Exploring the Synergy Between Tourism and Economic Development in Pakistan

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Abstract

Underdeveloped nations can get far more from tourism than just financial gains. It promotes cultural exchanges and infrastructure development in addition to jobs and income. The industry does more than just construct hotels; it also promotes regional customs and helps small businesses. This study uses time series data from the World Development Indicator (WDI) to examine the long-term association between tourism and economic growth in Pakistan from 1995-2012. The Augmented Dickey-Fuller (ADF) test is used at the start of the analysis to find possible unit root problems in the dataset. Using the Johnson cointegration technique, cointegration is demonstrated, confirming a strong and ongoing relationship between Pakistan's tourism industry and economic growth. The derived long-term tourist coefficient highlights a strong positive correlation with economic expansion. According to Granger Causality testing, GDP and tourism have a unidirectional causal relationship. These empirical results highlight tourism's critical role in promoting economic growth and the possibility of a positive feedback loop between the two. The study recommends that authorities take specific actions to support Pakistan's tourist industry in light of these findings. The development of infrastructure, marketing campaigns, and legislative frameworks that support the expansion of tourism are a few examples of such interventions. The study offers significant perspectives for well-informed policy development, advocating for proactive approaches to fully capitalize on the economic advantages of Pakistan's flourishing tourism sector.

1 | Introduction

The complex relationship between tourism and economic development in developing nations has attracted much attention due to its potentially revolutionary effects. How does tourism contribute significantly to

developing infrastructure, creating jobs, and generating cash? This study intends to investigate the complex relationships between economic expansion and tourism, particularly emphasizing Pakistan's developing environment. The undeveloped state of many countries, marked by a reliance on traditional sectors and economic monoculture, highlights the importance of tourism as a viable path towards all-encompassing development. Cite the industry's capacity to start a positive feedback loop of economic growth.

Furthermore, as explained by tourism's cultural and social effects, it highlights its contribution to local heritage preservation and cross-cultural interchange. This study uses a time series dataset from 1995-2012 to thoroughly examine the relationship between tourism and economic growth in Pakistan and fill in any gaps in the literature. In terms of methodology, this study follows accepted econometric procedures; it uses the Johnson cointegration technique to investigate the cointegration between GDP and tourism and the augmented Dickey-Fuller (ADF) test to identify unit root problems. The direction of causality is then determined using Granger Causality tests. This research is expected to significantly contribute by offering insightful analysis to policymakers and academics based on a comprehensive analysis of the long-term dynamics between tourism and economic growth in developing nations.

The groundwork was established by Dwyer and Kim [1], who conducted a thorough analysis of the factors that influence destination competitiveness. Recognizing the financial implications of tourism, [2] offered factual data regarding the impacts of tourism on the Mediterranean region's economy. Expanding upon this economic viewpoint [3], the notion of sustainable tourism was evaluated, stressing the necessity of striking a balance between theory and practice [4]. In the global setting, [5] used a Granger Causality test to investigate the connection between foreign tourists and South Africa's economic progress. Similarly, [6] examined the influence of real effective exchange rates and tourism receipts on Tunisia's economic growth. [7] conducted additional research on this cultural component and investigated the role of tourism in determining long-term economic prosperity. This investigation was furthered by Brida et al. [8], who offered actual data from Colombia to bolster the theory of tourism-led growth. The discussion then turns to nations, where [9]–[12] examined tourism-led growth. Pakistan, for example, was examined by [13] and [14] conducted an empirical evaluation of the contribution of tourism to economic growth. An additional component was introduced by Malik et al. [15], who investigated the connection between Pakistan's current account deficit, economic growth, and tourism. Furthermore, [16]–[18] investigated the effects of capital goods imports, tourism, and economic expansion in Spain. Tang and Tan [19] added to the continuing discussion on the economic effects of tourism by raising a crucial question about how well tourism stimulates Malaysia's economic growth. Simultaneously, Winters et al. [20] explored the complex connection between tourism and reducing poverty, shedding light on the possible contribution of tourism to the resolution of socioeconomic inequality [20], [21]. The social, economic, and spatial aspects of tourism activities are clarified by Derek et al. [22], which further refines our understanding. A thorough analysis of data-driven market segmentation was carried out by Dolnicar [23], who also provided insights into the methodological techniques used to comprehend the various demands and preferences of tourists. Furthermore, the shares technique was presented by Eugenio-Martin and Cazorla-Artiles [24], offering a fresh viewpoint on uncovering latent tourism demand.

Benefit segmentation provided a Scottish viewpoint on comprehending the benefits required by various tourist categories, as Frochot [25] investigated in the context of visitors in rural areas. In his contribution, Gray [26] emphasized the economic benefits of tourism and acknowledged its dynamic role in influencing both national and international economies. Japanese leisure tourists visiting the USA and Canada are categorized according to their benefits, risks, and profitability in each market category [27]. A comparison of destination attraction clustering using network and spatial analysis of online reviews for various origin markets [28], considering the environment, [29] performed a dynamic panel data analysis to examine how demand for tourism and climate interact. A vital issue in the tourism industry, the sustainability-profitability trade-off, was examined by [30], who questioned if it could be successfully resolved. While navigating the segmentation domains, Saqlain [31] contributed to decision-making methods [32], [33]. In the meantime, during the pandemic, Haq and Saqlain [34], [35] investigated the use of machine learning for iris detection in educational institutions. These pieces highlight the changing approaches and technological advancements that influence

modern research across a range of fields. The work incorporates insights from the investigation of tourism segments by [36], who profiled travelers in rural Southeast Spain [37] and drew from the rich tapestry of previous studies. By including gravity models in the tourism demand analysis, Morley [38] strengthened the theoretical foundation of the empirical findings. In addition, [39] added to the conversation on the financial effects of sustainable tourism by addressing the issue of whether these travellers are more affluent. Nicolau and Mas [40] explored stochastic modeling to understand the three-stage tourist choice process further. Their work provides a thorough framework for understanding the nuances of tourist decision-making.

Furthermore, Paulose and Shakeel [41] investigated the factors that preceded loyalty in hotel visitors, focusing on perceived value, perceived experience, and customer happiness. Prayag gave a detailed breakdown of visitor satisfaction that considers the cognitive image and forecasts behavioral loyalty [42]. The dynamic nature of tourism research is demonstrated by the evolution of tourism demand forecasting, as examined by [43]. Tkaczynski [44] examined the viewpoint of tourism stakeholders regarding segmentation, highlighting the significance of considering a range of viewpoints. Fourie [45] examined how major sporting events affected the number of tourists that arrived, clarifying the intricate dynamics that these events triggered.

Focusing on Pakistan, this study substantially broadens our knowledge of how tourism propels economic growth in developing nations. It attempts to find the connection between GDP and international tourism arrival using the Johnson cointegration and Granger causality tests. This study also examines the social and cultural aspects of tourism, raising concerns about unchecked development that may have a negative impact on the environment. As a result, ethical travel becomes more than just a business tactic; it also serves as a defender of a nation's culture and environmental heritage. Finding the right balance between advancement and preservation is a tricky dance. It assesses whether the end-of-the-day relationship exists between tourism receipts and GDP growth. It gives policymakers detailed insights into the precise mechanisms by which tourism might spur sustainable development through rigorous analysis and empirical evidence. The study's focus on the cultural, social, and environmental aspects highlights the many advantages of a flourishing tourism industry. It provides concise advice for developing inclusive growth plans in developing countries.

2 | Data and Methodology

There are numerous measures of tourism, but one of them is international tourism, the number of arrivals that shows earnings generated by foreign visitors. However, this study uses the number of tourist arrivals to represent tourism. The second is the real effective exchange rate index (2010 = 100). The tourism-directed growth hypothesis gives the influence of tourism on economic growth. Real GDP is used to characterize economic growth. Therefore, we estimate the following *Eq. (1)*:

$$LGDP_t = \alpha_0 + \alpha_1 LTAR_t + \alpha_2 LREXR_t + \mu_t, \tag{1}$$

where:

I. LGDP = log of Gross Domestic Product.

II. LTAR = log of tourist arrivals.

III. LREXR = log of real effective exchange rate.

IV. μ_t = the error term.

The real exchange rate in international tourism shows the potential to ignore variable issues and external effectiveness. This study investigates the validity of the tourism-led growth hypothesis for Pakistan. LREXR could be zero and does not affect model arrangements. Annual time series data is used in this study for the period 1995-2012. The data is collected from the World Bank. The modeling approach used in this article is based on the Engle-Granger methodology.

2.1 | Unit Root Test

The first stage is to check whether the variables are stationary or nonstationary. Nonstationary variables give spurious results. A cointegration test is carried out for a long-run relationship. The ADF stationarity test is applied at levels and variable differences. If series Y_t is not stationary while ΔY_t appears stationary at the first difference, and then the series is said to be integrated of order 1, denoted as I (1). If a series is stationary at d differences, then the series is integrated in order d, I_d. The ADF test of unit root uses the various specifications on the following *Eq. (2):*

$$\Delta \, LGDPt = \beta_1 + \beta_2 \, t + \delta \, LGDPt - 1 + \sum_{i=1}^{k} \alpha \, \Delta LGDPt - i + \varepsilon * t, \qquad (2)$$

where LGDPt = the level form of the variable LGDP is under considerationΔ, Symbolizes first-differences, while β is constant term, $t = time$, $\varepsilon * t$ = error term and $\Delta LGDPt - i$ is added to remove serial correction in error term $\varepsilon * t$.

The study uses the ADF test to assess the unit root problem in all the variables included in the study. A unit root's null Hypothesis (H0) in Yt is a Unit Root, while the Alternative Hypothesis (H1) is No Unit Root. The Schwarz information criteria determine the number of lags in the ADF test, and the maximum lag length is 4.

2.2 | Johnson Cointegration Test

A cointegration test is performed in the second step to check the long-run relationship. A cointegration test checks the long-run relation between nonstationary time series. The long-run relationship among nonstationary series indicates a stochastic trend that must have commonality. Single series may drift apart, but they will move together long-term to restore the relationship. The Johansen Cointegration test (trace and maximum eigenvalue test) confirms the presence or absence of cointegration in variables included in the model. Long-term cointegration between tourism and economic growth is found through Johansen cointegration, so there must be unidirectional or bidirectional causality among variables. Pairwise Granger Causality tests examined unidirectional causality between tourism economic growth. According to Engle and Granger [46], the stationary residual of the regression indicates that series are cointegrated.

$$Y_t = \beta \, X_t + \varepsilon * t. \qquad (3)$$

Where both variables Y_t and X_t are nonstationary, which are integrated into order 1 (i.e. $Y_t \sim I(1)$ and $X_t \sim I(1)$). For Y_t and X_t to be cointegrated, the necessary condition is that estimated residuals fit the above equation should be stationary (i.e., $\varepsilon * t \sim I(0)$).

3 | Calculations

This research uses a wide range of computations and analytical methods to decipher the complex relationships between tourism and economic expansion. A graphical representation of the interaction between the variables throughout the study is made possible by the visual portrayal, which acts as an initial lens. By breaking down the dataset even more, descriptive analysis provides information on the main trends and variances in the observed data. The type and degree of the association between tourism and economic growth are then measured using regression analysis. The Johnson Cointegration Test checks for cointegration, essential to comprehending long-term relationships. After that, long-term findings are obtained, providing insight into tourism's long-term influence on economic expansion. Lastly, the directionality of the causal relationship between GDP and tourism is determined using the Granger Causality test. This rigorous scientific approach guarantees a comprehensive investigation of the intricate relationship between tourism and economic growth. It includes visual depiction, descriptive statistics, regression analysis, cointegration testing, and causality evaluation.

3.1 | Graphical Analysis

A visual depiction of their dynamic interaction may be found in the economic growth graph plotted against tourism during the study. The study's timeline, represented by the X-axis, shows how the data has changed over time, and the Y-axis represents the GDP and tourism measurements. The graph confirms a strong long-term link, clearly showing a consistent and robust positive correlation between the two variables. This visual confirmation supports the idea that economic growth varies with tourism, consistent with our quantitative findings. The results are easier to understand because the graphical representation offers a quick and clear picture of how tourism and economic growth are moving together throughout the given time frame. The substantial positive link and continuous movement that have been seen highlight how closely tourism and economic growth are related. This visual confirmation strengthens the analysis's robustness and bolsters the argument that the tourism industry is a key driver of and contributor to long-term economic development. The graph provides an intuitive picture of the longitudinal dynamics between tourism and economic growth in Pakistan, which is a compelling addition to our data findings.

In the graph below, economic growth is plotted against tourism in a single graph. The period for which the data is used in the study is on the graph's X-axis, while the GDP and tourism observation have been taken on the Y-axis. The graph shows that both variables are moving constantly and have a strong positive relation in the long term.
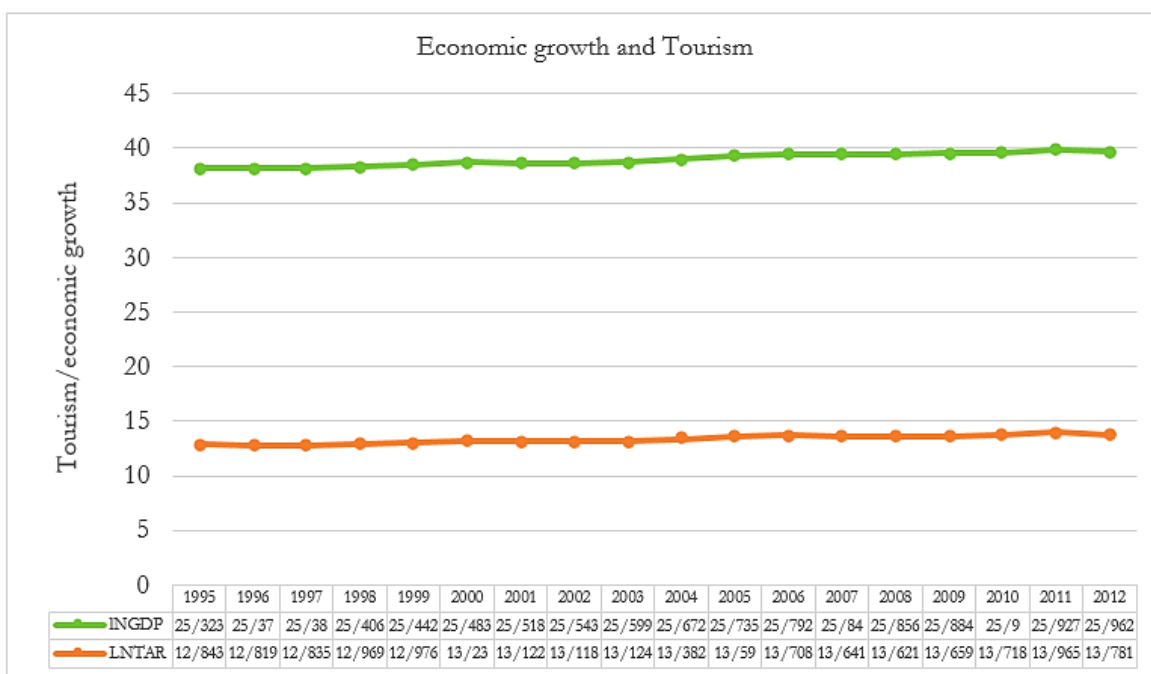
Fig. 1. Tourism and economic growth.

3.2 | Descriptive Analysis

Descriptive statistics express basic structures of data. It represents a quantitative explanation in a convenient form and provides a data summary. Mean, median, maximum, and minimum are given against each variable. Tourism is positively skewed, while GDP and exchange rates are negatively skewed. The prob value of Jarque Bera is insignificant of variables that explain data of all the variables is normally distributed. The correlation among variables is shown in *Table 1*. It did not find the issue of multicollinearity because, in diagonals, the correlation is less than 0.7, which explains no perfect correlation among variables, as presented in *Table 2*.

Table 1. Descriptive statics.

	LGDP	LREXR	LTAR
Mean	-0.000804	-0.006557	0.060148
Median	-3.23E-05	0.002586	0.027137
Maximum	0.031389	0.035761	0.257285
Minimum	-0.037235	-0.095482	-0.183873
Std. Dev.	0.017806	0.039817	0.132888
Skewness	-0.362529	-0.946462	0.082404
Kurtosis	2.726200	2.921498	2.131825
Jarque-Bera	0.400451	2.392883	0.520593
Probability	0.818546	0.302268	0.770823

Table 2. Correlation matrix.

	LGDP	LREXR	LTAR
LGDP	1	-0.09538514629032892	0.2452001682703299
LREXR	-0.09538514629032892	1	0.3538150759043927
LTAR	0.2452001682703299	0.3538150759043927	1

3.3 | Regression Analysis

Before estimations, it is necessary to check the unit root problem in data. Unit root analysis provides us with the order of integration of variables included in the model, which leads the researcher to an appropriate estimation technique. In this article, the researcher used the ADF test because it is most likely a test of cointegration by researchers. Results obtained from both tests are shown in *Table 3*. The economic growth variable is found nonstationary both in level form and by taking its first derivative. It becomes stationary after taking the second derivative. This series doesn't include trends but only intercepts. The other two variables, tourism, and real effective exchange rate, are stationary at their first difference. Tourism has intercepts in its data set, but the real effective exchange rate does not include intercepts or trends in their pattern.

Table 3. Unit root tests.

Variable	In Test Equation	T-State (Prob)	Decision
LGDP	With Constant and no trend	-4.586128 (0.0032)	I(2)
LTAR	With Constant and no trend	-3.472010 (0.0275)	I(1)
LREXR	Without a Constant trend	-3.958584 (0.0006)	I(1)

3.4 | Johnson Cointegration Test

The Johansen test is used in this research to investigate the long-term relationship between tourism and Pakistan's economic progress. In Johansen, two cointegration tests (trace and maximum Eigenvalue test) confirm the presence or absence of cointegration among variables included in the model. Each test confirms long-term cointegration at a 1 % significance level between tourism and Pakistan's economic growth. *Table 4*, below the trace statistics (54.28816), is greater than its critical value (42.91525) at a 5% significance level, and the Prob value is also significant. In the 2nd test of Maximum Eigen Static, the value of the max-eigen statistic (31.43397) is greater than its critical value (25.82321) with its significant Prob value. Hence, the null hypothesis of no cointegrating relations is rejected. Further, both tests highlight that there is one cointegrating vector.

Table 4. Johnson cointegration test.

Null Hypothesis	Trace Test			Maximum Eigen Test		
	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
r = 0	54.28816	42.91525	0.0025*	31.43397	25.82321	0.0082*
r ≤ 1	22.85419	25.87211	0.1135	16.54874	19.38704	0.1233
r ≤ 2	6.305447	12.51798	0.4225	6.305447	12.51798	0.4225

*Significant at 1 % level of significance.

3.5 | Long Run Results

Table 5 lists the long-run normalized cointegrating coefficients in the 2nd column. In the 3rd column, the standard error is given against each variable. LTAR is positively associated with GDP. The coefficient of Tourism explains that with a one percent increase in the number of tourist arrivals, 29% of the economy of Pakistan grows by taking other factors not into consideration. Meanwhile, the real effective exchange rate has a strong negative impact on Pakistan's economic development.

Table 5. Long-run estimates.

Parameter Estimates	Cointegrating Coefficients	Standard Error
LTAR	0.298007	(0.04867)
LREXR	-1.083095	(0.16168)

3.6 | Granger Causality Test

In *Table 6*, the cointegration between tourism economic growth is found through Johansen cointegration, so there must be unidirectional or bidirectional causality among variables. Pairwise Granger Causality tests examined unidirectional causality between tourism economic growth. The null hypothesis of 'LGDP does not Granger Cause LTAR' is rejected at a 10% significance level, meaning that with the change in economic growth, tourism in Pakistan is affected.

Table 6. Granger Causality test.

Null Hypothesis	F-Statistic	Probability
LTAR does not Granger Cause LGDP	1.73286	0.2309
LGDP does not Granger Cause LTAR	3.56966	0.0722***
LREXR does not Granger Cause LGDP	0.40515	0.6785
LGDP does not Granger Cause LREXR	0.42811	0.6643
LREXR does not Granger Cause LTAR	0.13029	0.8793
LTAR does not Granger Cause LREXR	0.34870	0.7139

4 | Results and Discussion

The dataset analysis reveals a persistent and strong positive link between tourism and economic growth, a trend visually corroborated throughout the study period. By clarifying central trends and variances within the dataset, descriptive analysis offers a detailed comprehension of the features of the data. This relationship is quantified using regression analysis, which provides statistically significant coefficients that highlight the considerable contribution of tourism to economic growth. A strong basis for comprehending the ongoing dependency between tourism and economic growth is provided by the Johnson Cointegration Test, which confirms a long-term relationship between the two. Regression coefficients provide insight into the extent of tourism's long-term impact on economic development, which is further supported by long-term results. The findings of the Granger Causality test demonstrate a unidirectional causal relationship between GDP and tourism, highlighting the role that economic expansion plays in shaping the dynamics of this industry. All things considered, the combination of graphic design, regression analysis, cointegration testing, descriptive analysis, and causality analysis provides a thorough grasp of the complex relationship between tourism and

economic expansion. These results demonstrate the potential of tourism as a catalyst for long-term economic development, which has important policy implications. This study used rigorous mathematical and statistical techniques to thoroughly examine the connection between Pakistan's tourism industry and economic expansion. Time series data from the WDI were used in the study. The ADF test addressed the dataset's unit root problems, guaranteeing the ensuing analysis's validity. The cointegration between economic growth and tourism was investigated using the Johnson cointegration technique, which reliably indicates their long-term relationship. The study also used Granger Causality tests to determine the direction of the causal relationship, and the results showed only one causal relationship between GDP and tourism. These methodological decisions, based on accepted econometric techniques, guaranteed the statistical integrity of the results and offered a thorough comprehension of the complex interactions between Pakistan's tourism and economic expansion throughout the given time frame.

5 | Conclusion

Finally, using Pakistan as a relevant case study, this research aims to investigate the transformative potential of tourism in developing nations. This study thoroughly analyses the complex relationships between tourism, economic growth, and related issues. It offers a sophisticated understanding grounded on empirical data and well-established econometric methodology. It was concluded that a long-term cointegration exists between tourism and Pakistan's economic progress. The long-run coefficient of LTAR is a positive sign that reflects a positive and encouraging relationship between tourism and Pakistan's economic growth. The Granger Causality test further estimated the unidirectional causality between economic growth and tourism. These findings encourage the Govt of Pakistan to invest in its tourism sector because it significantly affects economic growth. Based on the results of this research, the Pakistani government can choose many policy implications to increase the growth of the tourism sector. Firstly, the Govt. of Pakistan should work to enhance the image of Pakistan as a place of love and peace. Second, the infrastructure should be set up, particularly roads, hotels, leisure places, etc. Third, coordination between the public and private sectors is essential to educate human capital and provide better services to all tourists, such as information, offers, and other support services. By using an interdisciplinary approach that considers economic, cultural, and environmental factors, this research hopes to add to a thorough and compassionate understanding of how tourism affects developing countries' futures.

Author Contributions

The authors contributed equally to this work. All authors read and approved the final manuscript.

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Data Availability

The authors will supply the supporting information upon request, free from any unjustified limitations, which form the foundation of the conclusions presented in this article.

Conflicts of Interest

The authors declared no conflicts of interest regarding this work.

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