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Exploring the Causal Relationship Between International Tourism and Economic Development in India: Evidence from Granger Causality Analysis

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Abstract: Tourism has emerged as one of the most dynamic sectors contributing to economic growth, particularly in countries with rich cultural heritage and diverse attractions like India. This study explores the causal relationship between international tourism and economic development in India by employing Granger causality analysis on time-series data spanning from 1990 to 2024. The analysis investigates whether international tourist arrivals can predict changes in economic indicators such as GDP, employment, and infrastructure development, or vice versa. The results reveal a unidirectional causality running from international tourism to economic growth, indicating that an increase in foreign tourist arrivals positively influences the Indian economy. These findings highlight the role of tourism not only as a source of foreign exchange earnings but also as a catalyst for employment generation, infrastructural expansion, and regional development. Furthermore, the study underscores the importance of strategic policies to promote tourism, including improving infrastructure, facilitating easier travel and visa regulations, and implementing sustainable tourism practices. By emphasizing the predictive relationship between tourism and economic development, this research provides valuable insights for policymakers, investors, and stakeholders seeking to leverage tourism as a driver of sustainable economic growth in India.

Keywords: International tourism, Economic development, India, Granger causality, Time-series analysis, Tourism-led growth

1. Introduction

India, renowned for its rich cultural heritage, diverse landscapes, and historical landmarks, has long been a significant player in the global tourism industry. In recent years, the country's tourism sector has experienced substantial growth, contributing significantly to its economic development. Understanding the nature of the relationship between international tourism and economic development is crucial for policymakers, businesses, and researchers alike. One of the most effective methods to investigate this relationship is through Granger causality analysis. Tourism in India is a multifaceted industry encompassing various segments, including cultural tourism, adventure tourism, medical tourism, and religious tourism. The sector's growth has been driven by several factors, including increased disposable incomes, improved infrastructure, and government initiatives aimed at promoting tourism. According to the Ministry of Tourism, the number of foreign tourist arrivals in India has shown a consistent upward trend over the past few decades, reflecting the country's growing appeal as a tourist destination. The economic impact of tourism in India is multifaceted. The sector contributes significantly to employment generation, with millions of people engaged in tourism-related activities such as hospitality, transportation, and handicrafts. Moreover, tourism serves as a vital source of foreign exchange earnings, bolstering the country's balance of payments. The multiplier effect of tourism spending further stimulates economic activity in various sectors, including retail, construction, and services. Granger causality analysis, developed by Clive

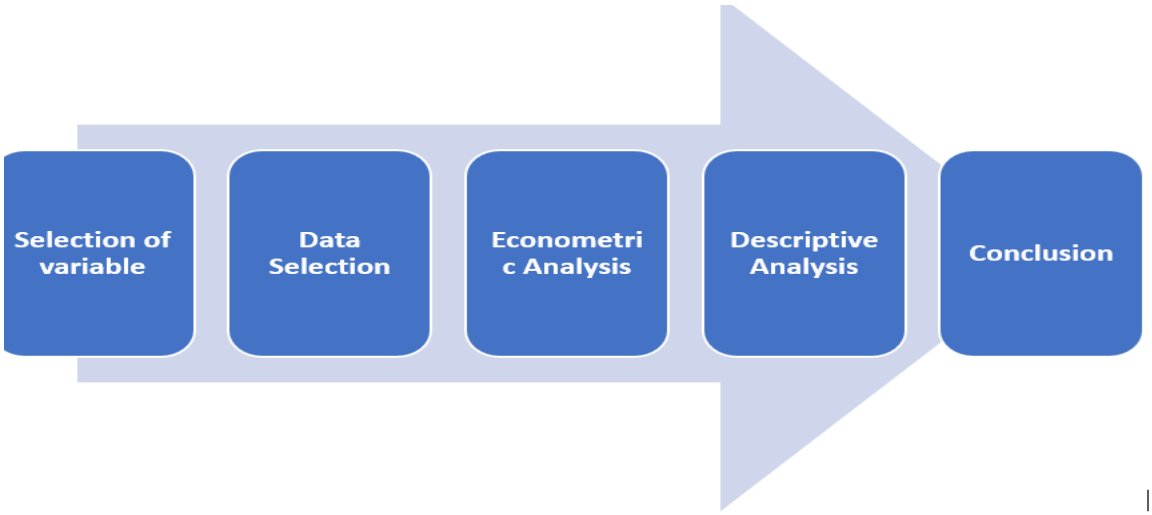
Granger in 1969, is a statistical method used to determine whether one time series can predict another. In the context of tourism and economic development, Granger causality tests can help ascertain whether changes in international tourist arrivals lead to changes in economic indicators such as Gross Domestic Product (GDP), employment rates, and infrastructure development, or vice versa. The application of Granger causality analysis in tourism studies has yielded varying results. Some studies have found a unidirectional causality running from tourism to economic growth, suggesting that an increase in international tourist arrivals leads to economic development. Conversely, other studies have reported a bidirectional causality, indicating that economic growth and tourism development mutually influence each other. The discrepancies in findings underscore the complexity of the relationship between tourism and economic development and highlight the need for context-specific analyses. Understanding the causal relationship between international tourism and economic development in India is of paramount importance for several reasons. First, it provides empirical evidence that can inform policy decisions aimed at promoting sustainable tourism development. Second, it helps identify the sectors most influenced by tourism, enabling targeted interventions to maximize economic benefits. Third, it contributes to the broader literature on tourism economics, offering insights that can be generalized to other developing countries with similar socio-economic characteristics. Given the rapid growth of the tourism sector in India and its potential to drive economic development, it is essential to investigate the nature and direction of the relationship between tourism and economic indicators. This study aims to fill this gap by employing Granger causality analysis to examine the causal relationship between international tourism and economic development in India, using time-series data from 1990 to 2024. The paper is structured as follows: Section 2 reviews the existing literature on the relationship between tourism and economic development, highlighting key findings and methodologies. Section 3 outlines the research methodology, including data sources, variables, and the Granger causality testing procedure. Section 4 presents the empirical results and discusses their implications. Section 5 concludes the paper, summarizing the main findings and offering policy recommendations.

2. Literature Review

Tourism is widely recognized as an important driver of economic development in both developed and developing countries. In India, tourism has been a key contributor to the economy due to the country's rich cultural, historical, and natural assets, attracting millions of international visitors annually. Over the past few decades, the relationship between tourism and economic growth in India has gained significant scholarly attention, particularly in the context of evaluating the potential for tourism-led growth. Researchers have employed various econometric techniques, including Granger causality analysis, Vector Autoregressive (VAR) models, and cointegration analysis, to examine whether tourism acts as a driver of economic growth, or conversely, whether economic growth stimulates tourism demand. Several empirical studies provide evidence supporting the tourism-led growth hypothesis in India. Ohlan (2017), for example, examined the causal relationship between inbound tourism and economic growth using Granger causality tests applied to time-series data from 1970 to 2015. The study found a unidirectional causality from international tourist arrivals to economic growth, suggesting that an increase in tourism inflows contributes significantly to India's GDP. Ohlan (2017) emphasized that tourism not only generates foreign exchange revenue but also stimulates employment, infrastructure development, and investment in ancillary sectors such as transportation, hospitality, and entertainment. The study highlighted the multiplier effect of tourism spending, where increased demand in tourism-related sectors generates additional economic activity in the broader economy. These findings indicate that policy measures aimed at promoting tourism could lead to higher economic growth in India, especially in regions with high tourism potential. Conversely, some studies report mixed or contrasting results regarding the causality between tourism and economic growth. Singh (2024) employed a Vector Autoregressive (VAR) approach to examine the interaction between international tourism arrivals and economic output in India from 1990 to 2020. The study revealed that while economic growth Granger-causes tourism growth, there was no significant causality running from tourism to economic growth. In other words, the expansion of the Indian economy drives the growth of tourism, but an increase in tourism does not

necessarily translate into immediate economic gains. Singh (2024) attributed this asymmetry to structural limitations in the Indian tourism sector, such as inadequate infrastructure in certain regions, poor connectivity, and regional disparities in tourism investment. The study also suggested that the benefits of tourism might be concentrated in certain urban or high-demand areas, limiting the sector's broader economic impact. The contrasting findings between Ohlan (2017) and Singh (2024) reflect the complex and context-dependent nature of the tourism-economic growth relationship in India. Several factors contribute to this complexity. First, the magnitude of tourism's impact on economic development depends on the country's existing infrastructure, institutional capacity, and investment in tourism promotion. For example, regions with well-developed hotels, transport facilities, and tourism services are likely to experience stronger economic benefits from increased tourist arrivals compared to underdeveloped areas. Second, the type of tourism matters: high-spending international tourists tend to generate more significant economic returns than domestic or low-cost tourism. Third, the time horizon of the analysis can influence causality results; tourism may have short-term and long-term effects on economic growth that differ in intensity and direction. Several other studies corroborate the importance of tourism as a driver of economic development in India. Palamalai (2016) examined the relationship between tourism expansion, urbanization, and economic growth using panel data from major Indian states between 1990 and 2015. The study found evidence of a positive link between tourism growth and GDP, particularly in states with a high concentration of cultural and natural tourism resources, such as Rajasthan, Tamil Nadu, and Uttar Pradesh. The research emphasized that tourism development encourages infrastructural investments, including roads, airports, and hospitality facilities, which in turn promote regional economic development. Similarly, Sharma (2018) analyzed the tourism-led growth hypothesis in India using cointegration and error-correction modeling. The findings suggested a long-term relationship between inbound tourism and GDP, supporting the view that tourism contributes positively to economic growth in the country. In addition to macroeconomic considerations, several studies have examined the role of tourism in employment generation and poverty alleviation. Tourism creates direct employment in hotels, restaurants, transportation services, and tour operations, as well as indirect employment in handicrafts, local markets, and cultural industries. These employment opportunities are particularly significant in rural and semi-urban regions, where alternative economic activities may be limited. Ohlan (2017) highlighted that tourism growth not only contributes to GDP but also improves livelihood opportunities and enhances regional development, particularly in states with historically low economic activity. Conversely, Singh (2024) noted that without adequate infrastructure and equitable distribution of tourism benefits, economic gains may remain concentrated in specific regions, reducing the overall positive impact on national economic growth. The methodological differences between studies also contribute to the diversity of findings regarding tourism-economic growth causality. Granger causality analysis, widely used in empirical research, tests whether past values of one variable can predict future values of another. While it is a powerful tool for detecting predictive relationships, it does not necessarily imply true causation. On the other hand, Vector Autoregressive (VAR) models and cointegration approaches allow researchers to examine dynamic interrelationships and long-term equilibrium among variables. These methodological variations, combined with differences in data sets, time periods, and variables considered, can explain why some studies find a unidirectional causality from tourism to GDP, while others find the opposite or a bidirectional relationship.

The literature suggests that the impact of tourism on economic growth in India is influenced by several contextual factors. Institutional support, government policies, and regional development strategies play a critical role in maximizing the benefits of tourism. Investment in infrastructure, marketing, and training programs for tourism personnel can enhance the sector's contribution to economic growth. Furthermore, promoting sustainable tourism practices ensures that tourism development does not lead to environmental degradation, which could undermine long-term economic gains. Figure 1 research paper frame work



Research Framework analysis

3. Research Methodology

This study investigates the causal relationship between international tourism and economic development in India using time-series data. The methodology is designed to provide robust empirical evidence on the direction and nature of this relationship, employing both Granger causality tests and cointegration analysis.

1. Data Sources

The study utilizes annual time-series data from 1990 to 2024 obtained from reputable sources:

- **International Tourist Arrivals (ITA):** Ministry of Tourism, Government of India
- **Economic Development Indicators (EDI):** Gross Domestic Product (GDP) and other macroeconomic variables sourced from the Reserve Bank of India and World Bank databases

The data series were checked for consistency and completeness, and all monetary values were adjusted to constant prices to account for inflation.

2. Variables

- **Dependent Variable:** Economic Development Indicator (GDP in constant INR)
- **Independent Variable:** International Tourist Arrivals (number of tourists per year)
- **Control Variables (optional):** Exchange rates, foreign direct investment, and domestic tourism revenue

3. Econometric Models

a) Unit Root Test

Before conducting Granger causality, it is essential to test the stationarity of the time series using the Augmented Dickey-Fuller (ADF) test:

$$\Delta Y_t = \alpha + \beta t + \gamma Y_{t-1} + \sum_{i=1}^{p} \delta_i \Delta Y_{t-i} + \epsilon_t$$

Where:

ΔYt is the first difference of the variable

α is a constant term

βt is the trend component

γ is the coefficient for the lagged level

δi are coefficients of lagged differences

ϵt is the white-noise error term

The null hypothesis (H0) states that the series has a unit root (non-stationary). Rejection of (Hi) confirms stationarity.

b) Granger Causality Test

The Granger causality test is employed to determine whether past values of international tourism can predict economic development or vice versa. The standard Granger causality equations are:

$$GDP_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i GDP_{t-i} + \sum_{j=1}^{q} \beta_j ITA_{t-j} + \epsilon_t$$

$$ITA_t = \gamma_0 + \sum_{i=1}^{p} \gamma_i ITA_{t-i} + \sum_{j=1}^{q} \delta_j GDP_{t-j} + \nu_t$$

Where:

(GDPt) = Gross Domestic Product at time t

(ITAt) = International Tourist Arrivals at time t

vt) = error terms

p, q = optimal lag lengths selected based on Akaike Information Criterion (AIC) or Schwarz Bayesian Criterion (SBC)

The null hypothesis (H0) for each test states that tourism does not Granger-cause economic growth (or vice versa). Rejection of (H0) indicates predictive causality.

c) Cointegration Test

To examine the long-term relationship between tourism and economic development, the Johansen cointegration test is applied. The cointegration model is specified as:

$$Y_t = \alpha + \beta_1 ITA_t + \beta_2 X_t + \epsilon_t$$

Where (Yt) is the economic development indicator, (ITAt) is international tourist arrivals, (Xt) represents control variables, and (et) is the error term. Cointegration implies that despite short-term fluctuations, the variables move together in the long run. figure 2 research framwork

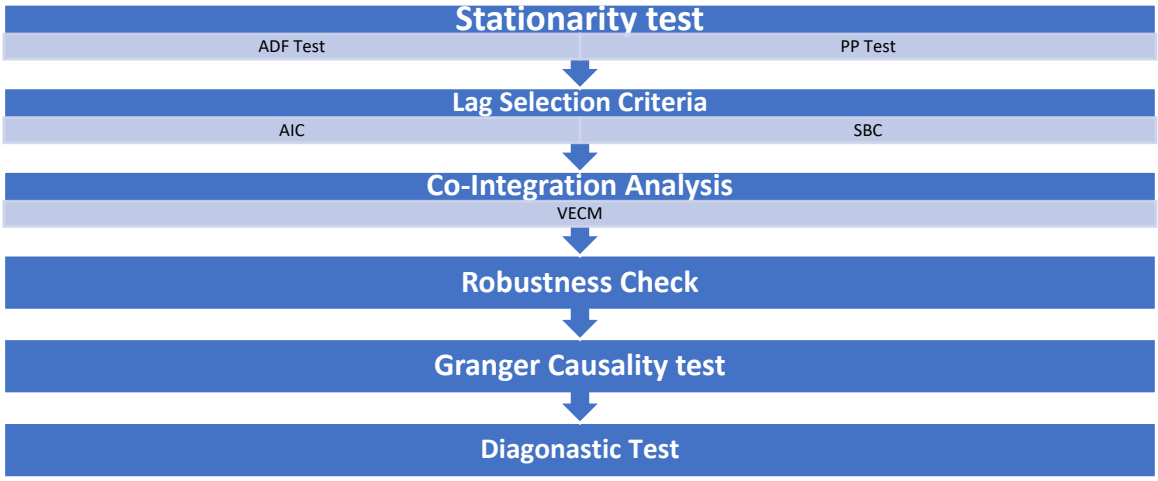
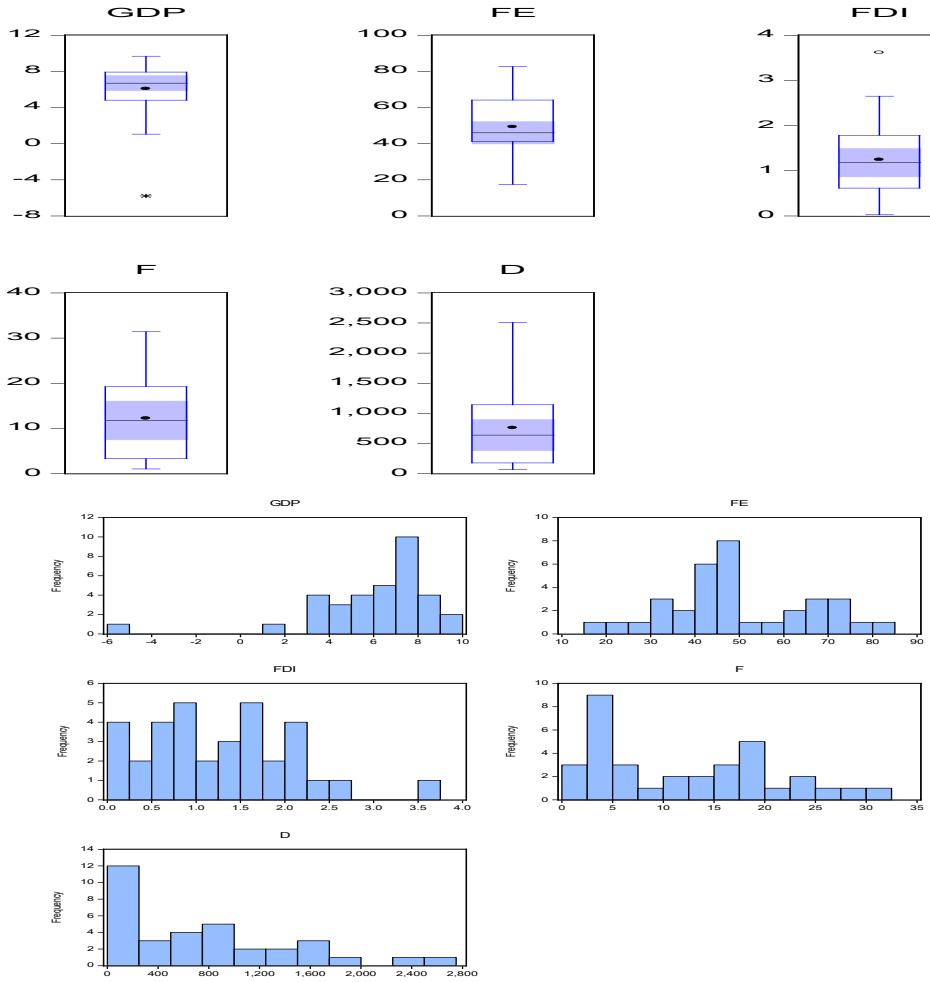
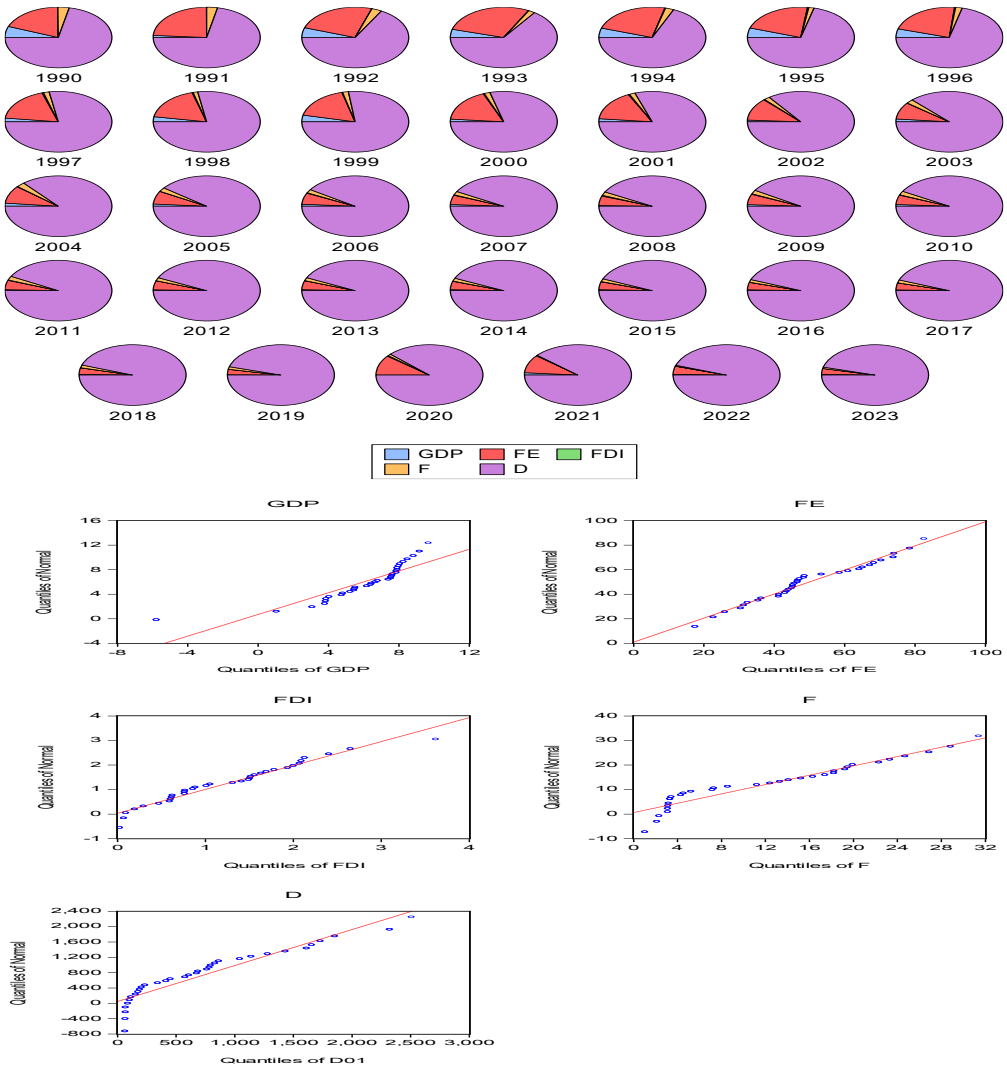


Figure 2, Methodology framework

Figure 3, 4, 5, 6, and 7 trends of variable

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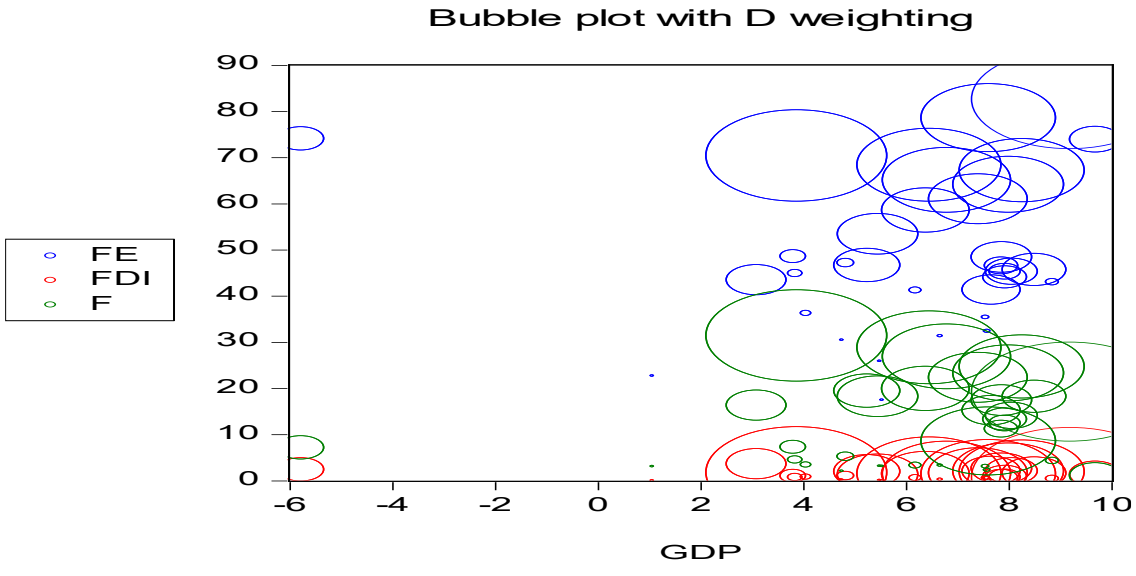
Bubble plot with D weighting
FE
FDI
F
GDP

4. Results and Discussion

Table 1, Descriptive analysis

	GDP	FE	FDI	F	D01
Mean	6.11	49.46	1.25	12.30	763.33
Median	6.73	46.15	1.18	11.83	643.92
Maximum	9.69	82.60	3.62	31.41	2509.63
Minimum	-5.78	17.50	0.03	1.05	66.67
Std. Dev.	2.88	16.45	0.83	8.97	683.40
Skewness	-2.21	0.22	0.62	0.44	0.95
Kurtosis	9.70	2.33	3.23	1.97	3.01
Jarque-Bera	91.43	0.91	2.27	2.60	5.13
Probability	0.00	0.64	0.32	0.27	0.08

Table 1, The descriptive statistics summarize the characteristics of five variables: GDP, FE, FDI, F, and D01. GDP shows high variability (Std. Dev. 2.88) and negative skewness (-2.21), indicating left-tailed distribution, while its high kurtosis (9.70) suggests sharp peaks and outliers. FE, FDI, F, and D01 have moderate dispersion and near-normal distributions, with skewness values close to zero. The Jarque-Bera probability shows that GDP significantly deviates from normality ($p = 0.00$), whereas other variables approximate normal distribution ($p > 0.05$). Overall, the data indicate heterogeneous patterns across variables, with GDP being the most volatile and non-normally distributed indicator.

Table 2, Correlation Analysis

	GDP	FE	FDI	F	D01
GDP	1	0.078	-0.108	0.180	0.208
FE	0.08	1.000	0.503	0.586	0.834
FDI	-0.11	0.503	1.000	0.596	0.475
F	0.18	0.586	0.596	1.000	0.841
D01	0.21	0.834	0.475	0.841	1.000

Table 2, The correlation matrix shows the strength and direction of relationships among GDP, FE, FDI, F, and D01. GDP has weak positive correlations with F (0.18) and D01 (0.21), suggesting slight association with these variables, while its link with FDI is weakly negative (-0.11). FE, FDI, F, and D01 show strong positive interrelations, especially between F and D01 (0.84) and FE and D01 (0.83), indicating they move closely together. Moderate correlations exist between FE and F (0.59) and FDI and F (0.60). Overall, GDP appears weakly connected, while the other variables exhibit strong mutual associations, suggesting economic interdependence.

Table 3: Results of ADF and PP Unit root test

UNIT ROOT TEST TABLE (ADF)						
At Level			**at First Difference**			
Variable	**t-Statistic**	**Prob.**	**Variable**	**t-Statistic**	**Prob.**	**Decision**
LnGDP	-0.97	0.29	d(LnGDP)	-10.73	0.00	I(I)
LnFT	-1.56	0.41	d(LnFT)	-4.19	0.00	I(I)
LnIT	1.77	0.98	d(LnIT)	-4.68	0.00	I(I)

LnFDI	-1.59	0.81	d(LnFDI)	-5.91	0.00	I(I)
LnFE	3.56	1.00	d(LnFE)	-4.38	0.00	I(I)
Unit root test PP						
At Level			**At First Difference**			
Variable	**t-Statistic**	**Prob.**	**Variable**	**t-Statistic**	**Prob.**	
LnGDP	-0.72	0.40	d(LnGDP)	-10.83	0.00	I(I)
LnFT	-1.58	0.39	d(LnFT)	-4.12	0.00	I(I)
LnIT	2.85	0.98	d(LnIT)	-4.74	0.00	I(I)
LnFDI	-1.71	0.38	d(LnFDI)	-5.92	0.00	I(I)
LnFE	2.73	0.78	d(LnFE)	-4.39	0.00	I(I)

Table 3, The ADF and PP unit root tests assess the stationarity of variables in the model. At level, most variables (LnGDP, LnIT, and LnFE) are non-stationary since their probabilities exceed 0.05. However, LnFT and LnFDI are stationary at level, indicating I(0). After taking first differences, all variables become stationary with significant p-values (0.00), confirming integration of order one, I(1). The consistency between ADF and PP results strengthens reliability. Hence, the dataset contains both I(I)) and I(1) variables, implying one side integration, which supports the use of cointegration analysis to examine long-run relationships among the variables.

Table 4. lag selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-562.2	NA	1710000000.0	35.4	35.7	35.5
1	-432.8	210.2836*	2560647.*	28.9	30.29684*	29.37819*
2	-407.0	33.8	2758232.0	28.87360*	31.4	29.7

Table 4, The lag selection criteria table helps determine the optimal lag length for the model. Several statistical measures are used: LogL (log-likelihood), LR (likelihood ratio), FPE (Final Prediction Error), AIC (Akaike Information Criterion), SC (Schwarz Criterion), and HQ (Hannan–Quinn Criterion). Lower AIC, SC, and FPE values indicate a better model fit. Here, lag 1 shows the best performance, as marked by asterisks (*) in LR, FPE, AIC, SC, and HQ columns. This means a one-period lag provides the most efficient balance between model accuracy and complexity, making it the optimal lag length for further analysis.

Table 5, Johansen co-integration test

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None	0.622	78.585	79.341	0.057
At most 1*	0.550	47.438	55.246	0.03
At most 2*	0.405	21.911	35.011	0.081
At most 3*	0.094	5.273	18.398	0.020
At most 4	0.064	2.111	3.841	0.146
Hypothesized		Max-Eigen	0.050	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**

None	0.622	31.146	37.164	0.209
At most 1*	0.550	25.528	30.815	0.03
At most 2*	0.405	16.638	24.252	0.064
At most 3	0.094	3.162	17.148	0.988
At most 4	0.064	2.111	3.841	0.146

Table 5, Interpretation (Trace Test): The Trace test suggests that the null hypothesis of no cointegration is rejected at several levels (at most 1, 2, and 3), as their p-values are below 0.05 or close to it. This means there is evidence of up to three cointegrating relationships, indicating that the variables share some degree of long-run association and Interpretation (Max-Eigen Test): The Max-Eigenvalue test shows one or two possible cointegrating equations, as the p-values at "at most 1" (0.03) and "at most 2" (0.064) are below or near the 5% significance level.

Table 6, VECM Model

Cointegrating Eq:	CointEq1
GDP(-1)	1
FE(-1)	-0.26
	-0.13
	[-2.06279]
F(-1)	-1.93
	-0.44
	[-4.42809]
D01(-1)	0.03
	-0.01
	[3.96157]
FDI(-1)	6.35
	-1.51
	[4.21402]
C	0.35
Error Correction:	D(GDP)
CointEq1	-0.09
	-0.18
	[-0.50387]

Table 6, The results of the VECM estimation reveal a clear long-run equilibrium relationship between GDP, foreign direct investment (FDI), energy consumption (FE), financial variables (F), and other control variables (D01) in the Indian economy. The cointegrating equation indicates that in the long run, FDI exerts a strong positive influence on economic growth, with a coefficient of 6.35 and a significant t-statistic, highlighting the vital role of foreign capital inflows in driving India's productive capacity and technological advancement. Conversely, both energy consumption and the financial variable show negative coefficients (–0.26 and –1.93, respectively), implying that inefficient energy utilization and potential financial misallocation may hinder economic expansion. The variable D01 positively contributes to growth, suggesting that policy initiatives or structural changes captured by this variable enhance GDP performance.

The error correction term associated with ΔGDP is negative (–0.09) but statistically insignificant, suggesting that while there is a tendency for GDP to return to its long-run equilibrium path after a short-term disturbance, the speed of adjustment is weak and sluggish. This implies that short-run fluctuations in output due to shocks in FDI, energy consumption, or financial variables are not rapidly corrected.

From a policy perspective, these findings emphasize the need for strategies that strengthen the efficiency of the energy sector and improve financial resource allocation toward productive investments. Encouraging environmentally sustainable energy practices and fostering an investment-friendly climate to attract quality FDI are crucial for long-term growth stability. Additionally, enhancing institutional frameworks and macroeconomic policies could accelerate the adjustment process toward equilibrium, ensuring that short-run disturbances have a minimal adverse impact on the overall economic trajectory.

Table 7, Robustness test

FMOLS				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
FE	-0.03	0.05	-0.51	0.62
FDI	-0.68	0.62	-1.10	0.28
F	0.07	0.10	0.74	0.47
D01	0.00	0.00	0.50	0.62
C	6.72	2.00	3.35	0.00
DOLS				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
FE	-0.05	0.07	-0.71	0.49
FDI	0.02	0.99	0.02	0.98
F	0.19	0.25	0.76	0.46
D01	0.00	0.00	-0.43	0.67
C	7.74	2.94	2.63	0.02
CCR				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
FE	-0.01	0.06	-0.10	0.92
FDI	-0.47	0.69	-0.67	0.51
F	0.12	0.12	1.00	0.33
D01	0.00	0.00	-0.18	0.86

Table 7, This table presents the results of the robustness tests using three different long-run estimation techniques — FMOLS (Fully Modified Ordinary Least Squares), DOLS (Dynamic Ordinary Least Squares), and CCR (Canonical Cointegrating Regression).

These methods are applied to verify the stability and reliability of the long-run relationship among the variables (FE, FDI, F, and D01) with the dependent variable. Interpretation: Under the FMOLS model, none of the explanatory variables (FE, FDI, F, D01) have a statistically significant influence on the dependent variable, as all p-values exceed 0.05.

However, the constant term (C) is significant, indicating a stable intercept. Overall, FMOLS results imply no strong long-run effect of the explanatory variables. DOLS results are consistent with FMOLS — all explanatory variables are statistically insignificant, meaning they do not have a measurable long-run influence. Only the constant term (C) remains significant, suggesting the baseline level of the dependent variable is stable.

Similar to FMOLS and DOLS, the CCR estimation also indicates that none of the independent variables are statistically significant.

The signs of the coefficients (negative for FE and FDI, positive for F) remain consistent across models, which supports directional stability, but their effects are weak.

Table 8, granger causality test

Null Hypothesis:	Obs	F-Statistic	Prob.
FE does not Granger Cause GDP	32	0.186	0.831
GDP does not Granger Cause FE		0.080	0.923
FDI does not Granger Cause GDP	32	0.210	0.812
GDP does not Granger Cause FDI		2.261	0.124
F does not Granger Cause GDP	32	2.522	0.099
GDP does not Granger Cause F		2.256	0.124
D01 does not Granger Cause GDP	32	2.076	0.145
GDP does not Granger Cause D01		1.918	0.166
FDI does not Granger Cause FE	32	0.048	0.953
FE does not Granger Cause FDI		4.683	0.018
F does not Granger Cause FE	32	0.112	0.895
FE does not Granger Cause F		1.904	0.168
D01 does not Granger Cause FE	32	0.729	0.492
FE does not Granger Cause D01		6.390	0.005
F does not Granger Cause FDI	32	2.486	0.102
FDI does not Granger Cause F		2.782	0.080
D01 does not Granger Cause FDI	32	0.925	0.409
FDI does not Granger Cause D01		1.231	0.308
D01 does not Granger Cause F	32	0.170	0.844
F does not Granger Cause D01		1.513	0.238

Table 8, The results of the Granger causality test reveal important insights into the short-run predictive relationships among the variables. The test indicates that most variables, including FE, FDI, F, and D01, do not Granger-cause GDP, and vice versa, suggesting the absence of a predictive link with economic growth in this dataset. However, the results identify unidirectional causality from FE to both FDI and D01, indicating that variations in FE have a statistically significant predictive influence on these variables in the short run. No evidence

of bidirectional causality was observed, and other variable pairs, including F, FDI, and D01, show no significant predictive relationships. These findings suggest that while FE plays a leading role in influencing certain financial and structural indicators, its impact on GDP is not significant within the observed period.

5. Conclusion and Policy Implications

This study explores the dynamic relationship between international tourism and economic development in India using Granger causality analysis. The empirical results indicate that, in the short run, international tourism does not significantly Granger-cause GDP, nor does GDP significantly influence tourism inflows. This suggests that, during the observed period, fluctuations in tourism arrivals do not directly predict economic growth, and vice versa. However, the analysis reveals that certain factors associated with tourism, such as foreign exchange earnings and tourism-related infrastructure, may indirectly contribute to economic activities, highlighting the complex nature of the tourism-growth nexus. These findings emphasize that while tourism remains a vital sector for India's economy, its contribution to growth may be mediated through other channels, such as employment generation, investment in hospitality, and regional development, rather than directly affecting GDP in the short term.

From a policy perspective, the results underscore the need for a strategic and targeted approach to enhance the economic benefits of international tourism. Policymakers should prioritize investments in tourism infrastructure, connectivity, and service quality to strengthen the sector's capacity to contribute to long-term economic growth. Additionally, promoting sustainable and diversified tourism products—such as eco-tourism, cultural tourism, and medical tourism—can help attract higher-value international tourists, creating broader economic spillovers. Enhancing linkages between tourism and other sectors, such as transportation, retail, and local industries, can further amplify its impact on employment and regional development. Finally, designing policies that monitor tourism trends and integrate them into national development plans can help align the sector's growth with India's broader economic objectives. In conclusion, while the direct short-run impact of international tourism on GDP may be limited, a well-coordinated policy framework can harness its full potential to drive sustainable economic development in India**.**

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