

PILGRIMAGE TOURISM AND ENVIRONMENT OF KASHMIR VALLEY OF J&K STATE

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ABSTRACT

Kashmir valley popularly known as a paradise on earth is one of the most preferred destination of tourists worldwide. It is primarily a mountainous region so an entirely sensitive area as significantly negative impacts are produced by even the slightest negative aspects attached with tourism industry operating therein. We cannot accept the present development at the cost of the future. Pilgrimage is one of the religious and cultural phenomena most common to human society throughout the world which have powerful political, economic, social and cultural implications, and can affect world trade and health. It is an important subject due to its scope and spatial influence. The aim of our present study is to focus on biophysical carrying capacity which deals with the extent to which the natural environment is able to tolerate external interference. In this paper, we examine pilgrimage tourist data (Amarnath Yatris) from 1989 to 2017 to examine the trend and predict the tourist's inflow using various statistical models. The outcome of the analysis shows that Kashmir valley has a tremendous potential to absorb tourists, but at the same time the Researchers have shown that an increase in the number of visitors does not only make the area overcrowded, but at the same time, it also leads to the over exploitation of the natural resources, leading to serious damage to the natural habitat. It is concluded that for the human welfare we have to set environment at priority and maintain a balance between environmental protection and the promotion of tourism.

Keywords: Kashmir; Pilgrimage; Tourism; Carrying Capacity; Environment; Sustainable, Tourism; Statistics.

INTRODUCTION

Pilgrimage is defined as, as journey resulting from religious causes, externally to a holy site, and internally for spiritual purposes and internal understanding (Barber, 1993). Pilgrimage creates population mobilities such as trade, cultural exchanges, political integration, and the less desirable spread of illnesses and epidemics (Barber, 1993). Pilgrimages have powerful political, economic, social, and cultural implications, and can even affect global trade and health (Barber, 1993; Vukoni'c, 1996, 2002, Timothy and Olsen, 2006). Kashmir is well known worldwide for its beauty. Each year, lakhs Hindu pilgrims visit Kashmir valley and go Amarnath and other religious places. It is important that tourism planners must first of all understand the phenomena with which they are dealing, as well as the participants' characteristics and desires. Kashmir is like a bowl so tourism and environment is directly related. Kashmir is a muslim majority state so people of Kashmir are more concerned towards environment than economic development.

The probability distributions form a basic and promising field of study in the domain of statistics and have many important applications in a wide variety of disciplines such as social sciences, biological and medical sciences, physical sciences, operation research, quality-control, engineering, agriculture and so on. In this paper, we use statistical models in Pilgrimage Tourist inflow data of Kashmir valley to determine the trend. In view of the literature (Cohen, E. (1998), Bilal et al 2008, Samira et al 2017 etc) we chose the study area Indian Administered part of Jammu and Kashmir. The present study makes an extensive use of secondary data (in thousands) of pilgrim tourists inflow in Kashmir valley of Jammu and Kashmir for the period 1989-2017. The state of Jammu and Kashmir (J&K) popularly known as paradise on earth because of its beauty with an area of 222236 square kilometer was unfortunately divided into two parts in 1947. One part of Kashmir is controlled by Pakistan and other part is controlled by India. The political events in the sub-continent that followed partition disfigured the map of J&K state. The tourism industry in Kashmir valley relies on natural resources but the same industry has the potential to impact its natural resources in adverse manner. Tourism and the supporting infrastructure that it requires pose threat to the environment particularly forests, water resources and wild life. The aim of this study is to find trade-off solution that guarantees a flourishing tourism industry. Since polluted regions distract tourists, the tourism planner has to take care of the environment at the time of planning. In this paper an attempt is made in to address the issue of environmental quality affected by tourism influx.

METHODOLOGY

To examine the trend and predict the tourist’s inflow in the Kashmir valley of J & K state using data for the period 1989-2017 various statistical models were used. To identify the best model for a particular time series, generally model selection criteria R^2 , Draper and Smith (1982) is used. It is generally considered that the more the value of R^2 , the better is the fit. Other measures like AIC, BIC etc are also used to check the model fitting. Here we also use mean absolute error (MAE), the root mean square error (RMSE) and the mean absolute percentage error (MAPE) given as:

$$MAE = \frac{\sum_{i=1}^n |y_i - \hat{y}_i|}{n}, RMSE = \sqrt{\frac{\sum_{i=1}^n (y_i - \hat{y}_i)^2}{n}}, MAPE = \frac{\sum_{i=1}^n |y_i - \hat{y}_i|}{n} \times 100\%$$

Where y_i and \hat{y}_i are the actual observed values and the predicted values respectively while n is the number of predicted values. The process of model fitting was done using the software’s like SPSS, MINITAB, R etc.

RESULTS AND DISCUSSION

Kashmir is one of the most preferred tourist destinations, both for national and international visitors, which is evident from the constant inflow of tourists. Tourism is an asset, an endowment of the nature on the state. Unless we are not able to spawn the requisite infrastructure and other facilities of international standards for the tourists, in consideration with the environmental norms, the real benefits will not flow to our people.

It is obvious that the tourists are attracted mainly by the natural beauty of Kashmir; so under such circumstances the concerned are suggested to take care of the pristine environment, which is the basic stuff of the industry. The Picture 1-3 shows the attitude of authorities/people towards environmental protection.

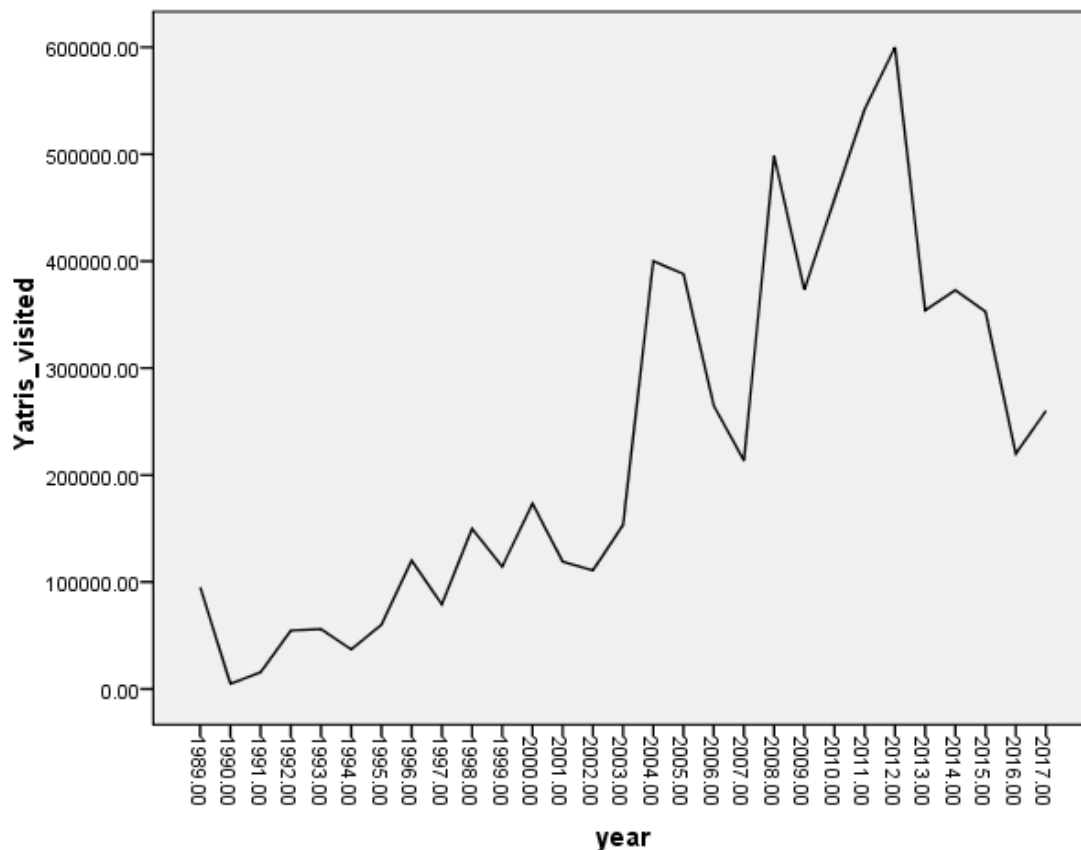


Picture 1-3: Waste present on road side, hilly areas and in water bodies

Environmental Effect of Pilgrim Tourism/Tourist

Destinations in Kashmir Valley: Pahalgam A Growing Concern. Pahalgam is situated at an altitude of 2,133 meters amidst lofty deodars, fir and pine trees, junipers and many other conifers gets lively during the tourist months of the summer, as well as during the weeks before the Amaranth Yatra. The town is at the junction of the Aru and Sheshnag rivers surrounded by, fir covered mountains with bare, snow-capped peaks rising behind them. According to the mountaineers from Jawahar Institute of Mountaineering (JIM) in 2008, the glacier has receded by half since 1985. The glacier is not safe to study because it is hollow and in places has 200 foot deep (61 m) crevasses. In Kashmir Pilgrimage tourism, is of most significant forms, which is advantageous as well as disadvantageous for the society of Kashmir.

Figure 1: Number of Pilgrimage Tourists who visited Kashmir (1989-2017)



Model Summary and Parameter Estimates

Dependent Variable: Yatris_visited

Equation	Model Summary					Parameter Estimates		
	R Square	F	df1	Df2	Sig.	b1	b2	b3
Linear	.653	52.748	1	28	.000	114.609		
Logarithmic	.651	52.124	1	28	.000	3.013E4		
Inverse	.647	51.320	1	28	.000	4.576E8		
Quadratic	.656	53.476	1	28	.000	.000	.057	
Cubic	.659	54.212	1	28	.000	.000	.000	2.870E-5
Compound	.992	3.582E3	1	28	.000	1.006		
Power	.992	3.355E3	1	28	.000	1.569		
S	.991	3.086E3	1	28	.000	2.389E4		
Growth	.992	3.582E3	1	28	.000	.006		
Exponential	.992	3.582E3	1	28	.000	.006		
Logistic	.992	3.582E3	1	28	.000	.994		

The independent variable is year.

The data presented above shows the value of R-square by using different models. We consider that trend best for prediction which gives maximum value of R-square.

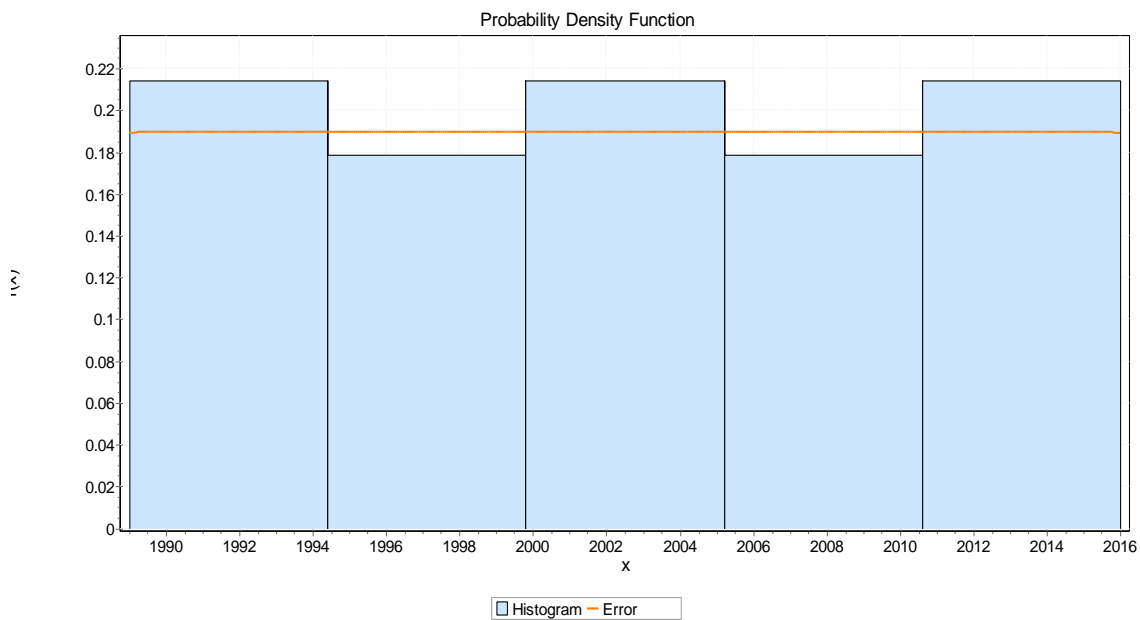
Goodness of Fit – Summary

#	Distribution	Kolmogorov Smirnov		Anderson Darling		Chi-Squared	
		Statistic	Rank	Statistic	Rank	Statistic	Rank
1	Beta	0.05765	7	1.9466	35	1.1964	29
2	Burr	0.09223	26	0.42067	23	1.5216	31
3	Cauchy	0.13322	35	0.72742	28	0.8629	20
4	Chi-Squared	0.42256	42	7.8175	42	68.656	42
5	Chi-Squared (2P)	0.09653	29	0.39299	22	0.70897	10
6	Dagum	0.58822	45	11.646	45	2578.4	45
7	Erlang	0.07136	15	0.30037	11	0.82588	14
8	Erlang (3P)	0.07775	24	0.33406	19	0.90099	23

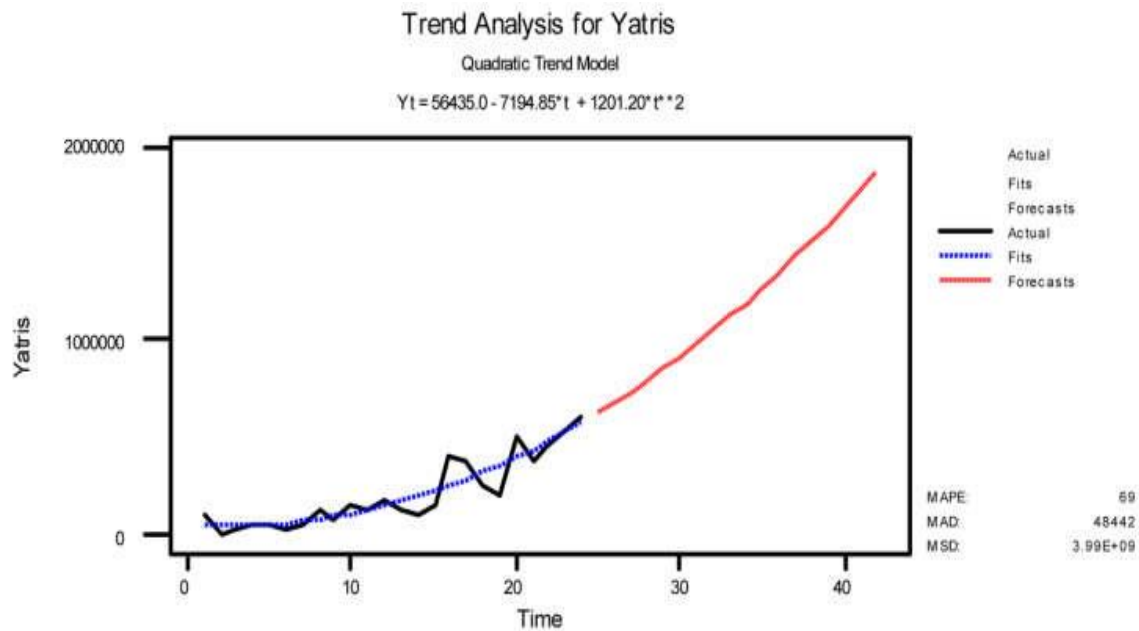
9	Error	0.02614	1	0.04503	2	0.12651	1
10	Exponential	0.62963	46	12.74	46	3073.6	46
11	Exponential (2P)	0.1661	38	3.3098	37	2.7265	38
12	Fatigue Life (3P)	0.07572	19	0.33254	15	0.89117	22
13	Frechet	0.10687	30	0.48497	25	0.63185	8
14	Gamma	0.07115	13	0.30036	8	0.82683	16
15	Gamma (3P)	0.07647	22	0.3335	18	0.90676	25
16	Gen. Extreme Value	0.05873	8	0.21848	5	0.71118	11
17	Gen. Pareto	0.03448	4	0.07477	4	0.14649	4
18	Gumbel Max	0.11515	33	0.81793	30	1.7875	33
19	Gumbel Min	0.11515	32	0.81793	31	2.3554	36
20	Hypersecant	0.10718	31	0.71795	27	2.0319	34
21	Inv. Gaussian	0.07138	16	0.3004	12	0.83107	18
22	Inv. Gaussian (3P)	0.07616	20	0.33097	13	0.9011	24
23	Johnson SB	0.0267	3	0.04393	1	0.12714	3
24	Kumaraswamy	0.0452	6	1.0207	33	0.21429	6
25	Laplace	0.1272	34	1.0465	34	2.8995	39
26	Levy	0.68106	48	14.756	48	4685.0	48
27	Levy (2P)	0.38361	41	3.5755	39	2.1511	35
28	Log-Gamma	0.07122	14	0.30036	10	0.82883	17
29	Log-Logistic	0.08557	25	0.35913	20	1.2559	30
30	Log-Logistic (3P)	0.07549	18	0.35938	21	0.65907	9
31	Log-Pearson 3	0.07111	12	0.30034	6	0.82654	15
32	Logistic	0.09312	27	0.52732	26	0.85797	19
33	Lognormal	0.07542	17	0.33321	17	0.88388	21
34	Lognormal (3P)	0.07645	21	0.33208	14	0.90871	26
35	Nakagami	0.0711	11	0.30036	9	0.82523	13
36	Normal	0.071	10	0.30034	7	0.82378	12
37	Pareto	0.16683	39	3.324	38	2.7107	37
38	Pareto 2	0.63638	47	12.96	47	3094.2	47

39	Pearson 5 (3P)	0.07651	23	0.33279	16	0.93051	27
40	Pearson 6	0.46954	43	9.4947	43	193.65	43
41	Pearson 6 (4P)	0.37542	40	6.9516	41	12.633	41
42	Pert	0.15935	37	3.1183	36	1.1874	28
43	Power Function	0.06077	9	0.9795	32	0.57143	7
44	Rayleigh	0.53922	44	10.847	44	1567.6	44
45	Reciprocal	0.03571	5	0.75296	29	0.21428	5
46	Student's t	1.0	49	417.0	49	4.5773E+9	49
47	Triangular	0.15128	36	4.8473	40	4.7679	40
48	Uniform	0.02624	2	0.04531	3	0.12662	2
49	Weibull	0.09354	28	0.46131	24	1.5476	32

For our data on the basis of Kolmogorov Smirnov, Anderson-darling and Chi-square test it is observed that Error and Johnson SB are the best fitted models.



Forecasting Yatris arrival is important as it would enable tourist related industries like airlines, hotels, food and catering services, etc., to plan and prepare their activities in an optimal way. On the basis of fitting various models we forecast by applying a suitable model on the basis of the highest value of Rsquare. It is forecasted that in 2020 expected pilgrim tourists will be 1056.2 thousands and in 2025, 1484.6 thousand.



The forecasting is of course based on the assumption that events, like government policy, promotion campaigns, natural or manmade events, etc., do not change drastically. The terrific increase in the limited capacity of the destination is an alarming bell for the valley as a whole.

CONCLUSION

In the present study we use statistical models to examine the trend and predict the pilgrimage tourist inflow in Kashmir valley. Forecasting is of course based on the assumption that events, like government policy, promotion campaigns, natural or manmade events, etc., do not change drastically. The present study have expressed concern over the number of people participating in the Amarnath Yatra which is having a negative impact on the area's ecology (shown in pictures) as the heavy rush of yatris creates a condition of excessive pollution. A number of studies on ecology and environment has expressed serious concern over the surging scale of pollution and excessive use of polyethylene carry bags that have choked the streams in this region. In the earlier times water bodies were clean and forests were so dense and that wild animals/birds would be seen roaming in the lanes of old towns especially in the winter season. In view of the environmental concerns, the Government of Utranchal has restricted the number of pilgrims visiting Gomukh and other Gangotari glaciers, the origin of the holy river Ganga to only 150 per day, while in Kashmir per day 20,000 Amarnath yatris are allowed for Darshan near Kolihi Glacier which is a colossal source of drinking water for residents in south Kashmir. Pumping of a millions of Pilgrims to Amarnath will vandalize the fragile environment of Kashmir. We have no right to destroy our nature in the name of any religion. PM of India talks about Clean Indian Drive (Swatch Bharat Mission) but no funds are provided to J&K Government for making Amarnath Yatra clean and *swatch*. Hardly we see the Shrine Board

invite suggestions for making Amarnath yatra eco friendly. We can jointly find out some scientific solution in future.



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