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Tourism-A Contributor Towards Economic Development of India

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ABSTRACT

Tourism industry acts as a important component of economic changes. In emerging countries like India, tourism has become one of the important sectors of economy. This sector is contributing heavily to national income and hence taking India towards development. In this paper an attempt has been made to study the contribution of tourism in economic growth. We used Gross Domestic Product (GDP) per capita, one of the important indicators of financial growth to measure the impact of Tourism industry on economic development of India. The different statistical tools such as Regression Analysis, ARIMAX and Descriptive Statistics were used for this purpose.

Keywords : GDP per capita, International Tourist arrivals, International Tourism Receipts, FDI, Multiple Regression Analysis, ARIMAX.

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INTRODUCTION

Indian Economy depends on many sectors such as Agriculture, Industrial Production, Service Sector etc. In India one of the fastest growing sector is Service Sector. This service sector includes Insurance and Banking, Information Technology, Aviation, Retail, **Tourism** etc .

India is a country with rich traditional and cultural diversity. Indian Tourism offers different cultures, festivals, traditions and beautiful vast geographical area. India is one of the fastest growing economies in the world. The tourism sector of India is economically important and is growing rapidly. It is expected to grow faster in the years to come. Several marketing and branding campaigns such as **"INCREDIBLE INDIA !"** and **"ATITHI DEVO BHAVA !"** have provided a focused impetus to Growth.

Tourism is an important sector in most countries and it generates direct, indirect and induced economic activity in the region. The direct economic activity takes into account the additional demand generated in production, supply processes and increase investment in infrastructure. The indirect economic activity takes into account demand in goods and service sector. This additional demand generate employment income etc in the related industry. This direct and indirect economic activities results in increase household income. This rise in income generates demand and results in induced economic activity.

Thus tourism plays significant role in economic development by generating employment and contributing in GDP.

LITERATURE REVIEW

Many government, quasi-government or private organizations such as Ministry of Tourism , CSO ,RBI , Ministry of Finance , Ministry of Labour and Employment and Tourism Industry bodies are focusing on growth Tourism Industry rate of GDP and Employment. Several attempts has been done by many researchers for anticipating growth in GDP through Tourism.

Pedak [1] has examined the general effect of tourism on economic growth of 111 countries. The aim of this study was to measure general effects of tourism on GDP Per capita by using Multiple Linear regression model. The result of his study showed that international tourism seems to have positive relation with the level of GDP Per capita.

Changle et al. [2] has attempted to forecast the GDP growth using ARIMA model. He concluded that the GDP of India would be rising continuously over the estimated period.

Mahalakshmi and Stanley [3] has examined the impact of India's economic growth on Tourism, contributors to economic growth, role of tourism industry in India's GDP. By using statistical tools, the paper establishes relationship between tourists and their different issues.

Dayananda and Leelavathi [4] has examined and calculated the contribution of travel and tourism to GDP in India. It also gave % share in employment through Travel and Tourism.

Jaswal [5] has discussed how India is emerging as a popular tourist destination in the World, driven by the focus on Innovation and creating value for tourist. Author also studied the impact of tourism on India's economic growth. He also analyze role of tourism industry in India's GDP and also explores impact of policies of the government and support from all levels on growth in tourism in India.

Mamula [6] has studied the accuracy of various forecasting methods. Author also predicted demand of international tourism in Croatia. Author also compared different forecasting methods like the Holts winter triple exponential smoothing, seasonal naïve model, ARIMA and multiple linear regression model. He has observed that the multiple regression model perform highly accurate forecasting of German tourist arrivals in Croatia.

Jelusic [7] provides a model of tourism useful to analyzed and forecast foreign exchange tourism inflows and outflows. Author stated that the model is useful to frame new Tourism policy, International trade policy and economic policy as a whole.

Mir [8] studied the economic viability of the Indian tourism industry by using secondary data. According to him, the Indian tourism industry has an important role in economic development of economy. Author stated that tourism sector is creating skilled and unskilled jobs, improving standard of living, particularly in rural areas, boosting the Indian traditional Art and craft, increasing foreign exchange and developing infrastructure. He concluded that tourism can be used as a catalyst for socio-economic development provided Government and other people involved in tourism employs sustainable development of tourism in planned manner.

OBJECTIVES

The objectives of the study are

1) To study the effect of different factors related to tourism industry viz. Tourist arrivals, Tourism receipts and Foreign Direct Investment on economical growth of India.
2) To predict GDP per capita of India considering the influence of tourism factors Tourist arrivals, Tourism receipts and Foreign Direct Investment.

RESEARCH METHODOLOGY

This study is based on Secondary Data provided by World Bank. The data collected for twenty-three years on yearly basis from 1995 to 2017 includes GDP per capita, International Tourists arrivals, International Tourism receipts and FDI of India.

The data collected were analysed using Statistical Packages SPSS, version 20 and Microsoft Excel. The various descriptive and data analysis techniques such as Correlation, Multiple Linear Regression and ARIMAX Model were used in this research.

VARIABLES UNDER STUDY

1) Gross Domestic Product per capita (GDP per capita)

The Gross Domestic Product Per capita is a measure of the economic growth of a country. It is calculated by dividing the GDP by midyear population. Here our aim is to obtain the impact of tourism industry on India's economy, hence gross domestic product per capita can be treated as our **dependent variable**. The values for GDP per capita is obtained through THE WORLD BANK (in current U.S. dollars).

2) INTERNATIONAL TOURIST ARRIVALS (TA):

International tourist arrivals is the number of inbound tourist , who travel to another country except the country in which they have their usual residence. Since arrivals of foreign tourists contributes to an Indian economy, it can be considered as one of the **independent variable**. The values for international tourist arrivals is obtained through THE WORLD BANK (in thousands).

3) INTERNATIONAL TOURISM RECEIPTS (TR):

International tourism receipts are the expenditures by the inbound tourists , including their payments to national carriers to international transport. It can be considered as **independent variable**. The values for international tourism receipts is obtained through by THE WORLD BANK (in current U.S. dollars).

4) FOREIGN DIRECT INVESTMENT (FDI)

FDI is flows of capital from one nation to another nation. Foreign direct investment in India is considered as a component of economic development. It can be considered as **independent variable**. The values for foreign direct investment is obtained through by THE WORLD BANK (in current U.S. dollars).

TOOLS AND TECHNIQUES

A) Descriptive Analysis

To analyze the pattern and trend of the data along with their predictions, descriptive analysis was used. Line plots and tables were used to show the results of analysis.

B) Multiple Linear Regression Model

Multiple linear regression modeling is a statistical methodology that describes a linear relationship between a dependent variables with two or more independent variables. The multiple Linear Regression Model is given by

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k X_k + \epsilon_k$$

Where,

Y is the dependent variables

$X_1, X_2, \ldots, X_k$ are k independent variables

$\beta_0, \beta_1, \ldots, \beta_k$ are k parameters which are to be estimated

ϵ_k are the random error terms, such that $\epsilon_k \sim N(0,\sigma^2)$ with $E(\epsilon_k) = 0$ and $V(\epsilon_k) = \sigma^2$.

The parameter β_k represents the expected change in the response Y per unit change in X_k when all of the remaining regressor variables $X_i (i \neq k)$ are held constant.

Multiple regression can establish how a set of independent variables explains the proportion of the variance in the dependent variable through R^2 and can establish the relative predictive importance of the independent variables. The hypothesis under consideration is :

$H_o: \beta_0=\beta_1=\beta_2=\ldots.=\beta_k=0$ V/S $H_1: \beta_k \neq 0$ at least for one k.

Rejection of the null hypothesis indicates that at least one of the independent variables among $X_1, X_2, .., X_k$ contributes significantly to the model.

C) ARIMAX

ARIMAX is related to the ARIMA technique but, while ARIMA is suitable for datasets that are univariate. ARIMAX is suitable for analysis where there are additional independent variables (multivariate) in categorical and/or numeric format. It is an extended version of the ARIMA model. It includes also other independent (predictor) variables.

An Autoregressive Integrated Moving Average with Explanatory Variable (ARIMAX) model can be viewed as a multiple regression model with one or more autoregressive (AR) terms and/or one or more moving average (MA) terms..

Autoregressive terms for a dependent variable are merely lagged values of that dependent variable that have a statistically significant relationship with its most recent value. Time-series dependent variable be well estimated by a properly weighted combination of the following four right-hand-side (RHS) variables.

1. x_t = The value of the independent variable at time t.
2. y_{t-i} = The immediately preceding value of the dependent variable at time t-i ; i= 1,2,…p .
3. e_{t-j} =The estimation error produced by the model at time t-j ; j=1,2,…q.

The ARIMAX model with one explanatory variable is given by,

$y_t = \beta x_t + \varphi_1 y_{t-1} + \cdots + \varphi_p y_{t-p} + e_t + \theta_1 e_{t-1} + \cdots + \theta_q e_{t-q}$

The above model can be used for the prediction of dependent variable when explanatory variables are given.

RESULTS AND DISCUSSION

To study the impact of the determinants International Tourists arrivals (TA), International Tourism receipts (TR) and FDI of India (FDI) on GDP per capita of India (GDP) and measure the degree of association among the determinants following techniques were used.

1) Descriptive Statistics

To obtain a visualization of the variables under study, mean and standard deviation is calculated. The values are presented in below.

Table: 1 descriptive statistics

	Mean	Std. Deviation	N
GDP per capita	942.8720157	519.34875178	23
Tourist arrivals	5713652.1739130	4250499.92363140	23
Tourism receipts	3117647826.0869565	2014288451.37333040	23
FDI	19419565217.3913040	16344244880.4300	23

As evident from Table 1, average GDP per capita income is around 943, average tourist arrivals is 5713652, average tourist receipt is 3117647826 and average FDI is 19419565217 during the study period.

2) Correlation Analysis

Table: 2 correlations between variables

		GDP per capita	Tourist arrivals	Tourism receipts	FDI
GDP per capita	Pearson Correlation	1.000	.906	-.378	.908
	p Value	0.000	0.000	0.038	0.000
	Result	Sig	Sig	Sig	Sig

As evident from Table 2, the Pearson's correlation coefficient between GDP per capita and Tourist arrivals is 0.906, GDP per capita and tourism receipts is -0.378, and GDP per capita and FDI is 0.908. Since the value of correlation coefficient are significant (p value <= 0.05), there is linear relationship between independent variables and dependent variable.

3) Regression Analysis

The Regression Model is,

$$\text{GDP per capita} = \beta 0 + \beta 1 * TA + \beta 2 * TR + \beta 3 * FDI$$

Table: 3 regression analysis

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
.951[a]	.905	.890	172.23987900	0.948
a. Predictors: (Constant), FDI, Tourist arrivals (TA), Tourism receipts (TR)				
b. Dependent Variable: GDP per capita				

As evident from Table 3 the value of coefficient of determination R^2 =0.890. This indicates that 89% of the variance in GDP per capita is predicted from the variables Tourist arrivals, Tourism receipts and FDI (independent). Since the value of Durbin-Watson statistic is 0.948 < 2 , indicates positive autocorrelation .

Table: 4 ANOVA for regression model

Model		Sum of Squares	df	Mean Square	F	p value
1	Regression	5370243.829	3	1790081.276	60.340	.000[b]
	Residual	563664.942	19	29666.576		
	Total	5933908.771	22			

As evident from Table 4, Regression sum of squares is 5370243.829 , Residual sum of squares is 563664.942 and total sum of squares is 5933908.771. Since p value <= 0.05 , We reject the null hypothesis at 5 % Level of Significance and conclude that **βk≠0** ,at least for one k; **k=1,2,3**.

Table: 5 coefficients of the regression

Model		Coefficients		t	Sig.	Collinearity Statistics	
		B	Std. Error			Tolerance	VIF
1	(Constant)	317.321	102.191	3.105	.006		
	Tourist arrivals	6.158E-005	.000	4.032	.001	.320	3.125
	Tourism receipts	-7.581E-009	.000	-.368	.717	.783	1.277
	FDI	1.531E-008	.000	3.596	.002	.279	3.590

As evident from Table 5 the values of coefficients are 317.321, 6.158E-005 , -7.581E-009 , 1.531E-008 for β0, β1, β2, β3 respectively. Also , the value for VIF for all the variables is less than 10, which indicates absence of multicollinearity.

4) ARIMAX Methodology

For predicting GDP per Capita with 3 explanatory variables (TA, TR, FDI), ARIMAX Methodology is used.

Table: 6 BIC values for different Models

MODEL	ARIMAX (2,1,2)	ARIMAX (1,1,1)	ARIMAX (3,1,2)	ARIMAX (2,1,3)	ARIMAX (3,1,3)
BIC	10.091	9.748	10.131	10.163	10.363

As evident from table 6, BIC value for ARIMA(1,1,1) is smaller hence the ARIMA (1,1,1) model is considered for forecasting GDP per capita with explanatory variables TA,TR,FDI. Table 7 and Figure 1 shows the predicted values for GDP per capita and Forecasted GDP per capita along with LCL and UCL are obtained from 2018 to 2035.

Table: 7 predicted values of GDP per capita using ARIMAX

YEAR	Actual GDP	Predicted GDP per capita	LCL	UCL
1995	370.1014	-	-	-
1996	396.0146	400.1075	325.3139	489.5407
1997	411.3877	428.1217	348.0913	523.8167
1998	409.1944	444.7412	361.604	544.151
1999	437.5861	442.37	359.6761	541.2499
2000	438.8646	473.0636	384.632	578.8042
2001	447.0139	474.4458	385.7558	580.4953
2002	466.2008	483.2558	392.9189	591.2745
2003	541.1352	503.9983	409.7839	616.6534
2004	621.3184	585.008	475.6502	715.7707
2005	707.008	671.6921	546.1301	821.8306
2006	792.026	764.329	621.4501	935.1741
2007	1018.1664	856.2399	696.1796	1047.629
2008	991.4846	1100.7147	894.9539	1346.75
2009	1090.3178	1071.8697	871.501	1311.457
2010	1345.7702	1178.7158	958.3739	1442.186
2011	1461.672	1454.8791	1182.913	1780.078
2012	1446.9854	1580.1777	1284.789	1933.384
2013	1452.1954	1564.3005	1271.88	1913.958
2014	1576.004	1569.9328	1276.459	1920.849
2015	1606.0383	1703.7793	1385.285	2084.613
2016	1717.4739	1736.2486	1411.685	2124.34
2017	1942.0974	1856.7189	1509.635	2271.738
2018		2099.5539	1707.076	2568.852
2019		2269.7763	1691.295	3014.552
2020		**2453.7995**	**1708.986**	**3468.595**
2021		2652.7425	1744.556	3950.548
2022		2867.8149	1792.505	4470.249
2023		3100.3244	1850.315	5034.965
2024		3351.6847	1916.699	5651.169
2025		**3623.4242**	**1990.984**	**6325.204**
2026		3917.1951	2072.845	7063.59
2027		4234.7836	2162.175	7873.204
2028		4578.1207	2259.012	8761.406
2029		4949.2941	2363.502	9736.13
2030		**5350.5605**	**2475.873**	**10805.98**
2031		5784.3599	2596.42	11980.3
2032		6253.3297	2725.497	13269.26
2033		6760.3214	2863.511	14683.98
2034		7308.4178	3010.919	16236.54
2035		**7900.9514**	**3168.226**	**17940.16**

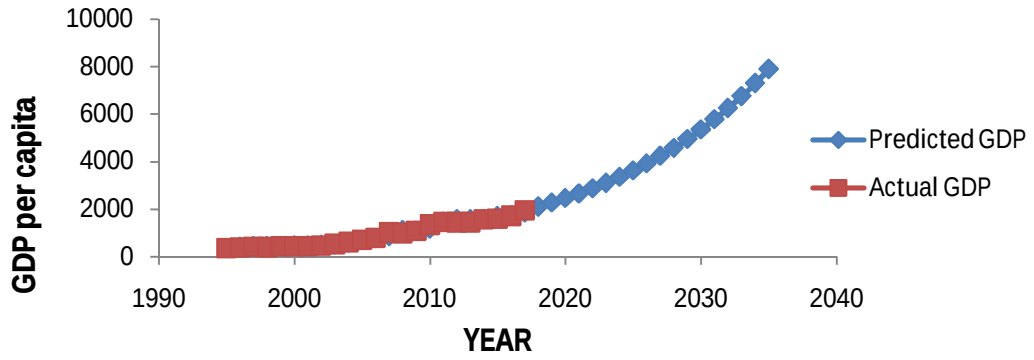

Figure 1 : Graphical Representation of GDP Per Capita and Forecasted GDP Per Capita Through Tourism of India From 1995-2035.

CONCLUSION

The conclusions obtained from the study are as follows:

1. The value of coefficient of determination, $R^2 = 0.898$, which indicates that 89% of the variance in GDP per capita (dependent variable) is predicted from the variables Tourist arrivals, Tourism receipts and FDI (independent).
2. The value of Durbin-Watson statistic is 0.948 < 2, indicates positive autocorrelation.
3. Since p value <= 0.05 , We reject the null hypothesis at 5 % Level of Significance and conclude that **$\beta k \neq 0$** ,at least for one k; **k=1,2,3** i.e. the independent variables contributes significantly to the model.

   The fitted model is:

   $(\text{GDP per capita})\text{est} = 317.321 + 6.158E-005 * TA + -7.581E-009 *$

   TR +1.531E-008 * FDI

a) $\beta_0 = 317.321$ is a constant.

b) $\beta_1 =$ 6.158E-005 implies positive effect of Tourist arrivals on GDP per capita of India.

c) $\beta_2 =$ -7.581E-009 implies negative effect of Tourism receipts on GDP per capita off India.

d) $\beta_3 =$ 1.531E-008 implies positive effect of FDI on GDP per capita of India.

4. The VIF for all independent variables included in our study is less than 10, hence there is no multicollinearity problem in the data.
5. The ARIMA(1,1,1) model used gives the prediction of GDP per capita of India considering the influence of tourism factors Tourist arrivals, Tourism receipts and Foreign Direct Investment.

YEAR	GDP per capita
2020	2453.7995
2025	3623.4242
2030	5350.5605
2035	7900.9514

The forecasting indicates the increasing trend. Hence, our study concludes that the economic growth of India due tourism sector is growing rapidly, which is a good indicator for development of the country.

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