



TOURISM DYNAMIC ASSESSMENT USING GEOSPATIAL APPROACH IN BAGESHWAR DISTRICT, UTTARAKHAND

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Abstract

Dynamics of tourism is a complex thing requires geospatial approach for effective planning and assessment. Geospatial technique for visualization is an innovation and emerging discipline and a valuable tool to recognized the dynamic assessment of tourism, by integrating geospatial data as well as non spatial data in the form of a map display as an outcome. Geospatial visualization approach necessitates the planning which is based on the needs, goals, formulation, monitoring and evaluation of an action plan or programmes. Present study practices a geovisualization of dynamic assessment of tourism in Bageshwar district by integration of spatial and non-spatial data and also explores the suggestions to develop the tourism industry. The study investigated a case study in Bageshwar district. Study area has extensive potentialities for expansion of tourism industry, so in the region there is need to make efforts in this direction and make region more attractive and suitable for tourist as well as region itself. In the present study, an approach has been described the socio-economic development and growth analysis in the study area on account of tourism by linking the geospatial data (spatial & non-spatial). It can be done through the tourist growth. Growth analysis is done through attribute data, as domestic and international tourist arrival data calculated by compound annual growth rate (CAGR) and coefficient of variation that correlates with geospatial data using GIS as tool. The present study presents the tourism development in context of impact aspect and geovisualization done by tourism growth and tourist variation map. The finding reveals that the growth of tourist arrival increased to 3.54 percent during the year 2000 to 2010. The growth of kausani, Baijnath and Bageshwar tourist places of Bageshwar district also shows increment in the annual growth.

Keywords: Tourism, GIS, Impact assessment

Introduction

Tourism is a movement of people from one place to another for recreation, enjoyment, religious, natural, culture and social attribute. (Gill.N, 2013). The tourism depends on the people upon their leisure time, desire and their interest in wildlife, and forest (Lloyd, P.J., 1964). Tourism is a vast dimension industry which supports socio- economic development of the destination. Tourism is an aspect of economic geography, strengthened the economies of many countries. Lloyd records that the tourist industry is a composite group of heterogeneous services and industries (Lloyd, P.J., 1964). Therefore, the 'recreational studies are multifarious and complex, constituting a fruitful field of research in economic geography (Boesch, H.,1964). The significance of Tourism, as defined by Ghosh is one of the major items of international trade (Ghosh, 1998).

Tourism is strengthens the economies of tourism destination and forges bonds of international-national and inter-regional relationship. Tourism destinations behave as dynamic evolving complex systems, encompassing numerous factors and activities which are interdependent and whose relationships might be highly nonlinear (Baggio, R., 2008).

Tourism industry has vast dimensions and supports

the economic growth of the destination area. Tourism is an aspect of economic geography, strengthened the economies of many countries. The significance of Tourism, as defined by Ghosh (Ghosh, 1998) is among other, one of the major items of international trade. Hall (1995) stated that the main reason why governments particularly in developing countries encourage tourism investment is because of the expectations that it will contribute to economic development. Carter (1991) noted that there is a cumulative relationship between tourism development environment and socioeconomic development. This means that if tourism is to contribute to sustainable development, then it must be economically viable, ecologically sensitive and culturally appropriate (Wall, 1997). Tourism industry earns the gross revenue and foreign exchange earnings, play an important role in economic development. But, it has both socio-economic and environmental implications. Socio-cultural transformation can be seen due to the mass tourism.

Tourism is an emerging application in the field of GIS. GIS is a tool for capturing, analyzing, retrieving and presenting the spatial and non- spatial data from geographic world for particular purposes. The method of gathering information about a tourist place to visit is

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dependent on the means and technology available at that relevant time. GIS is now recognized widely as a valuable tool for managing, analyzing, and displaying large volumes of diverse data pertinent to many local and regional planning activities (Chen, 2002). Impact assessment and simulation are increasingly important in tourism development, Geographical information system is a rapidly expanding field enabling the development of applications that manage and use geographic information in combination with other media. In the tourism industry, government strategy, decision making.

The study investigated a case study in Bageshwar district. It has extensive potentialities for expansion of tourism industry, so in the study area it is need to make efforts in this direction and make region more attractive and suitable for tourist as well as region itself. The study area provides great potentialities for tourism. The need of the region is to explore the tourism resources which are undefined and also should develop the some artificial tourism resources. The current area is chosen by keeping the above perception in the mind, to shows the dynamic conditions of the region which are affected by tourism and also examine the role of tourism industry in the economy of the region, which is need of the development.

Material and Methods

Research is a systematic method of finding solutions to a problem. The systematic method lies in enunciating the problem, collecting facts or date analysis the facts critically and reaching conclusion based on them. The main purpose of the present research is to explore the impact of tourism on the socio-economic development in the Bageshwar district. The research design passes through a several steps which are described through the following components:

Collection of Data:Data related to the present study have been collected from both primary and secondary sources. Primary data involved tourist location data and sample survey data of the region. Global Position System (GPS) instrument is used to locate the selected tourist spots of Bageshwar district. In the form of sample survey data Questionnaire was filled by tourist, host, shopkeeper, and villagers and interview also were taken for the analysis of socio-economic development of the region in tourism context. Secondary data were collected through the various government organizations, offices and department. Tourist related data was collected from the regional tourism office and KMVN (Kumaon Mandal Vikas Nigam) and socio-economic related data to the present study was collected from the economical and statistical department.

Techniques of Data Analysis: For the data analysis of the present research various techniques and methods have been used, which described as below:

(i) Statistical Technique: Growth analysis of Tourist at various tourist spots of Bageshwar districts are achieved with the help of statistical techniques. Statistical techniques like Standard Deviation and coefficient of various are used to find out the variation of tourist growth in selected tourist spot of the study area. Compound Annual Growth Rate method (CAGR) is also used to calculate the growth rate of tourist arrivals in selected tourist places.

(ii) Geographic Information System (GIS): GIS is a tool, by which one can capture the data, store, analyze, and present the data or it is technology for the acquisition and management of spatial information. In the study this technique is used for the geovisualization of geospatial data. With the help of this technique, integration of spatial and non-spatial data was done to shown the tourist arrival growth rate on the district boundary map of Kumaon. Tourist growth rate was shown with the help of various geovisualization techniques like pie and bar diagram

(iii) Photographic and Graphic Representation: Graphic representation was done through the diagram like 3 D pie. This is used to analyze the some aspect which is related to the present research

Software's Used: During the study several remote sensing, GIS and statistical software have been used for analysis, map preparation ad image classification. Details of the software's are given below-

I. **ArcGIS:** ArcGIS is a Geographical Information System software product of Environmental Systems Research Institute from Redlands, California (1969). In this research ArcGIS is used for the map preparation from the spatial data and non-spatial data collected from the field and different government offices.

II. **Erdas Imagine** - Erdas imagine, product of Intergraph Corporation, United States of America, is remote sensing software used mainly onto the raster datasets for different geospatial analysis. In this research Erdas Imagine has been used for georeferencing and image classification of the raster datasets.

III. **SPSS** – Statistical Package for the Social Science (SPSS) is statistical software, product of International Business Machines Corporation, used for the non-spatial data statistics analysis.

Results and Discussions

A result of the present study is discussed under the following sections:

International and Domestic Tourist Arrival Trend:

Tourism is an important service sector at the global level and significant generator of foreign exchange earnings. To analyze the growth pattern of the area, ten years gap data was taken for the study. During the period of 2000-10, international as well as domestic tourist arrivals worldwide grew at an average growth rate of 3.54 percent .Analysis of tourist arrival data reveals that, in 2000, there were 17986 domestic and 297 international tourists arrived and in 2010 which was decline to 13290 domestic and 48 foreign tourists as shown in table 3.1. During the ten year period from 2000-2010, there is drastic negative growth rate change in both domestic as well as international tourist arrival. In 2010 there was also a cause behind this was a

natural hazard occurred in whole Kumaon, which become a great havoc among the visitors.

The reasons behind this drastic downfall in both the cases, domestic as well as international, are given as follows:

- a. Due to lack of proper infrastructural facilities like, banks, roads conditions, travel maps, transportation facilities, ATM, etc, which are the basic needs.
- b. Occurrence of natural hazards and disaster.
- c. International tourist likely to visit Pindari Glacier in the district because they prefer trekking but the route is so risky and too long.
- d. Due to unexpected snowfall and rainfall, cause great hazards like landslides, earthquake, etc which creates a fear among tourist.

Table I. Tourist Arrival Growth Rate in Bageshwar District, 2000-10

Period	Average annual growth Rate of Domestic (%)	Average annual growth Rate of international (%)	Total Annual Growth Rate (%)
2000-01	8.73	-55.2	7.70
2001-02	-0.64	291.73	1.34
2002-03	1.38	-81.38	-0.78
2003-04	-7.22	-29.90	-7.33
2004-05	4.85	-36.76	4.69
2005-06	-0.91	34.88	-0.83
2006-07	-0.67	300.00	0.25
2007-08	-2.08	34.05	-1.64
2008-09	-28.05	-84.57	-28.98
2009-10	-1.37	16.67	-1.42

Source: District Tourism Department, Bageshwar

The global market shares of the arrivals of countries are decline at much faster rate. Initially British remained the top regional tourist destination, while France, Australia, and New Zealand on third, fourth and on fifth place respectively. But after 2006 growth rate of these countries are being decline. From 2000 onward, the year of creation of Uttaranchal state, year wise total tourists arrival at major tourist sites of Bageshwar district has been geovisualized through the bar diagram technique in map 1. Three tourism sites were taken to analyze the growth and development of

tourism in Bageshwar district. Kausani, Bageshwar and Baijnath were taken as major tourism spots of District because these places are the famous tourist spot.

Trend of Selected major spots of Pithoragarh District:

Growth of three tourist sites was studied to know the development of tourism in the district. Kausani, Bageshwar, and Baijnath are taken for the study. Table II mentioned the growth of major tourist sites has been going up.

Table 2. Tourist Traffic at the Major Tourist Places in Bageshwar District, 2000-10

Tourist Sites	Arrivals of domestic tourist		Arrivals of international tourist		Total Annual average Growth rate 2000-2010
	2000	2010	2000	2010	
Kausani	6231	6267	63	14	-0.02%
Baijnath	745	1838	3	7	9.45%
Bageshwar	3116	2644	52	43	-1.63%

Source: Kumaon Mandal Vikas Nigam, Uttarakhand Government, Nainital

From table 2, in 2000 the ratio of domestic and international in Kausani, Bageshwar, and Baijnath are

6231: 63, 3116: 52 and 745: 0 respectively. Growth rate of international tourist become much slow or goes to negative in some years, so the international market in district goes on loss. From the field survey, reason has been concluded that the foreign tourist visited Kausani place due to its calm and peace nature. But in recent year's population was increased as much higher rate due to immigration, which creates unpleasant place and lot of unhygienic conditions like garbage flow on the roads, etc. Climate change also an affected factor. Domestic tourist share also same trend but it recovered well and reached 6267 in 2010. The growth rate in ten years of domestic and international is -1.63% and -77.78% respectively. Main reason behind this undulating trend is also that

- Government initiative is almost negligible at this place
- Almost all the development is done by the private sector.
- Bad conditions of trekking route
- Lack of Transportation facilities become a great hindrance in the growth of tourist.
- Charges of hotels are unaffordable for middle class family.
- No proper management of flow of garbage.

It has been tried to calculate the coefficient of variation in tourist arrivals of selected tourist destinations of Bageshwar district. To know the exact variation in tourist arrival at three major tourist sites (Bageshwar, Baijnath and Kausani) in the district. Standard deviation technique from Mean position has been adopted.

Coefficient of Variation (C.V) is given by

$$CV = (\sigma/\bar{x}) 100$$

Where, Standard deviation $\sigma = (\sum X^2/N)^{1/2}$
and

\bar{x} = actual average defined by the relation $\bar{x} = \sum X/N$

The coefficient of variation for Kausani, Bageshwar and Baijnath are 21.20, 31.08 and 39.95 respectively as shown in figure 1. This shows that highest variation is found in Baijnath and minimum in Kausani. Highest variation is not good for tourism industry. Figure 1 show the integration of spatial and non-spatial data of tourist arrival with the help of GIS techniques. Geovisualization is of tourist data is easy to understand for the particular destination. Tourist arrival is shown by linking the pie-diagram with spatial data and variation of tourist by the point density.

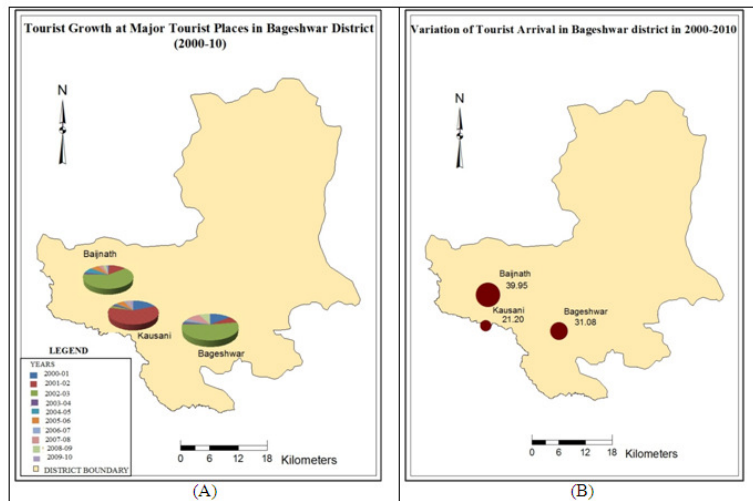


Fig 1. Map of tourist growth arrival (a) - Tourist arrivals growth rate (b) – Variation in tourist arrivals

Conclusion

This study demonstrated that tourism in Bageshwar district is in underdeveloped stage. The finding reveals that the growth of tourist arrival increased to 3.54 percent from year 2000 to 2010. The growth of the said tourist places of Bageshwar district also shows decrement in annual growth rate by -0.02, 9.45 and -1.63 percentage in Kausani, Baijnath and Bageshwar respectively. The

tourist variation of mentioned three tourist places of Bageshwar was not satisfactory which is a bad news for these tourist places. The study opted a GIS as a tool for geovisualtion of tourist data. By the geovisualization it is easy to know the effect of tourism trend on the various tourist places.

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