Statistical Analysis of Tourism in Rajasthan

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Abstract

The state of Rajasthan with its rich historical culture and heritage has emerged to be as most visited destination for both international and domestic tourists and the state has vast potential for tourism. The paper tries to highlight the potential of tourism in fostering economic development. It also attempts to study the trends in the flow of tourists to Rajasthan and examine the relationship between Gross State Domestic Product (GSDP) and the total tourist arrival in the state. Time Series analysis is done on the secondary data collected from various sources and the time series model is tested using chi- square test.

Keywords: Tourism, Economic Development, Flow of Tourists, Foreign Tourist Arrival.

Introduction

Tourism is defined as the activities of persons identified as visitors. A visitor is someone who is making a visit to a main destination outside his/her usual environment for less than a year for any main purpose (including) holidays, leisure and recreation, business, health, education or other purposes….This scope is much wider than the traditional perception of tourists, which included only those travelling for leisure. (UNWTO statistics Guidelines: 2010).

Tourism industry in Rajasthan is a vital breath in the economic activity. Tourism has direct and indirect impact on financial, social and cultural life of people. This industry is considered as leisure industry with many economic benefits like foreign exchange earnings, regional development, promotion of local handicrafts and artisans, infrastructure development and increasing standard of living. The state government has realized the potentials of this industry for the economic development in the state and has adopted vital measures to promote tourism in the state adopting schemes like "Padharo Mhare Desh" means "Rajasthan Invites You". The Chief Minister of Rajasthan has declared tourism as one of the key area of economic development and termed this sector as the "Hope Sector" for Rajasthan.

Tourism has been one of the biggest revenue generators for the state for a long time. During the calendar year 2017, the number of tourist visits in Rajasthan increased to 475.27lakh (459.17 lakh domestic and 16.10 lakh foreign).

Objectives of The Study

1. To examine the potential of tourism in fostering economic development of Rajasthan.
2. To study various factors affecting tourism in Rajasthan.
3. To study the trends in the flow of tourists in Rajasthan and examine the relationship between Gross State Domestic Product (GSDP) and the total tourist arrival in the state.
4. To fit the time series model and test it using chi square.
5. To project the tourist arrival in the state in coming years.
6. To suggest ways for improvement of tourism industry as a perspective tool of economic development in Rajasthan

Review of Literature

The review of tourism literature reveals a range of impacts related to tourism development, the tourism-community interaction and resulting influences. Batra in his study on "Tourism in Rajasthan problems, potential and future prospect" concluded that there were various snags, impediments and obstacles in the promotion of tourism in the state of Rajasthan in particular, and India in general. Some of which were inbuilt in nature and some were created by those who were totally unaware of the benefits of tourism. He strongly recommends that "tourist activity in Rajasthan must be taken as a dynamic tool in uplifting the social status of our society. The development of tourism industry is often credited for

Remarking An Analisation

generating new employment in the destination (Andrew Lepp 2008; Marianne Bickle and Rich Harrill Sujie Wang 2010) and the community's traditional work patterns might be seriously affected resulting in the abandonment of agricultural occupations (Hwansuk Chris Choi & Iain Murray 2010).

Travel & Tourism Economic Impact

In economy of Rajasthan the visitors spend in sectors like transportation, entertainment, recreation, retail, food and beverages and accommodations which have three types of impacts on economy and effects on production, jobs, wages and taxes. The impacts are as below:

The Direct Impacts

These are quantified within travel-related sectors like accommodations, catering, entertainment, recreation, transportation and other travel related services.

The Indirect Impacts

These include the benefits realized by the supply chain i.e. printing/ publication, utilities financial services, sanitation services, furnishings and equipment suppliers, security services, rental car manufacturing, transportation administration, tourism promotion, ship building, aircraft manufacturing, resort development, glass products, iron 7 steel etc.

The Induced Impacts

The induced impacts are generated as wages that are spend within the state's economy like food & beverage supply, retailers business services, wholesalers, computers, utilities, manufacturers, housing, personal services etc.

Potential of Tourism in Rajasthan

Tourism is one of key sectors identified in the Rajasthan development of the region. Rajasthan has the potential to attract tourists of diverse Interests. It has diverse endowments of tourist interests. The existing and potential variety of tourism can be Heritage Tourism, Adventure Tourism, Spiritual Tourism, Cultural Tourism, Wildlife & Eco – Tourism, Desert Tourism and MICE Tourism.

Various Factors Affecting Tourism in Rajasthan

Rajasthan attracts many tourists with its famous tourist destinations like Jaipur, Udaipur, Jodhpur, Ramthombore etc and the State is also rich in its History and Culture and known for its Entertainment which comes in form of music, dance , puppetry and desert festivals. Besides this the State's Location and Accessibility attracts tourists in large number, its easy proximity to other destinations, good market, 6 airports in the state and 4 upcoming airports and easy visa availability.

Rajasthan has a good infrastructure with a total road length of 2,17,707 km and railway track length of 5,898 km and has more than 1600 accommodation sites with some of the best luxury hotels in the country. It also has good local transport available and is a upcoming destination for meetings, conferences and exhibitions.The attractive and easy available holiday packages available online and Its famous luxury trains like Palace on Wheels and Royal Rajasthan also attracts tourist in large number.

Tourist Arrival in Rajasthan

The growth rate of tourism in the state of Rajasthan has shown that tourists arrivals both domestic and foreign in the state of Rajasthan is increasing annually and it increase 0.83 crore to 4.75 crore from the year 2001 to 2017 which represent that more attention made to this sector in state plans. The table and graph below shows the tourist arrival in Rajasthan from year 2001 to 2017:

Table: Tourist arrival in Rajasthan

Years	Domestic	Percentage Variation	Foreign	Percentage Variation	Total	Percentage Variation
2001	7757217		608283		8365500	
2002	8300190	7.00	428437	-29.57	8728627	4.34
2003	12545135	51.14	628560	46.71	13173695	50.93
2004	16033896	27.81	971772	54.60	17005668	29.09
2005	18787298	17.17	1131164	16.40	19918462	17.13
2006	23483287	25.00	1220164	7.87	24703451	24.02
2007	25920529	10.38	1401042	14.82	27321571	10.60
2008	28358918	9.41	1477646	5.47	29836564	9.21
2009	25558691	-9.87	1073414	-27.36	26632105	-10.74
2010	25543877	-0.06	1278523	19.11	26822400	0.71
2011	27137323	6.24	1351974	5.74	28489297	6.21
2012	28611831	5.43	1451370	7.35	30063201	5.52
2013	30298150	5.89	1437162	-0.98	31735312	5.56
2014	33076491	9.17	1525574	6.15	34602065	9.03
2015	35187573	6.38	1475311	-3.29	36662884	5.96
2016	41495115	17.93	1513729	2.60	43008844	17.31
2017	45916573	10.66	1609963	6.36	47526536	10.50

Source: Rajasthan Tourism Department Annual Progress Report 2016-17.
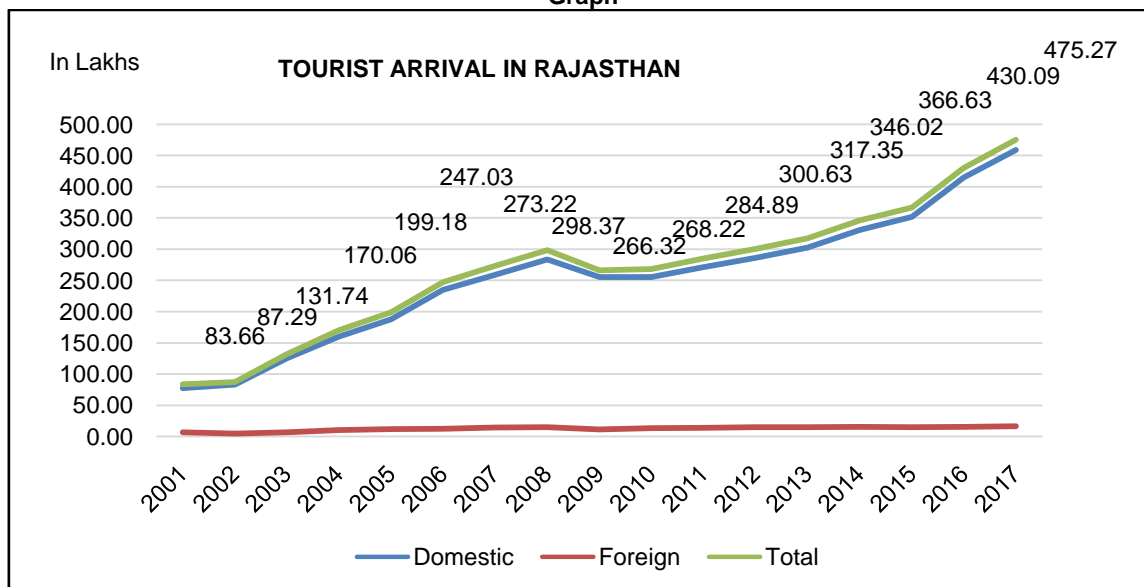
Graph

Table: Sectorial Share of trade, hotel and Restaurants sector in Rajasthan

(In Percentage)

Years	Sectorial Share of trade hotel and Restaurants
2001-02	13.87
2002-03	13.31
2003-04	13.35
2004-05	13.78
2005-06	14.16
2006-07	14.16
2007-08	14.50
2008-09	13.94
2009-10	13.61
2010-11	14.84
2011-12	14.56
2012-13	14.17
2013-14	13.31
2014-15	11.91
2015-16	12.44
2016-17	13.06
2017-18	13.56

Source: Directorate of Economics & Statistics, Government of Rajasthan.
Data from 2001-02 to 2013-14 is based on base 2004-05 and other on base 2011-12 at current prices.

From the year 2001 to 2017 there is a tremendous growth in tourist arrival in Rajasthan Showing a compound average growth rate of 11.6%.The sudden increase in tourist arrival was seen in year 2003 while a decline in 2009 and it started recovering. Share of Trade, Hotel and Restaurant industry In Gross State Domestic Product of Rajasthan at Current Prices stood at an average of 13.68% of total GSDP. In 2003 where there was a sudden increase in tourist arrival the income from

Trade, Hotel and Restaurant industry to the state also increased. A sudden decline in tourist arrival in 2009 did affect the income with slight decline but after that in coming years the recovery of tourist arrival increased the income.
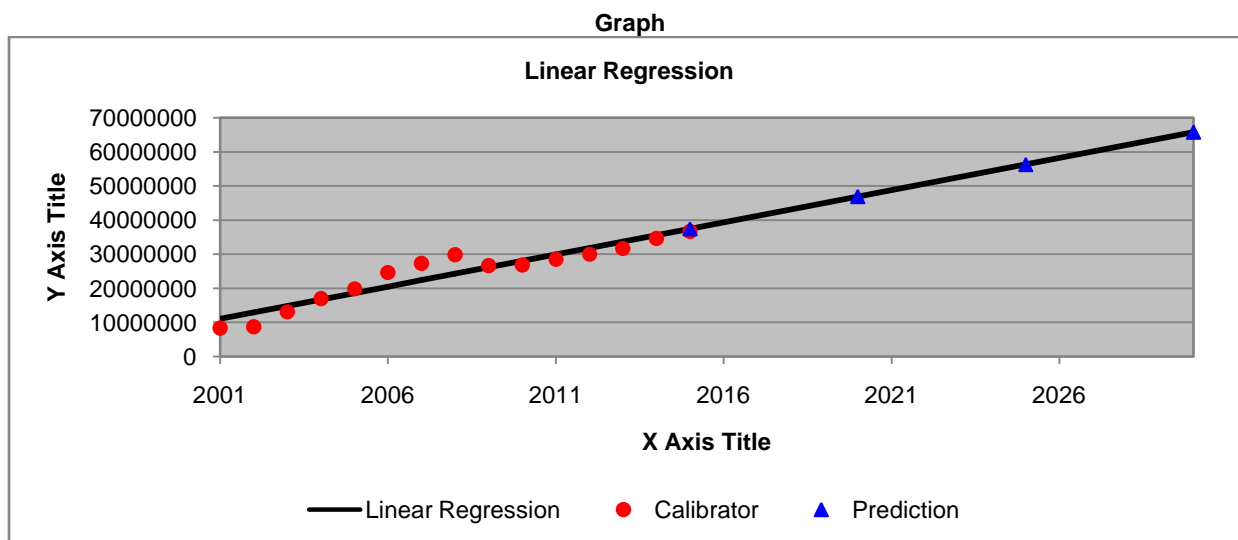
Projections

Seeing the trend of tourist inflow in Rajasthan from year 2001 to 2015 Power curve, Second Degree Polynomial, Cubic Regression and linear trend have been fitted and the projection of tourist arrival till 2030 have been made as follows in table 3.

Table 3: Projection for tourist arrival in Rajasthan

(In Lakh)

Years	Power Curve	Second Degree Polynomial	Cubic Regression	Linear
2015	307.46	340.94	361.45	374.61
2020	359.76	329.70	578.92	468.83
2025	420.79	262.95	1078.90	563.05
2030	491.98	140.70	2002.21	657.27

Graph

In 2015 actual tourist arrival in Rajasthan was 366.63 lakh.According to the projections linear trend and cubic regression show the closest data but prediction for next 15 years is most relevant for linear trend.

Time Series Analysis

Seeing the above description we fit straight line with the help of least square method on no of international, domestic as well as total tourist arrival in Rajasthan. The formula for a straight-line trend can most simply be expressed as:

$Ye = bX + a$

Where X represents time variable, Y is the dependent variable for which trend values are to be calculated and a and b are the constants of the straight tine to be found by the method of least squares. To obtain the values of constants a and b according to the Principle of Least Squares, we have to solve simultaneously the following two equations.

$\Sigma Y = na + b\Sigma X$ ...(i)

$\Sigma XY = a\Sigma X + b\Sigma X2$ ...(ii)

On solving the equations the line of best fit or the equation of trend that is

1. $Y = 20.71*X – 41332$ for the overall tourist arrival
2. $Y = 0.6148*X - 1223$ for foreign tourist arrival
3. $Y = 20.09*X – 40110$ for domestic tourist arrival

Then find the residual error which is Observed value minus predicted value i.e.

$U = Observed - Predicted$

Table 3: Forecasted Values Using The Equations And Residual Error

(In Lakh)

Years	Domestic tourist arrival			Foreign Tourist arrival			Total Tourist arrival		
	Observed	Predicted	Error	Observed	Predicted	Error	Observed	Predicted	Error
2001	77.57	94.57	-16.99	6.08	7.19	-1.11	83.66	101.76	-18.10
2002	83.00	114.66	-31.66	4.28	7.81	-3.52	87.29	122.46	-35.18
2003	125.45	134.75	-9.30	6.29	8.42	-2.13	131.74	143.17	-11.43
2004	160.34	154.84	5.50	9.72	9.03	0.68	170.06	163.88	6.18
2005	187.87	174.93	12.94	11.31	9.65	1.66	199.18	184.58	14.60
2006	234.83	195.03	39.81	12.20	10.26	1.94	247.03	205.29	41.75
2007	259.21	215.12	44.09	14.01	10.88	3.13	273.22	226.00	47.22
2008	283.59	235.21	48.38	14.78	11.49	3.28	298.37	246.70	51.66
2009	255.59	255.30	0.29	10.73	12.11	-1.37	266.32	267.41	-1.09
2010	255.44	275.39	-19.95	12.79	12.72	0.06	268.22	288.12	-19.89
2011	271.37	295.49	-24.11	13.52	13.34	0.18	284.89	308.82	-23.93
2012	286.12	315.58	-29.46	14.51	13.95	0.56	300.63	329.53	-28.90
2013	302.98	335.67	-32.69	14.37	14.57	-0.20	317.35	350.24	-32.88
2014	330.76	355.76	-25.00	15.26	15.18	0.07	346.02	370.94	-24.92
2015	351.88	375.85	-23.98	14.75	15.80	-1.04	366.63	391.65	-25.02
2016	414.95	395.95	19.01	15.14	16.41	-1.27	430.09	412.36	17.73
2017	459.17	416.04	43.13	16.10	17.03	-0.93	475.27	433.06	42.20

Test for Goodness Of Fit

To test that how better our data fit into expected curve i.e. Straight Line we use Chi-Square goodness of fit test. This is a non-parametric test that is used to find out how the observed value of a given phenomenon is significantly different from the expected value.

For use of χ2 Goodness of fit

Null Hypothesis H 0

There is no significant difference between the observed and the expected value of tourist arrival.

Alternative Hypothesis H 1

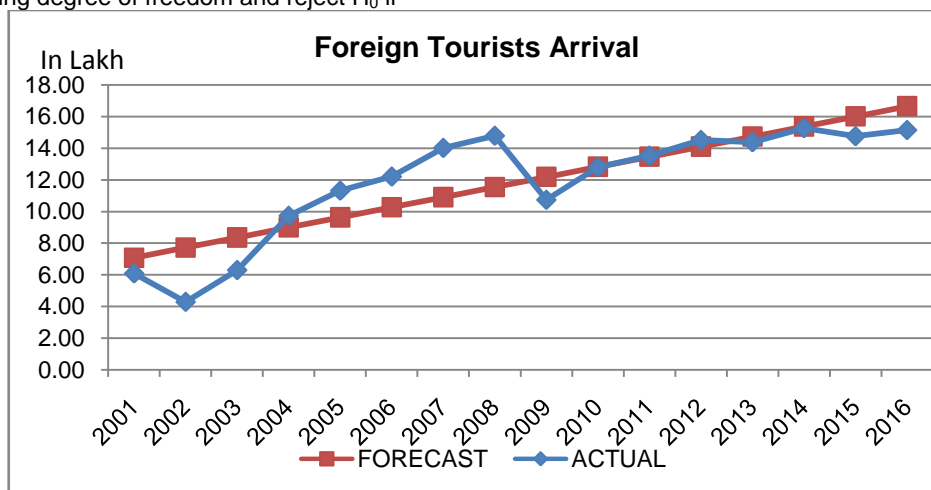There is a significant difference between the observed and the expected value of tourist arrival.

Compute the χ2 values for domestic, international as well as total tourist arrival using the formula

$$\chi 2 = ((O-E)^2 / E)$$ at (n-1) degree of freedom where O is observed values E is expected or predicted values and n is no of observations.

χ2 Calculated for Domestic Tourist Arrival is 59.44, International Tourist Arrival is 5.12 and total tourist arrival is 55.94. χ2 Tabulated at 95% confidence interval is 24.996 at 15 degree of freedom. We accept H_0 if χ2 Calculated ≤ χ2 Tabulated at corresponding degree of freedom and reject H_0 if

χ2 Calculated > χ2 Tabulated.

Seeing the calculated values we accept null Hypothesis just in case of International Tourist arrival and reject in the other two. This means that there is no significant difference between the observed and expected international tourists arrival at 95% confidence interval i.e. it certifies that Straight Line is best fitted for data of year wise International tourists arrival in Rajasthan.

Forecast

From the above discussion best fitted trend curve is given by straight line for International tourist arrival i.e.

Y = 0.6148*X – 1223

The International tourist arrival by 2020 and 2025 using the above equation is 18.89 Lakh and 21.97 lakh.

Contribution of Tourism in Obtaining Economic Development of Rajasthan
Eradicate Poverty

Tourism can stimulate economic growth at local and national levels and promote the growth of agriculture, industry and service sectors. It can also provide a wide range of employment opportunities. Also tourism business and tourists can purchase goods and services directly from the poor or enterprises directly employing the poor. This, in turn, creates opportunities for micro, small and medium sized enterprises in which the poor can participate. Domestic tourism in Rajasthan can spread the development to or regions and remote rural areas that may not be benefited from other types of economic development.

Development of Infrastructure

Tourism helps in the development of infrastructure through the construction of roads and tracks to different areas of tourist attraction.

Ensure Environmental Sustainability

Tourism can generate financial resources for conservation of the natural environment. It raises awareness about environmental conservation and promotes waste management, recycling and biodiversity conservation.

Development of a Global Partnership for Development

It contributes to the socio-economic development of Rajasthan through foreign exchange earnings and the creation of job opportunities. Tourism can stimulate the development of the transport infrastructure which can stimulate access to and from different places. It can reduce the burden on the public exchequer through implementation of public private initiatives. It creates decent and productive work for the youths of Rajasthan. Also the infrastructure agencies pay an important role in integrating tourism enterprises into global tourism markets .Although Rajasthan has the potentiality of developing tourism in a big way and foster economic development.

Recommendations

Keeping in view the region's colourful culture, Rajasthan has a huge potential in tourism which needs to be developed further. Some of the potential areas are Improving Intra State Air connectivity, Special desert tours for enthusiasts who want to know about the culture and history of the region need to be developed, Encourage Corporate Sponsorship for Heritage buildings for which Government already has in placed concessions and subsidies and Conversion of palaces into heritage hotels.

Conclusion

In this paper the data available from the reliable secondary data have been considered. According to the World Travel and Tourism Council, India will be a tourism hotspot from 2009-2018, having the highest 10-year growth potential. The most important economic feature of activities related to the tourism sector is that they contribute to three high-

priority goals of developing countries: foreign-exchange earnings, the generation of income and employment Foreign exchange earnings, and contributions to government revenues, take place at the macro or national level, whereas the generation of employment and income, and regional development occur at sub-national levels. It is important to note that with the exception of earning foreign exchange, other impacts can be gained from tourism activity. It is observed that on the basis of result that share of trade, hotel and Restaurant industry in Gross State Domestic Product of Rajasthan is over 13 per cent which is considerable share for the overall growth of the state.

Hence, tourism can be of considerable significance to the state as well as national economy. The importance of Tourism, as an instrument of economic development and employment generation, particularly in remote and backward areas, has been well-recognized the world over. Hence, tourism can be termed as a perspective tool of economic development in Rajasthan.

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