



Analysis of Tourist Arrivals and Tourism's GDP Contribution in Nepal: 2009-2023

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Abstracts: This study examines the evolution of tourism in Nepal from 2009 to 2023, analyzing tourist arrivals, economic contribution, and industry development patterns. Using a mixed-methods approach combining quantitative analysis of tourism statistics with qualitative document analysis, the study investigates the relationship between tourist arrivals and GDP contribution. The Mann-Kendall test is a non-parametric statistical technique is used to identify trends in time-series data. It evaluates whether a variable shows a consistent upward or downward trend over a defined timeframe. The null hypothesis (H₀) states that there is no trend in the tourism data of Nepal. The research reveals significant growth in tourism until 2019, followed by severe disruption due to COVID-19, with subsequent recovery patterns emerging post-2021. Findings show tourism's contribution to GDP increased from 1.7% in 2021 to 2.1% in 2023, while tourist arrivals recovered to 963,571 in 2023. The study identifies key challenges including infrastructure limitations, seasonal variations, and recovery obstacles, while highlighting opportunities for sustainable tourism development. These findings have important implications for policy development and tourism management in Nepal and similar developing nations.

Keywords: GDP, Economy, Nepal, Tourism, Tourists

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1. Introduction

Tourism is known as the short time movement of people from one place to another place for various purposes. Advanced Oxford Dictionary, 9th edition (2002) introduced tourism as the business-related activities related to services like lodging, folding with-entertainment in leisure period. It is also concerned with visiting new place for recreation. Tourism involves temporarily traveling to destinations beyond one's usual living and working areas. He/she participates in a variety of activities while visiting new destinations. Tourism is defined by linking the activities and investment of tourists visited in a particular area. Smith (2017, p.4) defines as, "A tourist is described as an individual who temporarily travels to a different place from their home to experience a change and leisure". In the same lines The World Tourism Organization (WTO) Report (2014) defines, "A tourist as someone who travels to a country other than their usual residence for a period of at least one night but not exceeding one year, with the main purpose of the visit being something other than work". WTO reports focused on period of living except homeland. The activities and investment of the tourist creates a kind of business, which is known as tourism. In this context Page (1999, p.12) defines, 'Tourism' as the temporary movement of people to destinations outside their usual living and working place, encompassing all types of travel purposes". The Government of Nepal, Ministry of Tourism and Civil Aviation, cited the United Nations' definition of tourism as, "It entails journeying and residing in locations beyond one's typical surroundings for a duration of up to twelve months, whether for recreational, professional, or any other reason. (Ministry of Culture, Tourism and Civil Aviation (MOTCA, 2018). Tourism has become a significant aspect of modern spatial behavior, leading to various global changes in human life. Nepal, with its diverse tourist destinations, offers numerous comparative advantages. The country's breathtaking mountains, diverse cultures, rich flora and fauna, and varied climate attract a large and increasing number of tourists from all over the world. It shows the emergence possibility of tourism in Nepal, however, the number of tourists arrival in Nepal is

not so high and contribution of tourism sectors in national GDP also lower than the other sectors. In this context, the study seeks the answers of the research question how is the situation of tourists' arrival in Nepal from 2009 to 2013.

Trend of tourism arrival plays significance role to increase the income from tourism sectors so that government should make policy to pull the quality tourist in Nepal, however, tourism business is one of the important income sectors of Nepal. It has long history in Nepal and still international communities like world Bank, International monetary Fund, United nation Development fund have providing support for the structural development of the tourism. Annual Budget of Nepal 2024 noted that international organizations like World Bank support Nepal for the structural development of tourism sector. In this context, the study analyzed the outcomes and efforts of government for the development of tourism through critically examined the trend of tourist arrival in Nepal and the contribution of tourism in GDP because such types of research help to fulfill the gap of research and finds out the fact of tourism sectors in Nepal.

2. Literature Reviews

Nepal has long history of tourism because people from India and China had travelled of Nepal. Adhikari, (2020) mentioned, "King Ashoka, (c. 304 – 232 BCE) from India and Huangshan, a Chinese traveler who travelled Nepal in 400 were the remarkable tourists of Nepal mentioned in the historical document" (p.3). Many travelers visited Nepal in medieval period; however, there is lack of official records of such visits. Nepal began tourism business after 1951 after establishment of democracy in Nepal. In this regard (Satyal, 1988, p.23) notes, "In 1952, Nepal saw a significant increase in tourist numbers for the first time. The following year, in 1953, Tenzing Sherpa and Sir Edmund Hillary successfully reached the summit of Mount Everest, the world's highest peak". Nepal has emerged as a prominent global tourist destination, with a growing number of visitors flocking to the country. The influx of tourists in Nepal has been steadily increasing over time. Burger (1987, p.34) mentioned, "The tourist inflow in Nepal rapidly increased. He indicated that more than 10,000 tourist arrived Nepal in 1976". Government effort plays import role to increase the number of tourists in short period, Nepal government established separate tourism department in 1975 and promote tourism industries in Nepal.

Scholar from home and aboard discussed on tourism industries. Pradhanaanga (1993), Pant (2014), Shrestha (2016), Badal (2019) and Nepal (2022) are scholar from home talked about different aspects of tourism in Nepal. Like that EI-said and Aziz (2022), Durga and Gupta (2012), Pollaco (2010) and present the tourism in international context.

In 2014, Pant carried out research on the economic impact of tourism in Nepal, identifying it as a vital and developing industry with substantial opportunities for expansion. The objective of the study was to gain an understanding of the present state of the tourism sector, assess its economic influence on the nation's economy, and anticipate forthcoming trends in tourist influx. Shrestha (2016) also examined the impact of tourism on the economy of Nepal, along with the challenges and potential advantages present in the tourism sector. The study focused on matters related to the impact of tourism on the national economy, infrastructure, government policies, and coordination challenges. Despite these obstacles, the research emphasized the favorable outlook for tourism in terms of employment opportunities, contribution to the national GDP, and overall economic progress.

Badal (2019) discussed tourism opportunities for 2020, including projected tourist arrivals, job creation, advancements in nature culture, connections with Indian and Chinese economies, public-private partnerships, decentralization of Nepalese tourism, and investment prospects. Challenges like lack infrastructure, limited connectivity, insufficient investments, weak national policy, poor coordination among government agencies, and lack of marketing resources are the main problem of tourism industries. It is necessary to address the challenges through improving in policy, enhancing investment, developing infrastructure and promoting the stakeholders like private and public agencies have been working in tourism sector. Similarly, Nepal (2022) conducted a study on sustainable tourism and focused on, the

challenges of developing sustainable tourism. Earthquake of 2015 and the Covid-19 pandemic created the problem on tourism development.

2.1 Reviews of International Journals

Hall & Page (2017). Notes about the tourism and its economic impact in his book entitled *The Routledge Handbook of Tourism in Asia*. The book focuses on a contemporary perspective on the region, emphasizing its continuous growth and development as an important center and contributor to tourism, marked by a high volume of intra-regional travel. In the same way Sharma & Hassan (2022) analyzed impacts of earth quake of tourism sectors of Nepal in this article entitled, "Tourism Recovery Strategies Following Natural Disasters: A Study of Nepal's Response to the 2015 Earthquake" that published in *Journal of Sustainable Tourism*. Major focus of the article goes on the situation of tourism sector of earthquake occurred in 2015. Li, & Zhang (2021) discussed about the situation of recovery of tourism sector after pandemic. In their article entitled, "Post-Pandemic Tourism Recovery: A Comparative Analysis of Asian Destinations." published in the journal of *Tourism Management*. The article focuses on the efforts of government and public sector for the recovery of tourism during post pandemic period. Nepal also brought various programs to recover the tourism sectors after earth quake of 2015 and COVID-19 pandemic. In the same line, Wilson, & Hollinshead, (2023) talk about sustainability of the tourism in their article *Sustainable Tourism Development in Developing Nations: Challenges and Opportunities*", published in the *Journal of Tourism Studies*. The article focuses on the challenges of sustainable tourism due to intelligence of the preservation of environment, which play important role for the promotion of tourism.

Butler (2019) discussed about the framework analysis of tourism and resilience in his article entitled "Tourism and Resilience in Development Context: A Framework for Analysis" published in the journal *Tourism Planning & Development*. This research evaluates the resilience of tourism in Grenada. It highlights that local tourism stakeholders acknowledge the considerable risks that natural disasters present to the destination; however, they have not adopted adequate strategies to improve resilience at both the destination and organizational levels. Like that Nepal & Saarinen (2022). Highlight the issue related to the challenges of sustainable tourism in Himalaya region in their article entitled "Tourism Development in the Himalayas: Opportunities and Challenges published in the *Journal of Sustainable Tourism*. The article focuses on infrastructure development in the Himalaya region and climate change that create great challenges for the sustainable tourism development in Himalaya region.

Scholar like EI-said and Aziz (2022) explore the dynamic nature of the tourism industry, covering various travel destinations from coastal areas to Mount Everest. The study uses the TAM and PADM to analyze factors influencing individuals' decisions to adopt Virtual Tours (VTs) as temporary alternatives. Durga and Gupta (2012) studied barriers to community participation in tourism development at Sudhmahadev in Jammu and Kashmir, finding similarities to barriers proposed.

The World Bank's 2020 Nepal Development Update highlighted the impact of Covid-19 on the country's economy. Initially affecting tourism, with a drop in arrivals from China and a halt in visitor visas, the crisis had broader repercussions. Nepal's GDP growth rate for FY 2020 is estimated at 1.8%, a significant decrease from 7% in FY 2019. The Government of Nepal introduced a new tourism policy in 2008, aiming to create jobs, enhance living standards, and increase revenue through the expansion of tourism activities and enterprises in the nation. The policy also focuses on developing various forms of tourism, including domestic, village, sports, education, agro, and health tourism in Nepal. In the same way tourism, board was established in 1998 and other tourism development committee and corporate instructions are jointly effort to enhance the tourism industry in Nepal. After promulgated on new constitution in 2015 ' constitution of Nepal' local province and federal government jointly effort on tourism development in Nepal, however, income of the tourism can't cover more than 2% of total GDP of Nepal. Like that, the annual tourists entrance their stay time and expenses not so high. In this context, the study analyzes the numbers tourists arrive in Nepal; propose of visit and income of tourism sectors and its contribution in employment and GDP since last 15 years.

Above-mentioned reviews noted that none of the study systematically analyzed the relationship between trends of tourism arrival in Nepal and its contribution of national GDP in recent time. The study will be helpful to make better policy for the tourism development in Nepal as well as findings of the study can be helpful for the developing and underdeveloped nations who want to enhance the tourism sectors for economic development of the national.

3. Theoretical framework

The study highlights the issue of tourist arrival and contribution of the income of tourism in national GDP in different financial years so that it uses the concept of Brau et. al, (2007) as a theoretical concept. They talk about how income of tourism plays a role for the contribution of GDP of any nation. They note, "Relative value of tourism services grows over time, hence they develop at a lower rate" (p5). Tourism sector provides jobs in different sectors like travel, hotels, trekking and guide sectors. Overall employment of the tourism sector increases the job and income of the people, which directly contributes to GDP. Like that, to enhance the market of local products, taxes, and revenue paid by tourists indirectly help in national GDP. Dwyer et al (2000) notes, "Factor supply constraints, the tourist industry increases its output by adding labor, land, capital plant and equipment" (p.3). Tourism increases local resource mobilization like hotels, roads, and airports. Thus, infrastructure development is a crucial link between tourism and economic growth.

4. Methodology

This research employed descriptive research design and analyzed data by using a quantitative paradigm of data analysis. Secondary sources were used to collect data for this study. Significant documents, including the Nepal Rastra Bank report (2023), the tourists' statistical report (2023), and the annual report from the Ministry of Culture, reports of Tourism, and Civil Aviation were analyzed. According to Creswell and Creswell (2018), a mixed methods research design involves the collection, analysis, and integration of both quantitative and qualitative research methods within a single study, aimed at comprehending a research problem. Mann-Kendall test model is used to analyze the numerical data collected from secondary sources. The numerical data collected from various sources were categorized into specific themes, and tables were employed to analyze the data and achieve the study's goals. Quantitative data were presented by using the Mann-Kendall test, a non-parametric statistical test used to identify trends in time-series data. It evaluates whether a variable exhibits a monotonic upward or downward trend over time. It has a null hypothesis (H_0) that there is no trend in tourism data in Nepal, for example.

5. Result and Discussion

5.1 Situation of Tourism in Nepal

The improvement seen in the tourism sector after the end of the COVID-19 pandemic in 2021. Report of The Ministry of Culture, Tourism and Civil Aviation Nepal (2022) noted increasing statistics of tourist arrivals in Nepal. This report shows the number 614,148 which is an average of the three years before. The report presents detailed information on inbound tourists, including the number of international visitors by nationality, demographic breakdown, length of stay, and purpose of visit. Additionally, it covers outbound tourism, focusing on Nepalese nationals traveling abroad by purpose and destination country. Despite the current tourist arrival numbers falling short of expectations, the government is taking steps to address the issue by initiating the construction of two regional international airports in Bhairahawa and Pokhara. It is anticipated that once these airports are operational, there will be a gradual increase in tourist arrivals to Nepal. Marketing involves aligning services with market demands to drive consumption, and the report also includes a presentation of tourist arrivals over the past 15 years.

Table: 1 Annual Tourists Arrival Statistics from 2009 to 2023

S.N.	Year	Males	Females	Total
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	2009	288155	22180	509956
	2010	361611	241256	602867
	2011	352059	384156	736215
	2012	439270	363822	803092
	2013	449058	348558	797616
	2014	445627	344491	790118
	2015	289158	249183	538971
	2016	399091	359911	753002
	2017	509585	430633	940218
	2018	624928	548144	1173072
	2019	634392	562799	1197221
	2020	124048	106037	230085
	2021	105410	45552	150962
	2022	358683	256012	614869
	2023	528216	435355	963571

Source: Tourism Statistics, 2009-2023

Table 1 presents a clear overview of the tourism flow in Nepal over a span of 145 years. The data ranges from 2009 to 2022 and is displayed in total numbers within the table. In 2009, Nepal welcomed a total of 509,956 tourists, with 288,155 being male and 221,801 females. The number of tourists showed a consistent increase over the years, peaking at 803,092 in 2012, with 439,270 male tourists and 363,822 female tourists. Following this peak, the number remained relatively stable for a few years until the devastating earthquake of 2015, which caused a significant drop in tourist arrivals to 536,970. Despite efforts to recover from the earthquake's impact, the tourism sector faced another setback with the global spread of COVID-19, leading to a further decline in tourist numbers to 150,962 in 2022, with 105,410 male tourists and 45,552 female tourists. However, there is a glimmer of hope for the industry as indicated by the tourism statistical data of 2022, where the total number of tourists visiting Nepal has shown signs of improvement. Based on the data provided in the table, it is evident that the number of female tourists visiting Nepal is consistently lower than that of male tourists each year.

5.2 Tourists' arrival by means of transportation

Average expenditure of tourists invested during the visiting period is determined by means of transportation using by the tourist while entering in Nepal. The tourists who entered by airport comparatively invest more than the tourist who came in Nepal by bus and car. At the time of initial phase of tourism development in Nepal, most of the tourists were entered from Tribhuvan international Airport. In 2009, 509956 tourists were entered in Nepal among them 379322 were arrived from airport and 130634 were entered from Land which is 25.61 percent of total tourist arrival in Nepal but in 2023 963571 tourists were entered in Nepal. From the total 635427 were arrived from land and 328144 were come from airport. It shows that 65.94 percent tourists from total were entered from land and only 34% were come in Nepal from airport. The number of tourists who arrived by air and by land is presented in the table. In 2009, the total number of tourists who arrived in Nepal was 509,956, with 379,322 arriving by air and 130,634 by land. Likewise, in 2015, the total number of tourists who arrived in Nepal was 538,970, with 407,412 arriving by air and 131,558 by land. When comparing the modes of transportation chosen by tourists to travel to Nepal, it is clear that the majority of tourists prefer air travel. This

conclusion is supported by the data itself. Furthermore, this information can be visually represented through a bar graph, which is provided below.

5.3 Visiting Purpose of the Tourists

In last fifteen years, tourists have visited Nepal with different purpose. The following table highlights the major purpose of visiting Nepal by tourist

Table: 2 Tourist Arrivals by Purpose of Visit

Year	Holiday /pleasure	Treading	Business	Pilgrims	Official	Confer	Other	Total
2009	42.6	11.7	3.9	17.5	3.9	2.4	8.5	509956
2010	(43.8)	(11.6)	(3.5)	(16.8)	(4.4)	(1.6)	(8.7)	602867
2011	(57.8)	(11.7)	(2.4)	(8.7)	(3.3)	(1.5)	(5.1)	736215
2012	(47.3)	(13.1)	(3.1)	(13.7)	(3.8)	(1.7)	(6.0)	803092
2013	(54.9)	(12.2)	(3.8)	(5.1)	(5.0)	(2.0)	(7.8)	797616
2014	(50.1)	(12.3)	(3.1)	(12.5)	(4.1)	(1.7)	(6.8)	790118
2015	(71.63)	(1.70)	(3.87)	(2.78)	(3.99)	(1.68)	14.35))	538971
2016	(65.0)	(8.83)	(3.23)	(11.0)	(2.83)	(1.7)	(7.41)	753002
2017	(54.9)	(12.2)	(3.8)	(5.1)	(5.0)	(2.0)	(7.8)	940218
2018	(60.0)	(16.0)	(3.1)	(14.4)	4.25	1.8	(9.6)	1173072
2019	(65.0)	(16.52)	(2.45)	(14.36)	5.23	2.1	(4.12)	1197221
2020	(60.5)	(12.4)	1.1	(15.6)	4.89	0.1	(11.5)	230085
2021	(64.0)	(17.52)	1.7	(15.36)	3.21	1.5	(5.12)	150962
2022	(65.0)	(16.52)	2.1	(14.36)	5.1	2.32	(4.12)	614869
2023	(66.0)	(15.52)	2.77	(13.36)	4.15	2.01	(5.12)	963571

Source: Nepal Tourism Board, 2023

Table illustrates the reasons for tourists visiting Nepal from 2010 to 2020. The data reveals that a significant number of tourists chose Nepal as their destination for holiday pleasure. However, due to the COVID-19 pandemic in 2020, the tourism sector faced challenges, resulting in a decrease in the number of tourists visiting Nepal for mountaineering purposes. The primary motive for visitors is pleasure and entertainment, as people typically seek refreshment when going out. Similarly, in Nepal, the majority of tourists visit the country for the purpose of pleasure and entertainment.

5.4 Average Staying day of the Tourist in Nepal

In the context of Nepal, tourists generally state 7 to 15 days because most of the visiting package itinerary cover the time of one to two week. The following table shows the duration of tourist staying in Nepal during 2009 to 2015.

Table: 3 Average Staying day of the Tourist in Nepal

S.N.	Year	Number	Average length of stay
	2009	509956	11.32

	2010	602867	12.67
	2011	736215	13.12
	2012	803092	12.16
	2013	797616	12.60
	2014	790118	12.44
	2015	538970	13.16
	2016	753002	13.4
	2017	940218	12.6
	2018	1173072	12.4
	2019	1197191	12.7
	2020	230085	15.1
	2021	150962	15.5
	2022	614869	13.1
	2023	963571	12.1

Source: Source: Nepal Tourism Board, 2023

The number of tourists visiting Nepal experienced a significant decrease in 2020 and 2021, however, their duration of stay has shown a slight increase. Government data indicates that tourist arrivals dropped to 230,085 in 2020 from over 1 million the previous year, while their length of stay rose by 19 percent compared to 2019. The average stay of a tourist in Nepal is 13 days, but in 2020 it increased to 15.1 days, marking the first time it has reached 15 days. The Ministry of Culture, Tourism, and Civil Aviation recently published the Nepal Tourism Statistics-2020, revealing the rise in tourists' length of stay. Despite the pandemic, tourist arrivals in 2020 plummeted by approximately 80 percent compared to previous years, with only 230,085 visitors recorded. This is a stark contrast to the 1,197,191 tourists in 2019 and 1,173,072 in 2018.

5.5 Contribution on Employment

The tourism sector is vital for job creation, encompassing both self-employed individuals and wage earners. The 2021 Tourism Employment Survey shows that about 5% of Nepal's tourism workforce is self-employed. A significant portion of the national labor force is involved in tourism activities, which include travel, trekking, rafting agencies, and transportation services. Professionals like trekking and tour guides are essential for tourist services, while many others engage in micro-enterprises and industries that cater to tourists. According to a report by the World Travel and Tourism Council (WTTC), the travel and tourism sector in Nepal represented 3.6 percent of the nation's total employment in 2019. The report indicates that this sector directly generated 553,500 jobs that year, an increase from 412,500 jobs in 2018. After 2021 tourism related enterprises have slowly revitalized, however, revitalizing process is going on. Before began COVID-19 pandemic in Nepal, government of Nepal declared 2020 as 'visit Nepal 2020' and announced to increase the numbers of tourist arrival in Nepal. For that government had brought the policy to increase the tourism related business agencies in Nepal. NRB Report (2023) mentions the government policy as,

5.6 Revenue from Tourism

Tourism is one of the potential sources of revenue in Nepal. Constitution of Nepal 2015 clearly mentioned about the distribution of revenue collated from tourism. Three levels of governments share the revenue

collected from tourism sectors. Total revenue collection from tourism sectors and its contribution of GDP are mentioned in the following table

Table: 4 Revenue Collected from Tourism and GDP Contribution

S. N.	Year	Earning USD (in Million)	Growth rate	Contribution of GDP in %
	2009	377.5	1.27	2.4
	2010	340.5	-9.80	1.6
	2011	379	11.30	1.7
	2012	389	2.638	1.8
	2013	472	21.33	2.1
	2014	472	21.33	2.1
	2015	537	13.77	2.2
	2016	392.7	-26.87	1.6
	2017	551	40.31	1.9
	2018	656.5	19.14	2.0
	2019	667.7	1.70	2.0
	2020	523.5	-21.59	1.6
	2021	61.6	-88.23	0.2
	2022	65.6	6.49	1.7
	2023	71.7	7.80	2.1

Source: Tourism Statistics, 2009-2023

The annual earning, growth rate of earning and GDP contribution of tourism since 200 to 2023. Data shows that earning trend is increasing till 2019. Due to COVID-19 pandemic it is in decreasing trend in 2020 and 2021, however it is in increasing trend after end of the COVID-19 pandemic. The government has recognized the tourism industry as a key driver of the country's GDP, emphasizing its importance. In 2008/09, tourism brought in 11,717 million in foreign exchange earnings, accounting for 16.8 percent of total merchandise exports, 11.8 percent of goods and non-factor services exports, 5.7 percent of total foreign exchange earnings, and 2.7 percent of GDP. The highest foreign exchange earnings were recorded in 2018/19 at 30,703.8 million, contributing 2.0 percent to GDP. However, earnings fluctuated between 2008/09 and 2013/14, impacting GDP in a similar manner. The tourism sector's largest GDP contribution was in 2011/12 at 3.4 percent, while the lowest was in 2014/15 at 1.4 percent.

5.7 Prospects and problems of Tourism in Nepal

Nepal is unique land for tourism that is related to combination of cultural heritage, natural beauty, and adventure opportunities. Several key factors contribute to the country's tourism potential. Nepal boasts eight of the world's fourteen highest peaks, including the iconic Mount Everest. This makes it a magnet for trekking, mountaineering, and adventure tourism enthusiasts from all over the world. Nepal is home to a wide range of ethnicities, traditions, and languages, making it a melting pot of diverse cultures. Visitors are often captivated by the ancient temples, monasteries, and historical sites in major cities like Kathmandu, Bhaktapur, and Patan. Nepal offers popular National Parks like Chitwan and Bardia for wildlife enthusiasts. The serene surroundings make it perfect for yoga retreats. Food lovers can enjoy authentic Nepali cuisine, and eco-conscious travelers will appreciate Nepal's sustainable practices. The

country is also home to UNESCO World Heritage Sites. Kunwar, (2002, p.5) defines, “The tourism industry in Nepal has a bright future ahead. With its diverse landscapes, vibrant culture, and thrilling adventure options, the country continues to allure travelers”. The country is known for its unique travel opportunities, vital to its economic growth. However, challenges like political instability, natural disasters, poor air connectivity, a lack of skilled workers, complex permits, competition, overcrowding, safety concerns, and the need for sustainability hinder its potential. Collaboration among the government, private sector, and local communities is essential to address these issues and promote Nepal's rich natural and cultural heritage.

5.8 Analysis of the Data on the basis of Mann-Kendall test model

Table 5: Trend analysis by using Mann-Kendal method

Variables:

Parameters of tourism business	Trend	H	Z	P-value	Tau	S	Var(S)	Slope	Intercept
[1] Arrivals of male tourist	No trend	False	0.891	0.373	0.181	19.0	408.3	9406.4	333246.2
[2] Arrivals of female tourist	No trend	False	0.891	0.373	0.181	19.0	408.3	7710.0	294588.0
[3] Total arrivals of tourist	No trend	False	0.791	0.428	0.162	17.0	408.3	17967.67	627228.3
Purpose of visits									
Holiday pleasure	Increasing	True	3.085	0.002	0.495	52.0	405.33	0.357	9.75
Trading	Increasing	True	2.53	0.011	0.6	63.0	403.67	1.599	48.8
Business	Decreasing	True	-2.189	0.029	-0.428	-45.0	403.67	-0.103	3.21
Pilgrims	No trend	False	0.00	1.00	0.0095	1.0	406.33	0.000	13.7
Official	No trend	False	1.04	0.298	0.209	22.0	407.33	0.040	3.87
Conference	No trend	False	0.647	0.517	0.133	14.0	402.67	0.017	1.58
Other	No trend	False	-0.844	0.398	-0.171	-18.0	405.33	-0.156	8.50
Average length of stay	No trend	False	1.23	0.215	0.247	26.0	407.33	0.082	12.1
Contribution tourist business revenue to growth GDP									
Earning in USD in million	No trend	False	0.743	0.457	0.152	16.0	407.33	6.100	350.0
Growth rate	No trend	False	-0.248	0.804	-0.057	-6.0	407.33	-0.437	9.55
Contribution to GDP in percent	No trend	False	-0.601	0.548	-0.123	-13.0	399.0	-0.0125	1.9

The number of tourist arrival with purpose of Holyday pleasure is significantly increasing. It shows it will enhance the tourism business in Nepal in coming days.

Interpretation for example

- S: the **test statistic** that measures the trend in the data.
- Vas_s: variance of S to account for tied values in the data
- Trend: 'decreasing' indicates an increasing trend.
- h: False means the null hypothesis (H_0 :) is not rejected (trend does not exist).
- P-value: 0.373 is the p-value. Since $p > 0.05$, the result is statistically insignificant.
- Z: 0.891 is the standardized test statistic.
- Tau: 0.181 is Kendall's Tau, indicating the strength of the trend. Values range from -1 (strong decreasing) to +1 (strong increasing).
- Slope: 6.0 indicates the average rate of increase per year.
- Intercept: 333246.2 represent the y-intercept of the trend line.

Normality Test

Table: 6 Normality test of all the variables

Variable	Shapiro-Wilk (p-value)	Shapiro-Wilk Result
Males' arrivals	0.5990	Normal
Females' arrivals	0.4240	Normal
Total arrivals	0.6948	Normal
Holiday pleasure	0.3534	Normal
Treading	0.0129	Not Normal
Business	0.2236	Normal
Pilgrims	0.0422	Not Normal
Official	0.4455	Normal
Confer	0.0022	Not Normal
Other	0.1744	Normal
Tourists	0.6947	Normal
Average length of stay	0.0192	Not Normal
Earning in USD in Million	0.0678	Normal
Growth rate	0.0074	Not Normal
Contribution to GDP in percent	0.0009	Not Normal

From this table, earning in USD in Million, Growth rate and Contribution to GDP in percent are two economic variables that help in adding revenues of the government and consequently contributing the nation's GDP in Nepal. However, the latter two variables are non-normal and the first one is normal. So, the variable 'Earning in USD in Million', to be treated as predict and or outcome variable, can be used as a proxy of the variable 'Contribution to GDP'. Now it can be developed a functional relationship between the predictand and a set of predictor variables available in the above table disregarding their respective nature of the distribution.

Multiple linear regression analysis

From above table, Contribution to GDP in percent is considered as a dependent variable and the ramming are taken as the independent variable but excluding 'Growth rate' and 'Earning in USD in Million' from the model.

Table 7: Multiple Linear regression of a dependent variable (contribution to GDP in percent)

Model	B	T	p-value	VIF	R-Square	0.988
Constant	2.136	4.751	0.042		RMSE	0.0261
Holiday pleasure	0.369	0.627	0.595	93.798	F-statistic	14.615
					P-value	0.066
Treading	-0.277	-0.540	0.643	48.133		
Pilgrims	-0.294	-1.230	0.344	17.281		
Official	0.081	0.543	0.641	6.651		
Confer	-0.824	-0.948	0.443	125.014		
Average length of stay	-1.233	-1.713	0.229	104.536		
Total arrivals	0.318	0.321	0.779	236.077		
Business	-0.333	-0.402	0.727	196.209		
Males' arrivals	1.152	0.845	0.487	470.937		
Females' arrivals	-1.365	-2.090	0.172	116.759		
Other	-0.126	-0.322	0.778	35.319		

The results of the multiple linear regression model of contribution to GDP in percent' variable on all the variables listed in the same table. It is observed that the model is approximately fitted to the data since F-statistic of 14.615 with the p-value of 0.066 less than 10% level of significance. R-square is 0.988, which is optimistically very high though the RMSE of 0.0281, is very low. This is because of a higher multicollinearity effect. The VIF values are higher. Due to this, Treading, Pilgrims, Confer, Average length of stay, Business and Females arrivals are showing the coefficients values with the negative signs, which are unrealistic. Therefore, this is to infer that the model is not so good and need further improvement after rigorous attempts, the weighted least square (WLS) is chosen as the best one with the following results.

Table 8: Multiple Linear regression of a dependent variable by WLS method

Model	B	t	p-value	R-Square	0.95
Holiday pleasure	0.1252	1.799	0.099	F-statistic	498.5
Pilgrims	0.1729	2.554	0.027	P-value	0.000
Official	0.2993	6.958	0.000		
Business	0.5919	8.872	0.000		

Residual analysis

Residual follows approximately normal distribution with Jarque-Bera (JB) test with the value of 1.182 and p-value of 0.322. Breusch-Pagan test statistic is 6.11 with the p-value: of 0.1063, which is more than 5% level of significance. Further, there is no a collinearity effect in the model. Therefore, this model is taken as a better one.

Table: 9 Interpretation of the coefficients of the independent variables

Statistics	Mean	SD	Minimum	Maximum
Males' arrivals	393952.73	154149.866	105410	634392
Females' arrivals	313205.93	162570.524	22180	562799
Total arrivals	720122.33	295866.453	150962	1197221
Holiday pleasure	57.9020	8.77432	42.60	71.63
Treading	12.6540	3.88518	1.70	17.52
Business	2.9280	0.84208	1.10	3.90
Pilgrims	12.0413	4.56322	2.78	17.50
Official	4.2100	0.73880	2.83	5.23
Confer	1.7407	0.53091	0.10	2.40
Other	7.4693	2.83630	4.12	14.35
Average length of stay	12.9580	1.08147	11.32	15.50
Earning in USD (Million)	397.153	196.9962	61.6	667.7
Growth rate	0.03920	29.762840	-88.230	40.310
Contribution to GDP in percent	1.800	0.5057	0.2	2.4

6. Conclusion

Tourism is a key driver of the Nepalese economy, making a substantial contribution to the Gross Domestic Product (GDP) and providing employment opportunities for a significant portion of the population. It has positive effects on foreign exchange earnings, infrastructure development, and the preservation of cultural heritage. Despite facing challenges such as dependence on a few main destinations, environmental issues, and managing the influx of tourists, the government of Nepal is dedicated to promoting and growing the tourism industry to boost economic development and reduce poverty. The earthquake and the COVID-19 pandemic have significantly affected the tourism sector in Nepal. All the four independent variables in normalized form are significant at 10% level of significance.

A change from the minimum value (0) to the maximum value (1) in normalized Holiday pleasure (i.e., a number of tourist arrivals with the purpose of holiday pleasure) will increase from 42.60% to 71.63% in the original scale) will increase the Contribution to GDP in percent by 0.1252 units or 12.50 percent. Likewise, the number of tourist arrivals as the pilgrims will increase from 2.78 to 17.5% in the original scale will increase the Contribution to GDP in percent by 0.1729 units or 17.29 percent. Further, the number of tourist arrivals for the official work will increase from 2.83 to 5.23% in the original scale will increase the Contribution to GDP in percent by 0.2993 units or 29.93 percent. Finally, the number of tourist arrivals for the business will increase from 1.1% to 3.9% in the original scale will increase the Contribution to GDP in percent by 0.5919 units or 59.19 percent. From this analysis, the business purpose of the tourists arrived in Nepal has the highest contribution to the contribution to the GDP

In Nepal, tourism plays a crucial part in generating employment opportunities, both directly and indirectly, especially in urban areas and popular tourist destinations. Furthermore, it has been acknowledged as a catalyst for reducing rural poverty by involving rural communities in different types of tourism-related enterprises. The tourism industries like travel agencies, trekking agencies, rafting agencies, and tourist transportation services should promote though enhancing skill and financing capacity.

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