures	ITR IT, receipts (current USD)	ITE IT, expenditures (current USD)
GDP USD	0.66	0.44	0.88	0.86
GDP PPP	0.64	0.58	0.72	0.92

As can be seen from Table 1, there is a relationship between the indicators of tourism development and the general indicator of economic development, expressed in GDP (and this dependence can be traced both to the GDP in current US dollars, and when it is converted into purchasing power parity). It should be noted that the correlation GDP USD with the indicators of tourist flows is higher compared with GDP PPP in three out of four calculated dependencies. It is only when calculating GDP and ITND dependencies that it is higher with GDP calculated at current country prices, which can be explained by the dependence of the number of shipments on the level of quality of life of citizens, whose more precise indicator is GDP PPP.

It is considered that:

- value of |κ| < 0.3 indicates a lack of relationship between the relevant indicators;
- value of |κ| in the interval [0.4; 0.7] indicates a moderate relationship between the corresponding indicators;
- value of |κ| in the interval [0.7; 0.9] indicates a strong relationship between the corresponding indicators;
- value of |κ| > 0.9 means that the indicators depend "almost linearly";
- value of |κ| = 1 corresponds to linear dependence (direct or inverse) (Kuklin, 2017).

Thus, the connection GDP PPP and number of arrivals (0.64), number of departures (0.58) is moderate. While GDP PPP and receipts (0.72), expenditures (0.92) have a strong correlation.

The above calculations suggest that the level of economic welfare, usually measured in GDP per capita, determines the development of the tourism sector and other socio-economic spheres of society.

In addition to the quantitative indicators of the tourism and travel sector activities, there are qualitative indicators that assess the development and attractiveness of the tourism sector of the country. The World Economic Forum, for example, calculates the global Tourism and Travel Competitiveness Index (TTCI) for the countries of the world and assesses their investment attractiveness.

The identification of the relationship between the tourism and travel sector with other areas is suggest based on determining the interdependence between the values of international global indexes which characterize the development of various spheres of life and human activity in society.

For further analysis, indicators of the quality of the socioeconomic environment of the tourist sector of the countries were selected: Doing Business (DB); Global Competitiveness Index (GCI); The ITU ICT Development Index (IDI); Happiness index (HI); Global Peace Index (GPI) and Social Progress Index (SPI) (Annex 1).

Since all of them are measured through rank scales (scale of order), the use of correlational analysis indicators (in particular Pearson correlation coefficients) for metric spaces in this metric cannot be correct. So we used in our study Spearman's rank correlation and Kendall's Tau correlation because they were specifically designed for non-numeric statistics.

The Spearman's rank correlation coefficient is calculated by the formula:

$$r_S = 1 - \frac{6 \times \sum d^2}{n(n^2 - 1)} \quad or \quad r_S = 1 - \frac{6 \times \sum (x' - y')^2}{n(n^2 - 1)}, \qquad (2)$$

where: d - the difference between the ranks of corresponding variables X and Y; x' – values of ranks, replacing the actual variants or qualitative features of the argument x; y' – values of ranks, replacing the actual variants or qualitative features of the function y; n – number of observations.

The Kendall correlation coefficient is calculated by the formula:

$$\tau = 1 - \frac{4R}{n(n-1)}, \qquad (3)$$

where: $R = \sum_{i=1}^{n-1} \sum_{j=1+1}^{n} \left[\left[x_i < x_j \right] \neq \left[y_i < y_j \right] \right]$ – the amount of "mess" (inversions) formed by the values y_i and

placed in ascending order of the corresponding x_i; n – the number of set objects.

Exploring the peculiarities of applying correlation analysis in applied research, Shyshlyannikova (2009) has concluded that there are no fundamental differences between these criteria, but it is assumed that the Kendall coefficient is more "meaningful", since it more closely and in detail analyzes the relationships between variables, picking all possible matching between pairs of values.

The Spearman's coefficient more accurately takes into account the quantitative degree of the relationship between the variables. The Spearman rank correlation coefficient is a nonparametric analogue of the classical Pearson correlation coefficient, but when it is calculated, the indicators of the comparable variables (arithmetic mean and variance), and ranks are not related to the disposal.

Taking into account the close correlation between TTCI and GDP, let's analyze the relationship between the TTCI and the quality indicators of the socio-economic environment.

To identify the relationships and mutual influence of the tourism sector and travel on the socioeconomic sphere of society, the correlation dependence between the main indicators is calculated.

The results of Spearman's and Kendall's correlation analysis between TTCI and other global indices are given in Tables 2 and 3. The research includes data from 149 countries for 2016.

Table 2. Spearman's rank correlation

Variable	TTCI	DB	GC	IDI	HI	GPI	SP
TTCI	1.00	0.80	0.89	0.84	0.75	-0.53	0.86
DB	0.80	1.00	0.84	0.85	0.68	-0.61	0.87
GC	0.89	0.84	1.00	0.84	0.75	-0.50	0.82
IDI	0.84	0.85	0.84	1.00	0.80	-0.55	0.93
HI	0.75	0.68	0.75	0.80	1.00	-0.47	0.83
GPI	-0.53	-0.61	-0.50	-0.55	-0.47	1.00	-0.67
SP	0.86	0.87	0.82	0.93	0.83	-0.67	1.00

Table 3. Kendall's Tau correlation

Variable	TTCI	DB	GC	IDI	HI	GPI	SP
TTCI	1.00	0.61	0.72	0.65	0.54	-0.36	0.67
DB	0.61	1.00	0.64	0.67	0.50	-0.43	0.69
GC	0.72	0.64	1.00	0.65	0.57	-0.34	0.64
IDI	0.65	0.67	0.65	1.00	0.61	-0.39	0.77
HI	0.54	0.50	0.57	0.61	1.00	-0.34	0.65
GPI	-0.36	-0.43	-0.34	-0.39	-0.34	1.00	-0.49
SP	0.67	0.69	0.64	0.77	0.65	-0.49	1.00

As can be seen from the Tables 2-3 the Doing Business (DB), the Global Competitiveness Index (GCI), the Happiness Index (NO), and the TTCI have a high correlation as they include a set of indicators that, according to different methods, assess the socioeconomic status of the country. The country's tourism competitiveness also has a high correlation (K = 0.84) with the country's ICT Development Index (IDI). The Global Peace Index (GPI) has a moderate feedback with the TTCI, since the GPI calculation method is ranked countries in the direction backward to the TTCI calculation methodology, that is, the country with the highest value of the indicator has the best state of the GPI.

The calculations given before suggest that the level of economic welfare, usually measured in GDP per capita, determines the development of the tourism sector and other socioeconomic spheres of society.

Hypothesis 2. The degree of correlation between the tourism sector and other socio-economic sectors due of the level nation welfare.

All countries were divided into 4 groups with high, average and low GDP per capita so that the uniformity of the relationship between the indicators TTCI and other global indices in countries could be explored. The correlation dependence was calculated for each group. The results of the analysis are presented in Table 4.

Table 4. Rank correlation TTCI and other global indices

Variable		The indicated correlations are significant at the level of p <, 05000	
		Spearman's rank correlation	Kendall's Tau correlation
DB	to 2,000 (39 countries)	0.70	0.52
	2,000-5,000 (33 countries)	0.30	0.22
	5,000-20,000 (41 countries)	0.27	0.19
	more than 20,000 (38 countries)	0.60	0.44
GC	to 2,000 (39 countries)	0.83	0.68

Variable		The indicated correlations are significant at the level of p <, 05000	
		Spearman's rank correlation	Kendall's Tau correlation
	2,000-5,000 (33 countries)	0.73	0.54
	5,000-20,000 (41 countries)	0.56	0.41
	more than 20,000 (38 countries)	0.61	0.44
IDI	to 2,000 (39 countries)	0.55	0.40
	2,000-5,000 (33 countries)	0.21	0.14
	5,000-20,000 (41 countries)	0.23	0.17
	more than 20,000 (38 countries)	0.57	0.42
HI	to 2,000 (39 countries)	0.24	0.16
	2,000-5,000 (33 countries)	-0.11	-0.08
	5,000-20,000 (41 countries)	0.33	0.22
	more than 20,000 (38 countries)	0.30	0.20
GPI	to 2,000 (39 countries)	-0.27	-0.16
	2,000-5,000 (33 countries)	-0.07	-0.05
	5,000-20,000 (41 countries)	-0.14	-0.11
	more than 20,000 (38 countries)	-0.44	-0.27
SP	to 2,000 (39 countries)	0.61	0.43
	2,000-5,000 (33 countries)	0.08	0.06
	5,000-20,000 (41 countries)	0.35	0.26
	more than 20,000 (38 countries)	0.50	0.35

The results of the analysis presented in Table 4 indicate that the strongest dependence of tourism and indicators of the socioeconomic environment is observed in the countries with the lowest income (up to 2,000 USD) and in countries with a high level of GDP per capita (over 20,000 USD). At the same time, this tendency can be observed also when the correlation between other global indices is detected. For example, DB, HR, IDI and GCI have strong relationship in high and low income countries, and in middle-income countries (from 2,000 USD to 5,000 USD and between 5,000 USD and 20,000 USD) such relationship becomes weaker. This tendency is observed both in the calculation according to the Spearman's correlation and to the Kendall's Tau correlation. The results of analysis give reason to assert the objectivity of the analysis for this sample.

However, it should be noted that in some cases, such relationship is not observed at all. For example, there is no correlation between TTCI and HR for the countries with income from 2,000 USD to 5,000 USD (although the overall correlation coefficient is 0.54). GPI has a relationship with TTCI only in the high-income countries.

5. DISCUSSION

The hypothesis about the relationship between the tourism sector and GDP has been confirmed. The study found that such relationship exists, and it is significant for most countries, which analyzed in the work. Results of correlation analysis also showed that tourist flows are positively related with GDP. This is explained by fact that tourist goods and services themselves are subject of a second necessity (and often relate to luxury items) and demand for they increases significantly with growth of income level. At same time, an increase of tourist flows has a positive impact on overall economic situation in country, stimulate creation of new jobs, reduce unemployment and increase tax revenues to budget. In general, this gives grounds for concluding about importance of the tourism sector for socioeconomic development of countries.

The second hypothesis suggested the existence of a relationship between indicators of the tourism sector development and indicators of quality of socio-economic environment. According to results of analysis, we can make a conclusion that there is a positive correlation between these indicators. This may be due to fact that, on one hand, high quality socioeconomic environment stimulates visits to country; on other hand, travels improve subjective accepting of environment and stimulate growth of economy and welfare of citizens who live in territory that visited.

Further analysis of aggregate of countries, divided into 4 groups by income, showed mixed results. Thus, a stronger correlation between all analyzed indicators is observed in low and high-income countries, weakening in transition to averages by a sample of values. However, such a weak relationship for some countries may be a consequence of a small share of the tourism sector in the economy.

CONCLUSION

Correlation relationship between indicators of tourism and GDP was calculated in this paper. The research examined the relationship between GDP and tourism indicators for 149 countries in 2016. This paper differs from previous researches by focusing on a large sample of countries and reveals the relationship between tourism sector development indicators and socioeconomic environment indicators. One can speak of objectivity of results obtained, since they are confirmed both using Spearman's correlation coefficient, and Kendall's Tau correlation.

The results of the studies confirm the importance of tourism for economy. The findings can be used in the development of state policy in the sphere of tourism, as well as the justification of tourism development at the regional level. Prospects for further research, in our opinion, consist in identifying the direction of the relationship between indicators of tourism development and socio-economic indices based on Granger, Pesaran tests, etc. This analysis will allow assessing the impact of tourism on the economy and the influence of economic environment on development of the tourism industry in the country.

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