Educational Administration: Theory and Practice
2024, 30(5), 15741-115751
ISSN: 2148-2403
https://kuey.net/

Research Article

Spatio-Temporal Patterns, And Seasonality of Tourism In Uttarakhand: An Exploratory Study

Sunil[1*], S.P. Kaushik[2]

[1*]Research Scholar, Department of Geography, Kurukshetra University Kurukshetra -136119 Haryana, India,
Email: sunilmanglaw1@gmail.com
[2]Professor, Department of Geography, Kurukshetra University Kurukshetra -136119 Haryana, India, Email: spk34@rediffmail.com

Citation: Sunil, et.al (2024). Spatio-Temporal Patterns, And Seasonality of Tourism in Uttarakhand: An Exploratory Study, *Educational Administration: Theory and Practice*, 30(5) 15741-15751
Doi: 10.53555/kuey.v30i5.10693

ARTICLE INFO

Article Received: 10/04/2024
Article Revised: 28/04/2024
Article Accepted: 13/05/2024

ABSTRACT

The world's fastest-growing industry is tourism. It is a crucial tool for the country's economic growth, especially in developing nations, as it offers a range of socio-cultural and economic advantages, including job opportunities, the ability to attract foreign investment, infrastructure expansion, and the preservation of historical monuments. Uttarakhand, a Himalayan state, draws tourists worldwide and is the most well-known travel destination. The state has seen a rise in visitors in recent years, with many traveling during specific seasons. In this respect, the current study tries to assess the pattern and trend of tourist arrivals in the state of Uttarakhand from 2000 to 2021. The analysis is based on secondary data sources obtained from the Uttarakhand Tourist Development Board, Dehradun, the World Travel and Tourism Council (WTTC), the United Nations World Tourism Organisation (UNWTO), and a state economic survey. The data have been analyzed using regression analysis, annual growth rate (AGR), and compound annual growth rate (CAGR). The simple average method was used to quantify the seasonality of tourist arrivals. The result shows a continuous increase in both domestic and foreign tourist arrivals (FTA) in the state. Haridwar, Dehradun, and Tehri Garhwal are the leading districts in terms of tourist arrivals. The study also reveals that June and July are the peak months for domestic tourist arrivals, while March and October are the peak months for FTAs in the state.

Keywords: Tourist arrival 1; trend 2; pattern 3; annual growth rate 4; seasonality index 5.

1. INTRODUCTION

In many civilizations, both in developed and developing nations, tourism is an important economic, social, and cultural activity. It is also a lucrative industry that is expanding quickly and makes a significant contribution to the local economy and society (Telfer and Sharpley, 2007; Henderson, 2007; Parks et al., 2009; Le-Klahn and Edwards, 2014). Within a destination zone, tourism has the potential to support other economic sectors, create job opportunities, encourage local and regional investment, and open up trade opportunities for locals (Ryan, 2003; Pappas, 2014; Ollivaud and Haxton, 2019; Zhuang et al., 2019). Goeldner and Ritchie (2009) defined tourism as *"a composite of activities, services, and industries that deliver a travel experience: transportation, accommodations, eating and drinking establishments, shops, entertainment, activity facilities, and other hospitality services available for individuals or groups that are traveling away from home"*. Tourism is considered the most desired human activity that can transform the world's socio-economic, cultural, and environmental landscape (Lordkipandidze et al., 2005; Akama et al., 2007; Sigala, 2020). It is also one of the most crucial means of bridging cultural divides between individuals from different regions of the world.

In addition to these, tourism is a major economic driver for many nations since it creates jobs in related service sectors, taxes on the travel and tourism industry, and revenue from tourist purchases of goods and hospitality services. In 2021, the global economy received US$5812 billion from travel and tourist activities, or 6.1% of the world's GDP. This industry generated $1.3 trillion in exports and 289 million jobs worldwide (9.1% of all jobs) in 2021 (UNWTO, 2022). Due to its strong links, both in the forward and backward directions, with the other important sectors of the Indian economy, the tourism sector has long been acknowledged as a vital contributor to economic growth. According to the World Travel & Tourism Council (2022) report, India's travel and

tourism sector is expected to increase and become the third-largest in the world by 2028, ranking third in terms of both direct GDP and total GDP. In 2021, the Indian tourist industry generated US $ 170 billion (5.8% of GDP), and by 2028, $460 billion (9.9% of GDP) is anticipated to be generated. In India, this sector supported 32 million jobs in 2021, and it's predicted that the number will rise to 53 million by 2029 (WTTC, 2021). The Himalayan state of Uttarakhand is home to a variety of landscapes, including river basins, highlands, alpine pastures, and snow-capped mountain peaks. There are several tourist attractions there, including the well-known mountain and lowland holy places such as Gangotri, Yamunotri, Kedarnath, Badrinath, Haridwar, and Rishikesh, as well as natural places like Dehradun, Mussoorie, Nainital, Ranikhet, Almora, and Kosani, nature reserves, conservation areas, and many others (Sati, 2013). Because of its beneficial effects on the creation of employment possibilities, the enhancement of infrastructure, and the generation of revenue as a result of the proliferating tourist industry, tourism can be a tool for long-term poverty alleviation in the Himalayan state (Molla, 2015; Jangra and Kaushik, 2018; Srijuntrapun et al., 2018; Goffi et al., 2019; Sosa et al., 2021), and it generates 15.45% of the state's domestic gross product (SDGP). Moreover, seasonality is considered to be among the most notable and important features of the global tourism industry. According to Baum and Lundtrop (2001), tourism is a key feature of the world economy and is heavily reliant on seasonal variations in the weather, economic activity, human behavior, and society. The lack of funding, hiring, and recruiting full-time staff, insufficient profits from investments that lead to significant risk management, problems with peaking and utilization of facilities, and other problems have all been attributed to seasonality, which has been considered a key concern for the tourism business (Butler, 2001). Thus, it is necessary to search out the most current trends in tourist arrivals, as they are vital for the expansion of the tourism industry and the hospitality and infrastructure sectors. Due to the rapid increase in tourist arrivals, it is also crucial and valuable for boosting economic development and employment creation in the tourism industry, including hotels, restaurants, leisure businesses, travel agencies, etc. This study examines the recent trend and pattern of tourist arrivals in Uttarakhand state from 2000 to 2021. In addition to this, it also looks into how seasons affect the state's tourism sector. Understanding the recent trends and patterns of tourist arrivals can help develop strategies to attract tourists throughout the year, mitigate the negative effects of seasonality, and improve facility utilization. The study can inform policymakers and stakeholders about potential opportunities and challenges in the tourism industry, highlighting the need for investment in infrastructure, skill development, and marketing to ensure long-term sustainable growth.

1.1 OBJECTIVES

The study set out to accomplish the following objectives:

1. To examine the trend of tourist arrivals in Uttarakhand between 2000 to 2021.
2. To examine the pattern of tourist arrival during the peak year of 2019 as well as the seasonality of tourist arrival in Uttarakhand from 2011 to 2021.

1.2 LIMITATION

This research paper has some limitations, such as the unavailability of month-wise data on tourist arrivals for the period of 2000-2010. The pattern of tourist arrival is restricted to the year 2019, and the seasonality of tourist arrival during 2011-2021.

2. STUDY AREA

Uttarakhand, which is located in the north of the vast and abundant expanse of India and is cradled in the magnificent grandeur and quiet tranquility of the Himalayas, is known as a Holy place that has drawn tourists and pilgrims from all over the world since ancient times. (Figure 1). It is endowed with magnificent scenic beauty, such as river valleys, mountains, pasturelands, rich Doon valleys, and mountain peaks that are capped with snow. On November 9, 2000, Uttarakhand was formed from the north-western part of Uttar Pradesh to become India's 27th state. It is located between a latitude of 280 43' N and 310 27' N and a longitude of 770 34' E and 810 02' E. The overall area of the state is 53,483 sq. km, of which 86% is covered by mountains and 65% by forests. In the north, the Indo-Tibetan border is formed by the snow-capped peaks of the upper Himalayas, whereas in the south, this region begins in the Himalayan foothills. The state, which has 13 districts, is divided into Garhwal and Kumaon's two distinct socio-cultural and geographical regions. Seven districts make up the Garhwal division, whereas six are in the Kumaon division. The Garhwal region includes Haridwar, Dehradun, Chamoli, Pauri Garhwal, Rudraprayag, Tehri Garhwal, and Uttarkashi. The Kumaon region is made up of the districts of Nainital, Almora, Bageswar, Udham Singh Nagar, Champawat, and Pithoragarh. Dehradun, the state's capital, is located in the northwest part of the state.

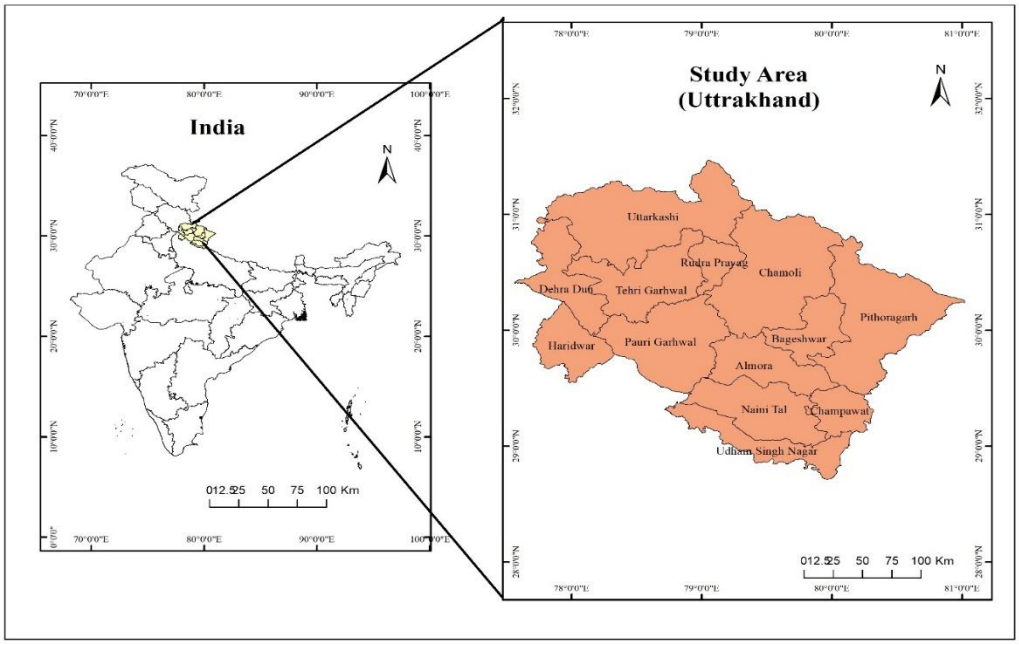


Figure 1. Location of the study area

3 DATABASE AND METHODOLOGY

Research is an organized approach to solving problems. The paper has used a systematic approach, which entails stating the issue, gathering information, critically analyzing the information, and drawing conclusions from it. The following components outline the various steps that the research design goes through:

3.1 DATA COLLECTION AND ANALYSIS

The entirety of the data used in this study comes from secondary data sources. The data was obtained from the World Travel and Tourism Council (WTTC), the United Nations World Tourism Organization (UNWTO), the Government of India's Ministry of Tourism, the Uttarakhand Tourism Development Board in Dehradun, the Statistical Handbook of Uttarakhand State (2015-16), and the State's Economic Survey (2021-22). In addition to these, the study incorporated data and information from several papers, articles, works of literature, and websites.

3.2 METHODOLOGY

The study employs several statistical techniques to examine the trends and seasonality of visitor arrivals in the state. To assess the percentage change in each year of tourist arrivals, the annual growth rate (AGR) has been computed. The compound annual growth rate has also been calculated, which shows the constant rate over the time period (Kaur and Sharma, 1997).

$$Annual\ Growth\ Rate\ (AGR) = \frac{Present\ year - Base\ Year}{Base\ Year} \times 100$$

$$Compound\ Annual\ Growth\ Rate\ (CAGR) = \left\{\left(\frac{Present\ year}{First\ Year}\right) \wedge \left(\frac{1}{Number\ of\ periods}\right)\right\} - 1$$

The trend in time series data, which is a common feature of these forms of data, can be modelled and forecasted using regression (Perera, 2017). A linear regression analysis, which assesses the effect of changes in the independent variable on the dependent variable, can be used to investigate the nature of the relationship between a dependent and an independent variable. Using the linear trend model given in the equation, a regression-based trend analysis is carried out:

$$Y = mx + c$$

Where m stands for the rate of change and c for the line's y-intercept. The model's explanatory power is indicated by the R-squared (R2) value, which ranges from 0 to 1 and is adjusted for degrees of freedom (goodness of fit). To examine the tourism pressure on the destination, the tourism pressure index and tourism density index have been calculated:

Tourism Density Index (TDI) = Tourists per sq. km

Tourism Pressure Index (TPI) = T / P × 100

Where:
T = Tourist arrivals
P = Population of the area

3.2.1 SEASONALITY

Strong seasonality and significant imparity in occupancy rates between cold and warm seasons have long been characteristics of the Himalayan tourism industry. Seasonality not only hampers profit margins and makes it difficult to manage human resources, but it also results in temporal variations in how well infrastructures are used and, as a result, how much of their capacity is utilized. If there are more visitors than the place can accommodate during a peak season, the quality of the destination may decrease, and the tourism industry may see a decline in profit that would not be dreamed up during the lean or off-season. The most popular simple average method was taken into consideration to measure the seasonality phenomena. In that, the average for each month over time from 2011 to 2021 was determined as an arithmetic mean of the level registered in the same month across the period. The overall average was calculated using the monthly average for the whole period. The following is the method for calculating the seasonality index, which is based on the formula proposed by Constantin and Daniela (2011):

$$Seasonality\ Index = \frac{Monthly\ average}{Annual\ average} \times 100$$

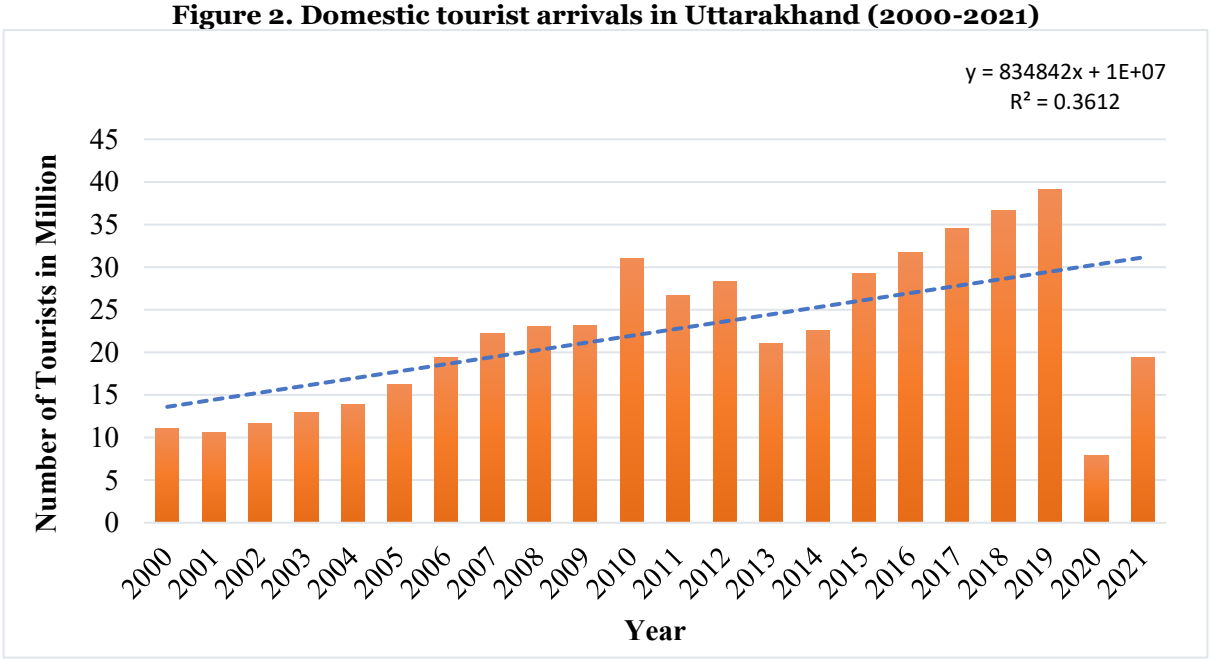
The trends, patterns, and seasonality of tourist arrivals were characterized using a variety of cartographic approaches.

4 RESULT AND DISCUSSION

4.1 TREND AND PATTERN OF TOURIST ARRIVALS IN UTTARAKHAND

The pattern of the temporal influx of domestic and foreign tourists can be observed using trend analysis, which depicts the increasing or decreasing pattern of quantitative data. Figure 2 depicts the trend of domestic tourists' arrival in the state during 2000–2021. In 2000, the volume of domestic tourists arriving was 11.07 million, which increased to 16.28 million in 2005. Due to the cloudburst that occurred in Nachni, which is close to Munsiyari in the Pithoragarh district, the trend of tourist arrivals in 2009 was seen to be consistent with that of the previous year. The sacred "Kumbh Fair," which was held in Haridwar on the shores of the Ganga, a significant pilgrimage hub of the state, in 2010, resulted in a huge increase in the number of visitors. In June 2013, a flash flood came down upon the overflowing bank of Chorobari Lake in the state. This tragedy has affected Uttarakhand tourism on a large scale.

Figure 2. Domestic tourist arrivals in Uttarakhand (2000-2021)



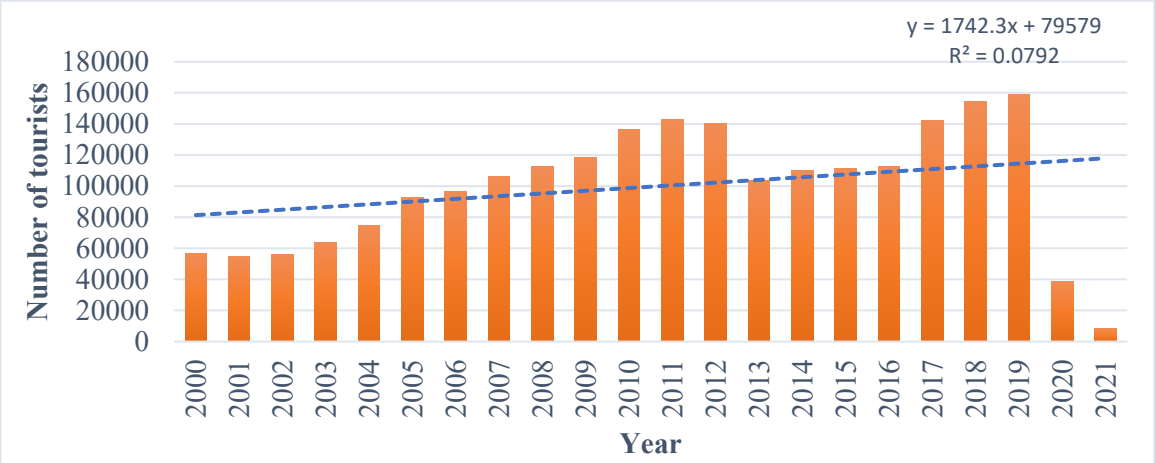
Source: Uttarakhand Tourism Development Board, Dehradun

In 2013, only 21.02 million domestic tourists visited the state, which was 1/3 less than the 2010 figure. After 2014, there was an upswing in domestic tourist arrivals, which increased to 29.29 million in 2015 and crossed the 39.06 million marks in 2019. Due to the COVID-19 pandemic, the number of tourists arriving suddenly declined to 7.8 million in 2020. After the receding of the COVID pandemic in 2021, the volume of domestic

tourist arrivals started increasing again. However, it may take a few more years to reach the all-time high of 2019.

Figure 3 reveals the annual trend of foreign tourists' arrival in the state during 2000–2021. In 2000, the volume of foreign tourists arriving in the state was 56766, which increased to 92744 in 2005. It remained constant in successive years due to the cloudburst that occurred in Nachni, which is close to Munsiyari in the Pithoragarh district. In 2010, like domestic tourism, there was a tremendous increase in tourists' arrival in the state because of the holy 'Kumbh Fair, which comes every 12 years as Jupiter takes this much time to revolve around the Sun, and according to Hindu mythology, Jupiter has a significant impact on human life on the earth. The number of tourists arriving in the state was 0.13 million. There has been a decrease in tourist arrivals in 2013 due to cloudbursts in the state. After 2013, the trend of foreign tourists' arrival in the state continuously increased. The volume of tourists arriving in 2014 was 1.09 lakh, which increased to 1.58 lakh in 2019. Thereafter, due to the COVID-19 pandemic in 2020 and 2021, there was a sharp dip in foreign tourist arrivals in the state (Figure 3).

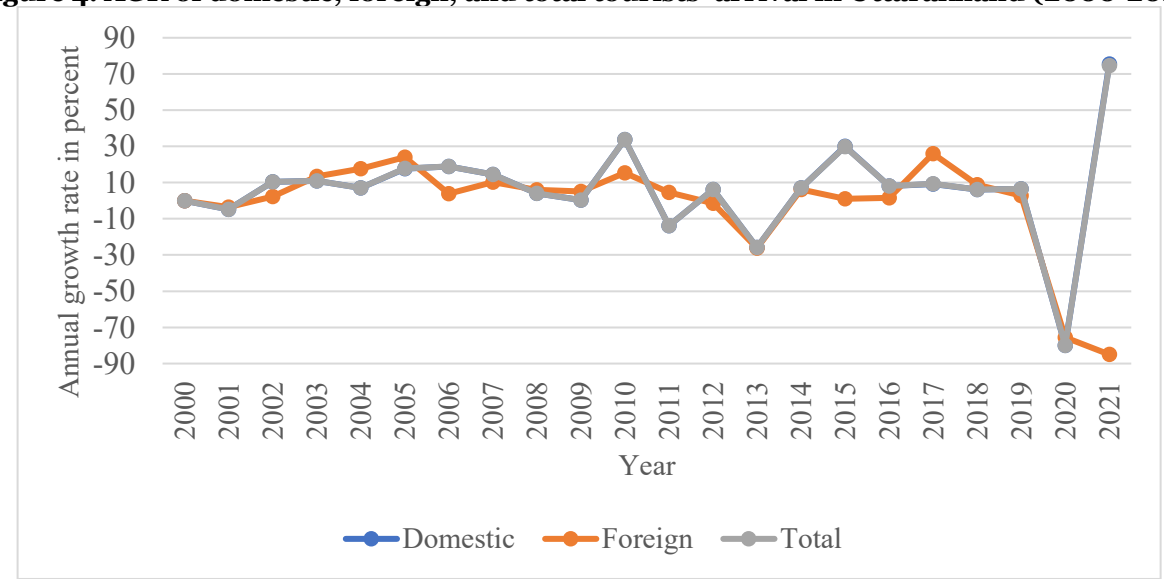
Figure 3. Foreign tourist arrivals in Uttarakhand (2000-2021)



Source: Uttarakhand Tourism Development Board, Dehradun

Figure 4 shows the annual growth rate of domestic and foreign tourist arrivals in the state during 2000–2021. The AGR of domestic and foreign tourists' arrival in 2001 was negative, as it was observed as -4.78% and -3.64%, but increased significantly in 2005 to 17.72% and 24.05%, respectively. The highest AGR of domestic tourists was observed in 2010, which was 33.76%, while for foreign tourists' arrival, it was observed in 2017, which was 25.98%.

Figure 4. AGR of domestic, foreign, and total tourists' arrival in Uttarakhand (2000-2021)



Source: Uttarakhand Tourism Development Board, Dehradun.

In 2013 observed a negative AGR was observed in both categories of tourists' arrival due to natural hazards that occurred in June 2013 in the state, which were -25.77% and -26.28%, respectively. There was a significant increase in the AGR of domestic tourists' arrival in 2015, which was 30.08%, while there was a marginal change

of only 1.04% in the AGR of foreign tourists' arrival in the state. The AGR of both domestic and foreign tourist arrivals nosedived again and recorded extremely negative growth in 2020 due to the COVID-19 pandemic of -79.94% and -75.62%, respectively. However, the post-pandemic time in 2021 attained equally high positive growth in domestic tourist arrivals. Contrarily, during the same year, there was a negative growth rate in FTAs, with an AGR of -84.97%.

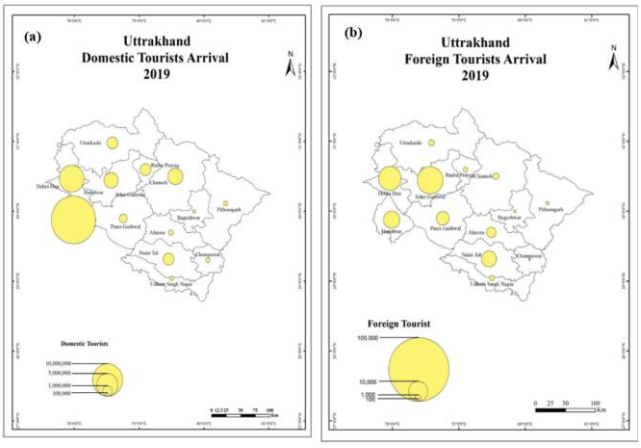
Table I. Tourist arrival in Uttarakhand (2000-2021)

	Domestic		Foreigner		Total	
Year	**Number of Tourists**	% Change	**Number of Tourists**	% Change	**Number of Tourists**	% Change
2000	11078814	...	56766	...	11135580	...
2001	10548784	-4.78	54701	-3.64	10603485	-4.78
2002	11652018	10.46	55974	2.33	11707992	10.42
2003	12929593	10.96	63499	13.44	12993092	10.98
2004	13830045	6.96	74761	17.74	13904806	7.02
2005	16280765	17.72	92744	24.05	16373509	17.75
2006	19358453	18.90	96264	3.80	19454717	18.82
2007	22154250	14.44	106150	10.27	22260400	14.42
2008	23064170	4.11	112423	5.91	23176593	4.12
2009	23154214	0.39	118243	5.18	23272457	0.41
2010	30972134	33.76	136459	15.41	31108593	33.67
2011	26665753	-13.90	142687	4.56	26808440	-13.82
2012	28329686	6.24	140524	-1.52	28470210	6.20
2013	21028010	-25.77	103596	-26.28	21131606	-25.78
2014	22520097	7.10	109948	6.13	22630045	7.09
2015	29295152	30.08	111094	1.04	29406246	29.94
2016	31663782	8.09	112799	1.53	31776581	8.06
2017	34581097	9.21	142102	25.98	34723199	9.27
2018	36697678	6.12	154526	8.74	36852204	6.13
2019	39066776	6.46	158964	2.87	39225740	6.44
2020	7836002	-79.94	38763	-75.62	7874765	-79.92
2021	19434475	75.42	8532	-84.97	19443007	74.60
	CAGR	14.35		15.55		14.36

Source: Uttarakhand Tourism Development Board, Dehradun.

Figure 5a shows the district-wise domestic tourists' arrival in the state during 2019. Haridwar has received the highest number of domestic tourists in the state (21.74 million), which constitutes 56% of the total domestic tourists arriving there. It is one of the major religious centers For Hindus. The district lies in the Haridwar-Pauri-Devprayag and Rishikesh tourist circuit, which is the most important religious center not only in Uttarakhand but also in the whole of India and is well connected by airways, railways, and the road network. With 6.75 million domestic tourists, Dehradun ranked 2nd and shared 17% of the total domestic tourists' arrival in the state. The state's capital, Dehradun, is home to numerous national research institutions, including the Forest Research Institute of India, the Wild Life Institute of India, the Wadia Institute of Himalayan Geology, the Indian Institute of Remote Sensing, the Indian Institute of Petroleum, the Indian Military Academy, the Survey of India, the Doon State University, and several other educational institutions. Dehradun is located in the foothills of the Himalayas, and many tourists and pilgrimage centers are located in its periphery, such as Rajaji National Park, Mussoorie-Dhanoulti, Rishikesh, and Haridwar. It is also the gateway to Chardham (the four Hindu pilgrimage centers) of Gangotri, Kedarnath, Badrinath, and Yamunotri, due to which it is popularly called the abode of God, or *Devabhumi*.

Figure 5. Maps show district-wise (a) domestic tourists' arrival and (b) foreign tourists' arrival



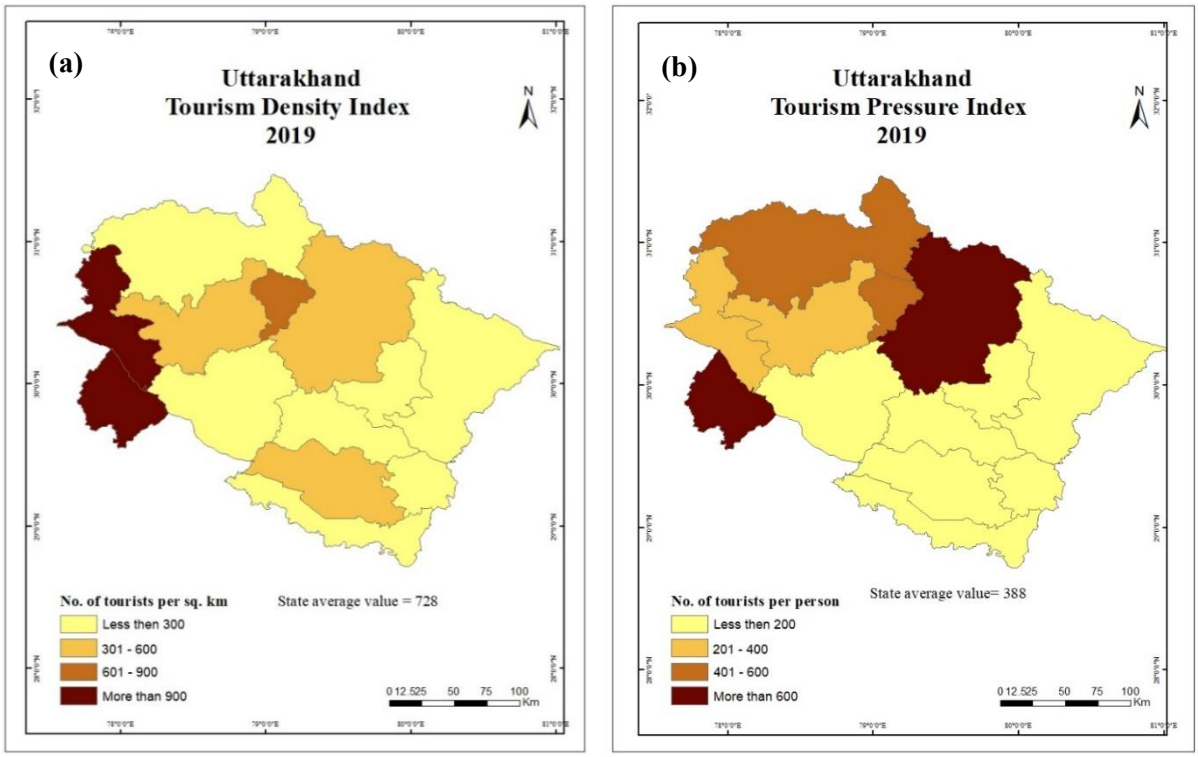
It was followed by the Chamoli district (2.52 million), Tehri Garhwal (2.29 million), and Uttarkashi district (1.37 million). The pilgrimage tourist destinations in Uttarkashi, such as Gangotri Temple, Yamunotri Temple, Vishwanath Temple, Kedar Tal, and Dodi Tal Lake, are situated at high altitudes and remain closed in the winter season. These destinations are open from mid-May to November. These destinations are highly eco-sensitive, susceptible to atmospheric hazards, and have poor infrastructural facilities. The lowest number of domestic tourists has been observed in Bageshwar district, which is 0.1 million, followed by Udham Singh Nagar and Pithoragarh, which are 0.16 million and 0.20 million, respectively.

Figure 5b shows the foreign tourists' arrival in the state in 2019. Tehri Garhwal and Dehradun districts are the two most important districts, which together received more than half of the total foreign tourist arrivals in the state. Tehri district alone has received 51348 tourists, which is 1/3 of the total foreign tourists who visited the state. At the confluence of the rivers Bhagirathi and Bhilangana in Tehri, the district boasts one of the largest dams, which is a popular tourist destination. In the Dehradun district, Rishikesh is an important center of Yoga and meditation, attracting many tourists from around the world. After Tehri and Dehradun districts, Haridwar, Nainital, and Pauri Garhwal have received a significant number of foreign tourists, which are 20807, 17738, and 12407, respectively. Haridwar is the most important religious center of the state, and Nainital is famous for the Naini Lake and Jim Corbett National Park, which attracts a large number of foreign tourists. The lowest volume of foreign tourists has visited the Champawat district (191). The other low-foreign tourist attraction districts include Bageshwar and Pithoragarh districts. These districts are located in the southeastern part of the state, where Nepal shares its international boundary, are less accessible by means of transportation, and have no popular pilgrimage destinations.

Figure 6a shows the tourism density index in Uttarakhand state in 2019. It depicts the relationship between tourists' arrival and the total area of the region. Haridwar (9224) and Dehradun (2199) were placed in the category of very high tourism density. These two districts received around 70% of the total tourist arrivals in the state. Haridwar is the major religious center of the state, which attracts a large number of tourists, and Dehradun district is the hub of yoga, education, and important national institutions, and it has good transit connections. These are followed by Rudra Prayag, though its index value is slightly lower than the state average of 728 in 2019.

The district has one of the *Char Dham* pilgrimage centers known as Kedarnath and Tungnath (Panch-Kedar). A large number of Hindu devotees come here to pay obeisance to Lord Shiva. Chamoli, Tehri Garhwal, and Nainital show a moderate tourism density index value, though Chamoli district has Badrinath, which is one of the *Char Dham* destinations, and three Kedar out of Panch Kedar, namely, Rudranath, Madmaheshwar, and Kalpeshwar, while Tehri Garhwal district has one of the tallest Tehri Dams, an important tourist destination. Auli, in the Chamoli district, has emerged as an important winter sports center in recent years. All the *Char Dham* pilgrims' centers are located in the cryosphere in the high Himalayas, due to which tourism duration is restricted between mid-May and November only and remain closed for pilgrimage tourism in the rest of the months.

Figure 6. Maps show the (a) tourism density index and (b) tourism pressure index in Uttarakhand



Hence, even though they are very important pilgrim centers, the annual number of travelers is minuscule as compared to Haridwar and Rishikesh (Dehradun district), which are all-weather destinations. The districts in the northeastern part of the state known as the Kumaon region show a low tourism density index value because these districts have accessibility constraints, and secondly, no major pilgrimage destination is located here. But there is a high scope for tourism development in this region. For example, Nainital is emerging as a winter sports center. In the Nainital district, there are various tourist destinations such as Nainital Lake, Naukuchiatal Lake, Bhimtal Lake, the Wildlife Art Gallery, Jim Corbett National Park, Eco Cave Garden, and Naina Devi Temple, which attract thousands of domestic as well as foreign tourists. Apart from these, tourist destinations such as Ranikhet, Binsar, Kausani, Munsiyari, Mukteshwar, and Jeolikot (known as the gateway to Nainital Lake) have huge potential to attract tourists around the world.

Figure 6b shows the tourism pressure index of Uttarakhand during 2019. Tourism pressure is the ratio of the number of tourists to the area's total population. This figure clearly shows the highest tourism pressure index value found in the Garhwal region. Because this region received around 90% of the total tourist arrivals in the state, major pilgrimage centers such as the *Char Dham,* namely Gangotri and Yamunotry (Uttarkashi district), Kedarnath (Rudra Prayag district), and Badrinath (Chamoli district), and Panch Kedar, namely Kedarnath, Tunganath (Rudra Prayag district), Rudranath, Madmaheshwar, and Kalpeshwar (Chamoli district), and various national institutions, are located in this region. The state's average tourism pressure index is 388 tourists per person. The Kumaon region received around 10% of the total tourists in the state. Only a few tourist destinations, such as Nainital, Ranikhet, Kausani, and Jim Corbett National Park, are situated here, which is why the district in the Kumaon region shows low tourism pressure.

4.2 SEASONALITY IN TOURIST ARRIVAL IN UTTARAKHAND

Due to the weather conditions and public and school holidays, there is fluctuation in the demand and supply of the tourism industry, termed seasonality (Baron, 1972; Allcock, 1989; Cooper et al., 2005; Parrila et al., 2007; Lee et al., 2008; Chung, 2009; Cannas, 2012). Multiple reasons are responsible for seasonality, which is grouped into natural and institutional factors (Logar, 2010; Cantis et al., 2011; Connell et al., 2015; Corluka, 2019). The regular temporal fluctuation in natural phenomena is related to natural factors, which include variables like sunlight, daylight, air temperature, snowfall, ice cover, rainfall, wind, humidity, precipitation, cloudiness, and visibility (Allcock, 1989; Butler, 1994). In contrast, institutional elements include religious, cultural, social, ethnic, and organizational factors and represent a society's cultural beliefs and rules (Baron, 1972; Hinch and Hickey, 1996). Religious events like pilgrimage are one of the most important institutional factors (Allcock, 1989). According to Koenig and Bischoff (2004), seasonal fluctuations brought about by natural events are predictable since they are often stable in a specific region and reoccur with only minor modifications, but it is difficult to forecast institutional influences because these are based on human behavior and consumer decision-making (Lee et al., 2008). Figure 7 and Table 2 show the seasonality of tourist arrivals in Uttarakhand from 2011 to 2021. Due to the harsh climatic conditions of the Himalayan state, it has been noted from the table and graph that the lowest seasonal indices of domestic tourists, which are 57, 68, and 81, respectively, were found in January, February, and March. As a result, these months can be referred to as the first off-peak seasonal months for domestic tourists. These are followed by the April seasonal indicators, which might be considered the first shoulder-seasonal month for domestic tourist arrivals. The highest seasonal indices of domestic tourists have been observed in June, with seasonal indices of 162, followed by May, July, and August, with seasonal indices of 132, 139, and 123, respectively. So, these months might be referred to as the peak season for domestic tourist arrivals.

Table II. Seasonal indices of tourist arrival in Uttarakhand from 2011 to 2021

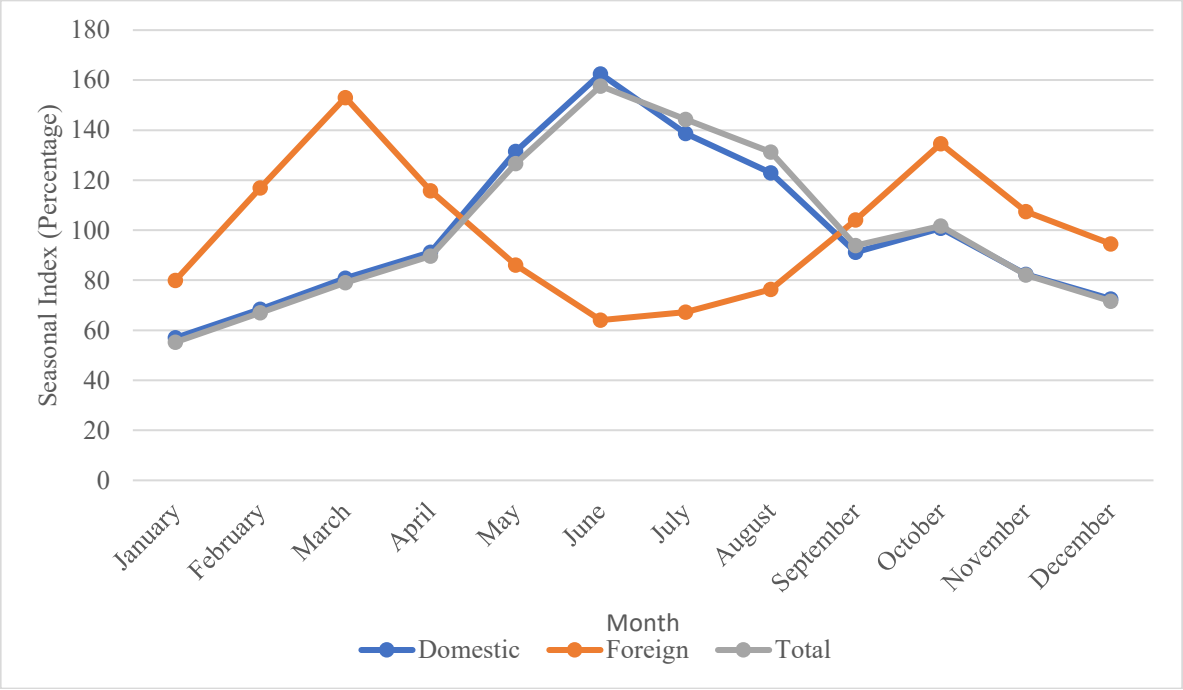
Months	Domestic	Foreign	Total
January	57	80	55
February	68	117	67
March	81	153	79
April	91	116	90
May	132	86	127
June	162	64	158
July	139	67	144
August	123	76	131
September	91	104	94
October	101	135	102
November	82	107	82
December	73	94	72

Source: Calculated by the author

In June and July, Uttarakhand has pleasant weather, which attracts many tourists. At the same time, nearby plain areas remain under scorching heat, thus providing ideal conditions for domestic tourism to the hills and mountains of the Himalayas. Apart from these, many governments and private institutions offer summer

vacations in these months, which is the strongest factor influencing domestic tourism across the country. Further, some *Hindu* religious festivals like *Maha-Shivratri* also fall in these months. Therefore, a large number of *Shiv Bhakat* (he who is a worshipper of Lord Shiva) go to Haridwar to take *Kavad* (a genre of religious performance where participants ritually carry water from the holy river Ganga to offer it in their local Shiva shrines or to their deities). The months of September and October can be referred to as the second shoulder season because of the low influx of domestic tourists arriving during those months. Similarly, the lowest seasonal indices, 82 and 73, respectively, were recorded in November and December, which might be considered the second off-peak seasonal months. On the other hand, Figure 7 shows that there are two peak seasons for foreign tourist arrivals (FTA). The first one was seen in March with seasonal indices of 153 and the second one in October with seasonal indices of 135; both months can be regarded as the peak season for foreign tourist arrivals. It is followed by the February and September months, with seasonal indices of 117 and 104, respectively and these can be called the first and second shoulder-seasonal months for the FTAs. With seasonal indices of 64, 67, and 76, respectively, the months of June, July, and August might be considered the FTA's first off-peak season because they have the lowest seasonal indices. The months from November to January, which might be considered the second off-peak seasonal months, are likewise a lean time for FTA.

Figure 7. Seasonality of tourist arrival in Uttarakhand from 2011 to 2021



Source: Uttarakhand Tourism Development Board, Dehradun

5 CONCLUSIONS

Tourism is a significant source of income for the people of Uttarakhand. The state provides various forms of tourism such as leisure, pilgrimage, adventure, wildlife, hill resorts, river rafting, mountaineering, health, etc., which attract a large number of tourists not only from India but throughout the world. Haridwar and Dehradun districts are the most important centers of domestic tourism because they are centers of Hindu religion and culture, while Tehri Garhwal and Dehradun districts are the FTAs because Dehradun district is the center of Yoga and meditation, which attracts a large number of tourists from all over the world. Domestic tourism is governed by vacation periods across India in May and June, while FTA's peak season is March and October.
The development of tourism in Uttarakhand is hampered by a few natural limitations. It is sensitive to numerous types of natural hazards or calamities due to its unique geo-tectonic, geological, geomorphologic, and climatic circumstances; therefore, tourism should be properly regulated in this region. For example, in June 2013, there was a drastic decrease in tourist arrivals because of a flash flood due to the overflowing bank of the Chorobari Lake in the state. After 2013, the state government adopted various schemes and policies to promote tourism in the state. In 2015, the Uttarakhand government declared 2015 the year for the 'promotion of tourism' to develop skiing centers in the state. In 2018, the government of Uttarakhand adopted a 'tourism policy 2018'. This policy's primary goal is to enhance Uttarakhand's prestige as a secure and hospitable tourist spot. In 2020, the state government will prepare a draught of an 'ecotourism policy' to open large areas for ecotourism activities and protect wildlife and biodiversity.

ACKNOWLEDGMENT

We are grateful to the Uttarakhand Tourism Development Board, Dehradun for providing the required data at their earliest. We also consider the contribution of all those who helped us by giving their valuable suggestions.

COMPLIANCE WITH ETHICAL STANDARDS

All authors have read, understood, and complied as applicable with the statement on "Ethical responsibilities of Authors" as found in the Author guidelines.

FUNDING

The first author has received funding from University Grants Commission (UGC) under the reference number 200510047425.

REFERENCES

1. Akama, J. S., & Kieti, D. (2007). Tourism and socio-economic development in developing countries: A case study of Mombasa Resort in Kenya. *Journal of sustainable tourism*, *15*(6), 735-748.
2. Allcock, J. B. (1989), Seasonality, In Witt, S. F. and Moutinho, L. (eds), Tourism Marketing and Management Handbook, London, Prentice Hall, 387-392.
3. Baron, R. R. V. (1972), Seasonality in tourism – part I, International Tourism Quarterly, Vol 4, 40-64.
4. Baum, T. (1999). Seasonality in tourism: understanding the challenges. Tourism Economics, 5(1), 5-8. https://doi.org/10.1177/135481669900500101.
5. Baum, T., & Hagen, L. (1999). Responses to seasonality: the experiences of peripheral destinations. *International journal of tourism research*, *1*(5), 299-312.
6. Baum, T., & Lundtorp, S., (2001). Seasonality in tourism. Advances in Tourism Research Series, Pergamon, UK: Elsevier Science.
7. Butler, R. (1994), Seasonality in tourism: Issues and problems, In: Seaton, A.V. (ed), Tourism: The state of Art, p. 332-339.
8. Butler, R. W. (2001). Seasonality in tourism: Issues and implications. Seasonality in tourism, 5-21.
9. Cannas, R. (2012). An overview of Tourism Seasonality: key concepts and policy. *AlmaTourism*, *3*(5), 40-58.
10. Chung, J. Y. (2009). Seasonality in tourism: A review. *E-review of Tourism Research*, *7*(5).
11. Connell, J., Page, S. J., & Meyer, D. (2015). Visitor attractions and events: Responding to seasonality. *Tourism management*, *46*, 283-298.
12. Constantin, S. & Daniela, F. (2011). Statistical methods used in the analysis and forecast of the tourism activity affected by seasonality. Romanian Economic and Business Review, 6, 4.
13. Cooper, C., Flechter, J., Fyall, A., Gilbert, D., Wanhill, S. (2005), Tourism principles and practice, (3re ed.), Pearson Education.
14. Corluka, G. (2019). Tourism seasonality–an overview. *Journal of Business Paradigms*, *4*(1), 21-43.
15. De Cantis, S., Ferrante, M., & Vaccina, F. (2011). Seasonal pattern and amplitude–a logical framework to analyse seasonality in tourism: an application to bed occupancy in Sicilian hotels. *Tourism Economics*, *17*(3), 655-675.
16. Goeldner, C.R. & Ritchie, J.R.B. (2009) Tourism: principles, practices, philosophies, New York City: John Wiley & Sons.
17. Goffi, G., Cucculelli, M., & Masiero, L. (2019). Fostering tourism destination competitiveness in developing countries: The role of sustainability. *Journal of cleaner production*, *209*, 101-115.
18. Henderson, J. C. (2007). Corporate social responsibility and tourism: Hotel companies in Phuket, Thailand, after the Indian Ocean tsunami. *International Journal of Hospitality Management*, *26*(1), 228-239.
19. Hinch, T. D., Hickey, G. P. (1996) Tourism attractions and seasonality: spatial relationships in Alberta, In Tourism for All Seasons: Using Research to Meet the Challenge of Seasonality, Mackay K, Boyd K R (eds). University of Manitoba: Winnipeg, Manitoba; 69–76.
20. Jang, S. S. (2004). Mitigating tourism seasonality: A quantitative approach. *Annals of tourism research*, *31*(4), 819-836.
21. Jangra, R., & Kaushik, S. P. (2018). Analysis of trends and seasonality in the tourism industry: The case of a cold desert destination-Kinnaur, Himachal Pradesh. *African Journal of Hospitality, Tourism and Leisure*, *7*(1), 1-16.
22. Kaur, M. & Sharma, N. (1997). Growth and development of the Indian tourism industry. JOHAR - Journal of Hospitality Application & Research, 7 (2), 14-24.
23. Koenig, N., Bischoff, E. E. (2004), "Analyzing seasonality in welsh room occupancy data", Annals of Tourism Research, Vol. 31, No. 2, 374-392. doi: http://dx.doi.org/10.1016/j. ijhm.2012.12.002.

24. Kumar, D. S., Rana, G., & Mairaj, H. (2015). Status and scenario of tourism industry in India–a case study of Uttarakhand. *Sustainable Tourism Management*, 585-575.
25. Lee, C., Bergin-Seers, S., Galloway, G., O'Mahony, B., McMurray, A. (2008) Seasonality in the tourism industry, impacts and strategies, CRC Sustainable Tourism Pty Ltd 2008, Gold Coast, Queensland, Australia.
26. Le-Klähn, D. T., & Edwards, D. (2014). Conference Report: The best education network thinks tank xiii: Engaging communities in sustainable tourism development, Taylors University, Kuala Lumpur, Malaysia 2013. *Journal of Hospitality, Leisure, Sport & Tourism Education*, *14*, 1-5.
27. Logar, I. (2010). Sustainable tourism management in Crikvenica, Croatia: An assessment of policy instruments. *Tourism management*, *31*(1), 125-135.
28. Lordkipanidze, M., Brezet, H., & Backman, M. (2005). The entrepreneurship factor in sustainable tourism development. *Journal of cleaner production*, *13*(8), 787-798.
29. Molla, M. B. (2015). The value of urban green infrastructure and its environmental response in urban ecosystem: A literature review. *International Journal of Environmental Sciences*, *4*(2), 89-101.
30. Nikolaos Pappas (2014) The effect of distance, expenditure, and culture on the expression of social status through tourism, Tourism planning & development, 11:4, 387-404, DOI: 10.1080/21568316.2014. 883425.
31. Ollivaud, P., & Haxton, P. (2019). Making the most of tourism in Indonesia to promote sustainable regional development.
32. Parks, T. H., Parks, T. A., & Allen, C. (2009). The development of a framework for studying ecotourism. *International Journal of Management*, *26*(1), 89.
33. Parrilla, J. C., Font, A. R., & Nadal, J. R. (2007). Accommodation determinants of seasonal patterns. *Annals of Tourism Research*, *34*(2), 422-436.
34. Perera, K. K. (2017). An analysis of recent trends in tourist arrivals in Sri Lanka. *Athens Journal of Tourism*, *4*(1), 51-80.
35. Ryan, C. (2003). Recreational tourism. In *Recreational Tourism*. Channel View Publications.
36. Sati, V. P. (2013). Tourism practices and approaches for its development in the Uttarakhand Himalaya, India, Journal of Tourism Challenges and Trends, Vol 6 (1), Pp. 97-112.
37. Sigala, M. (2020). Tourism and COVID-19: Impacts and implications for advancing and resetting industry and research. *Journal of business research*, *117*, 312-321.
38. Sosa, M., Aulet, S., & Mundet, L. (2021). Community-based tourism through food: A proposal of sustainable tourism indicators for isolated and rural destinations in mexico. *Sustainability*, *13*(12), 6693.
39. Srijuntrapun, P., Fisher, D., & Rennie, H. G. (2018). Assessing the sustainability of tourism-related livelihoods in an urban World Heritage Site. *Journal of Heritage Tourism*, *13*(5), 395-410.
40. Telfer, D., & Sharpley, R. (2007). Tourism and development in the developing world. London/New York: Routledge.
41. Uttarakhand Tourism. (2008). *Uttarakhand Tourism Development Master Plan Executive Summary*. *III*(April 2008). https://uttarakhandtourism.gov.in/wp-content/uploads/2019/05/volume-1-executive-summary.
42. Yacoumis, J. (1980). Tackling seasonality-The case of Sri Lanka. International Journal of Tourism Management, 1(2), 84-98.
43. Zhuang, X., Yao, Y., & Li, J. (2019). Sociocultural impacts of tourism on residents of world cultural heritage sites in China. *Sustainability*, *11*(3), 840.