

The Employment Aspect Of Tourism Sector In India And Its Long Run Dynamics: An Econometric Analysis

Abstract

This study examines the long-term employment dynamics of India's tourism sector by analysing trends of employment and its relationship with tourism growth. Using secondary data from the World Travel and Tourism Council (WTTC) and India Tourism Statistics, the study uses trend analysis to identify the best-fitting employment trend curve among linear, quadratic or exponential based on R-squared values. The quadratic trend curve provided the best fit, indicating a period of sustained expansion before contraction. Augmented Dickey-Fuller and Phillips-Perron unit root tests were used to assess stationarity before applying the Johansen co-integration test to determine the long-term relationship between tourism expansion and employment generation. The findings establish the existence of a long-term equilibrium relationship between tourism growth and employment generation in India. However, challenges such as economic fluctuations, global pandemic and the need for sustainable policies necessitate strategic policy interventions for long-term sustainability.

Key words

Tourism India, Employment, Trend, Johansen Co-Integration Test, Unit Root Test, Time Series Analysis

Introduction

India's tourism industry has long been recognized as an essential contributor to its economy, with extensive benefits in the area of job creation and social and economic development. As one of the fastest-growing service industries, tourism can potentially offer a vast range of employment opportunities, from managerial and skilled careers to entry-level positions in hospitality, tours and travels, and other related services. The sector contributes to direct and indirect employment. Direct employment includes hospitality, tours and travels, airlines, and other tourism-related services, whereas indirect employment originates from the supply chain supporting the tourism industry, such as food production, transport, and retail (Aynalem et. al., 2016, Prasad & Kulshrestha, 2015; Sharma & Sharma, 2018). The tourism sector in India

has long been recognised as a vital component of the country's economy, contributing significantly to job creation and socio-economic development. As one of the fastest growing service industries, tourism has the potential to create a range of employment opportunities, ranging from highly skilled managerial positions to entry-level roles in hospitality and related sectors. The sector's contribution to employment is multi-faceted, comprising direct and indirect employment. Direct employment includes jobs in hotels, travel agencies, airlines and other tourism-related services. Indirect employment arises from the supply chain supporting the tourism industry, such as food production, transport and retail (Aynalem et. al.,2016; Das and Jha, 2019).India has attracted millions of domestic and international tourists each year with its diverse cultural heritage, natural landscapes, and historical sites, causing great demand for assorted services and creating job opportunities in various sectors. With tourism multiplier effects, income generated from the sector circulates throughout the economy, necessarily affecting many different industries (Rusu,2011,Batabyal & Das, 2022;Nukhu & Singh, 2020). Besides, it can promote inclusive growth by creating employment opportunities in those rural and remote areas, which would not only reduce regional disparities but also contribute to poverty alleviation (Dighliya & Dahiya, 2023; Singh, 2021).The tourism sector should also be given prime attention for cultural exchange and projecting India as a rich and diverse destination on the global scene. In India, however, the tourism sector faces many speed bumps: shortage of trained manpower, high attrition rates, and the need for sustainable practices. Targeted policies and interventions are needed to help the tourism sector sustain its growth, enabling it to effectively generate jobs. Such interventions could include an effective training program, investment in human capital, and development of sustainable tourism practices. This could increase its contribution to employment generation and economic growth(Sharma & Sharma, 2018; Narayanan et. al.,2022). Opportunities and challenges arise for job creation due to the evolving landscape of the tourism industry owing to technology, tastes of consumers, and global trends. The tourism sector continues to expand, taking shape in major importance in terms of job creation, which continues to be vital to the socio-economic development of India (Giampiccoli & Saayman, 2017).The potential for job creation by the tourism sector facilitates its advancements in inclusive growth and poverty alleviation, thus making it a pathway to prosperity for millions of people in the country (Sulistyadi et. al. 2024).Though it is evident that tourism has the potential to generate employment in the short term, however is this practice viable in the long run needs assessment.Moreover limited number of studies have tried to capture the long run dynamics of the employment scenario of the tourism sector in India.Given this backdrop, this study will

attempt an empirical analysis of the long run dynamics of the employment potential of the tourism sector.

Objectives

- 1.To assess the trend of total employment generated by the tourism sector in India.
- 2.To assess whether there is any long-run association between tourism growth and tourism employment generation in India.

Data and methodology

The study is mainly based on secondary data collected from various sources. The sources include,World Travel and Tourism Council (WTTC) and India Tourism Statistics, Ministry of Tourism, Government of India (MoT, GoI).

Trend analysis was performed by plotting the time series as a histogram with respect to indicator employment. The ordinary least squares method is used to estimate the best fit (linear or non-linear) trend curve, with R-squared values justifying its explanatory power. By comparing the estimated R-Squared values for linear, quadratic, and exponential trend curves, the best fit is determined. R-Square is a statistical measure that indicates how closely the data fits the fitted trend line. Overall, the higher the R-squared, the better the model fits the time series.

Linear Trend Line: $Y = a + bt$

Exponential Trend Curve: $Y = Ae^{bt}$

Quadratic or Parabolic Trend Curve: $Y = a + bt + ct^2$

To achieve the 2nd objective, a time series analysis has been done primarily to assess a long run association between the tourism expansion and employment generation in India. For the purpose, by employing a time series data from 2008 to 2021 Johansen Co-integration test was conducted. In the first step,unit root test was conducted for the variables to identify the stationarity. When a variable has unit root, it is considered as non-stationary and this may induce spurious regression problem in dealing with time-series data. Therefore, checking stationarity of the time series variables is crucial (Granger and Newbold,1974). For the purpose, the analysis of Augmented Dickey-Fuller (Dickey & and Fuller, 1981) and Phillips-Perron (Phillips and Perron, 1988) unit root tests have been done. The procedure of testing unit root consists of running a regression of the univariate time series of the form:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^p \alpha_i \Delta Y_{t-i} + \varepsilon_t$$

Where, ΔY_t is 1st difference of the series Y_t , ΔY_{t-i} is lagged difference terms up to p th lags, Y_{t-1} is lagged value of Y_t , ε_t is pure white noise error term.

Unit root test is performed on the regression coefficient of Y_{t-1} . We test null hypothesis $\delta=0$. If δ is statistically different from zero, the hypothesis that (Y_t) contains a unit root is rejected. If null hypothesis is rejected, the series is stationary. Both the Augmented Dickey-Fuller and the Phillips-Perron unit root tests produce similar findings, however the Phillips-Perron unit root test gets more preference because it allows for automatic correction of auto-correlated residuals and it can readily cope with heteroscedasticity in the error term and it does not need the specification of lag length.

It was followed by Johansen Co-integration test to find a long-run association of tourism and economic growth in India. At the initial step of the Johansen co-integration test, we are considering a collection of g variables that are integrated of order 1, $I(1)$ and that we believe to be cointegrated. A vector autoregression (VAR) with k lags containing these variables can be set up as:

$$y_t = \beta_1 y_{t-1} + \beta_2 y_{t-2} + \dots + \beta_k y_{t-k} + u_t$$

Where, y_t and u_t are $(n \times 1)$ vectors.

To apply the Johansen test, the aforementioned VAR must be transformed of the form:

$$\Delta y_t = \Pi y_{t-k} + \Gamma_1 \Delta y_{t-1} + \Gamma_2 \Delta y_{t-2} + \dots + \Gamma_{k-1} \Delta y_{t-(k-1)} + u_t \quad (a)$$

Where, $\Pi = (\sum_{i=1}^k \beta_i) - I_g$ and $\Gamma_i = (\sum_{j=1}^i \beta_j) - I_g$

Π is $(n \times n)$ parameter matrix. On the left-hand side of (a), the g variables are in first differenced form and on the right-hand side, there are $k-1$ lags of the dependent variables in first difference, each with its own coefficient matrix Γ .

To arrive at conclusion on co-integration among variables, the rank (r) of the matrix Π must be examined. Here null hypothesis with r co-integrating vectors is tested against alternative $r+1$ co-integrating vectors. To test for the co-integration, Johansen methodology uses two likelihood ratio (LR) tests: 1) The trace test and 2) The maximum eigenvalue test. The trace and max-eigenvalue statistic can be formulated as:

$$LR_{\text{trace}}(r) = -T \sum_{i=r+1}^g \ln(1 - \hat{\lambda}_i)$$

$$LR_{max}(r, r + 1) = -T \ln(1 - \hat{\lambda}_{r+1})$$

Where, λ_i = estimated i th ordered eigenvalues from the matrix Π

T = number of observations

r = co-integrating vectors.

It is also worth noting that, deciding appropriate lag length is essential to carry out tests for Johansen co-integration.

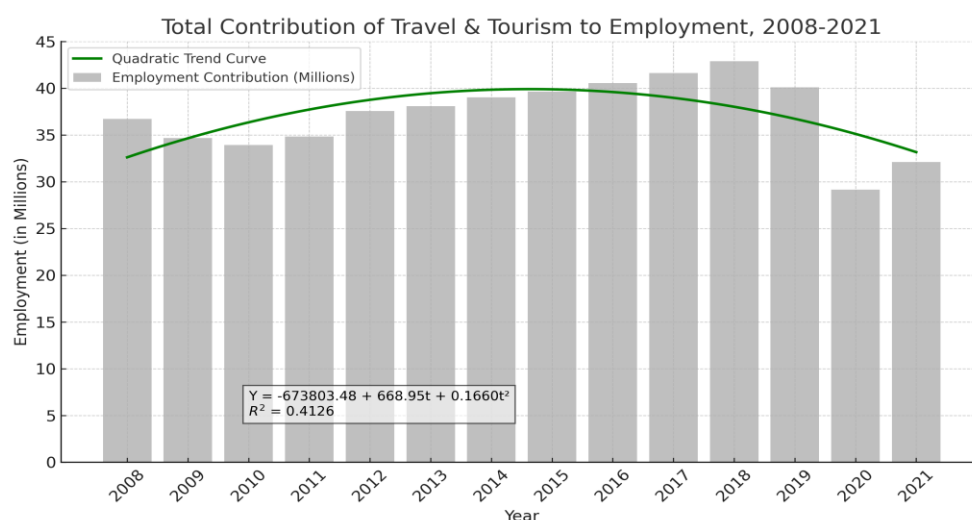
Operational definition of the variables:

The variable employment (EMP) implies total number of people employed directly or indirectly in tourism sector. Even though tourism receipts are frequently utilized as proxy of tourism growth, the total tourist visits, which includes both domestic and the foreign tourist inflows, can be utilized as well (Wang and Godbey, 1994). In this analysis, tourism growth is proxied by total tourist visit (TTV).

The trend of tourism employment in India

The total contribution of travel and tourism to employment in India from 2008 to 2021, highlighting actual employment figures (in millions) represented by the histograms (Fig.1) and the data best fitted a quadratic trend curve with R^2 value of 0.4126. The employment contribution increased steadily from 2008, reaching its peak around 2018, before experiencing a notable decline from 2019 to 2021. This decline, particularly sharp in 2020 and 2021, is likely due to the COVID-19 pandemic, which severely impacted global travel, leading to widespread job losses in the tourism sector. The quadratic trend curve shows an initial upward trajectory followed by a downturn, indicating a period of sustained growth before contraction. The significant drop in 2020 and 2021 aligns with global travel restrictions, lockdowns, and reduced consumer confidence in travel, which resulted in massive job losses across the sector. However, the slight upward movement in 2021 hints at the beginning of a recovery phase, though the extent of this recovery remains uncertain and highly dependent on factors such as government policies, vaccine rollouts, and the revival of international tourism. Moving forward, the trend suggests that while employment in the tourism sector may recover, it is unlikely to return to pre-2019 levels immediately, requiring strategic interventions such as sustainable tourism initiatives, digital transformation in the industry, and policies aimed at increasing resilience to future global disruptions.

Figure 1. Total Contribution of Travel & Tourism to Employment in India, 2008-2021



Source: Author's own Plot based on WTTC data

Tourism Sector Growth and Employment Generation in India

In India, employment has always been a significant concern. Employment is associated with every sector of an economy and is a key macroeconomic element. Since independence, all the economic sectors have experienced variation in the employment pattern. Certain sectors exhibited notable changes in their employment status, while others showed just minor changes in employability. One industry that has experienced significant growth in employment pattern over the years is the tourism. The National Tourism Development Policy of India was launched in 2002 with the purpose of promoting tourism for economic growth to realise the multiplier effects of tourism activities on employment generation.

A snapshot of domestic, foreign and total tourist visits in India along with the direct and indirect employment generated by tourism sector between the years 2008 and 2021 is portrayed in Table 1. Domestic tourist visits increased from 563.03 million in 2008 to 2321.98 million in 2019. Despite the Covid-19 pandemic's adverse impact in 2020, which witnessed a substantial decline to 610.22 million, the value increased marginally to 677.63 million in 2021. The significant decline in foreign tourist visit was due to restrictions that COVID-19 imposed in 2020 and 2021. There was a decrease in the total number employment generated in the years 2009, 2010, 2019, and 2020. It is evident from the table 1 that the sector was severely impacted by the Covid-19, which led to a considerable decline in tourist visits and the total employment generated by the sector.

Table 1.Tourist visit and total contribution (direct + indirect) to employment

Year	Tourist Visits (No. in Million)			Contribution to Employment (No. in Million)
	Domestic	Foreign	Total	
2008	563.03	14.38	577.41	36.71
2009	668.80	14.37	683.17	34.67
2010	747.70	17.91	765.61	33.93
2011	864.53	19.50	884.03	34.85
2012	1045.05	18.26	1063.31	37.57
2013	1142.53	19.95	1162.48	38.08
2014	1282.80	22.33	1305.14	39.02
2015	1431.97	23.33	1455.30	39.63
2016	1615.39	24.71	1640.10	40.54
2017	1657.55	26.89	1684.43	41.62
2018	1853.79	28.85	1882.64	42.90
2019	2321.98	31.41	2353.39	40.10
2020	610.22	7.17	617.39	29.14
2021	677.63	1.05	678.69	32.10

Source: WTTC; India Tourism Statistics; Ministry of Tourism, GOI,2021,2022

In order to study the relationship of tourism activity and employment, the following hypotheses are considered:

H_0 : There exists no long-run relation between tourism expansion and employment generation.

H_1 : There exists long-run equilibrium relation between tourism expansion and employment generation in India.

In this time series analysis, Total Tourist Visit(TTV) will be considered as proxy for tourism expansion/growth and Total contribution to employment (number in Million) as employment generation (Emp). Johansen Co-integration methodology says that the variables should be non-stationary at level form but stationary after first difference (Johansen, 1988; Johansen and Juselius, 1990). Augmented Dickey Fuller (ADF)(Dickey & and Fuller, 1981) and Phillips-Perron(PP) (Phillips and Perron, 1988) tests of unit root are used to examine the stationarity.

The findings for ADF and PP tests(table 2) clearly indicate that the variables EMP and TTI are non-stationary at the level but after first differencing the p-values are lower than 0.05 which means that the null-hypothesis of Unit root or non-stationary rejected at 5% level. Hence, Emp and TTI is stationary at 1st difference and I (1) variable.

Table 2. Unit Root Test

Variable	ADF		PP		Decision
	Level	1 st Diff.	Level	1 st Diff.	
TTV	-1.949 (0.3092)	-3.886 (0.0021)	-1.907 (0.3288)	-3.909 (0.0020)	I (1)
Emp	-1.411 (0.5771)	-3.031 (0.0321)	-1.560 (0.5037)	-3.007 (0.0343)	I (1)

Source: Author's computation

Notes: TTV=Total Tourist Visit, Emp=Employment generation

ADF: Augmented Dickey–Fuller & PP: Phillips–Perron test.

Figures in the parenthesis are p-values. I(1):Integrated of order 1.

Optimal lag-order selection

For testing co-integration among the variables, optimal lag-order selection is necessary to decide a functional lag length. Among various criteria, the Schwarz information criteria (SIC) is chosen to select the lag length because of its unbiasedness and accuracy of forecasting for small sample size than any other criteria (Lutkepohl,1985). Based on SIC, the optimal lag obtained here is 2.

Results of the Johansen co-integration tests

Since the variables are I(1), the Johansen co-integration approach is applied to identify long-run relationship for the specified variables, namely tourism expansion/growth and employment generation. Max-Eigenvalue along with trace test is performed here to investigate the number of cointegrating vectors under the Johansen co- integration test. The findings are demonstrated in Table 3.

229 **Table 3. Johansen tests for co-integration**

	Null hypothesis	Alternative hypothesis	Test statistic	Critical value 5%	Prob.
(1) Trace of the stochastic matrix	$r = 0$	$r = 1$	26.5583*	15.49	0.0007
	$r \leq 1$	$r = 2$	0.0954	0.7574	0.7574
(2) Maximum eigenvalue of the stochastic matrix	$r = 0$	$r = 1$	26.4629*	14.2646	0.0004
	$r \leq 1$	$r = 2$	0.0954	3.8415	0.7574

230

231 **Source: Author's computation**

232 *Notes: r denotes no. of co-integrating equations; *denotes rejection of the null-hypothesis.*

233 *Optimal lag =2, based on SIC.*

234 *Trace test & Max test indicate 1 co-integrating equations at 5% significance levels.*

235

236 When trace and max-eigenvalue statistic are more than 5% critical levels, the
 237 rejection of null hypothesis is feasible. Here one null hypothesis is possible to reject at 5%
 238 level, indicating the existance of one cointegrating equations. Similar conclusion can be made
 239 by looking at the p-values. We reject null hypothesis if the p-values are lower than 0.05.
 240 Hence, Johansen co-integration test supported the hypothesis (H_1) of this study. Therefore,
 241 existence of stable long-run equilibrium relation of tourism expansion and employment
 242 generation in India is confirmed by the Johansen-cointegration test. Thus, tourism sector
 243 expansion and employment generation in India move together in the long run.

244

245 **Conclusion**

246 This study affirms the significant role of the tourism sector in employment generation in
 247 India. Trend analysis indicates that employment in the sector followed a steady upward
 248 trajectory until 2018 before experiencing a sharp decline in 2019-2021, largely due to the
 249 COVID-19 pandemic. The quadratic trend curve best fits the employment data, suggesting a
 250 sustained growth phase before contraction. The Johansen Co-integration test establishes a
 251 stable long-term association between tourism expansion and employment, reinforcing
 252 tourism's role as a key driver of job creation. However, the findings also highlight the
 253 sector's vulnerability to external disruptions like economic fluctuations and global pandemic,

requiring targeted policies to build resilience. Addressing workforce challenges, investing in skill development and adoption of sustainable tourism practices will be crucial in ensuring long-term employment stability and strengthen the tourism-employment nexus and sustain the tourism sector's contribution to India's economy.

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