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# SOCIO-ECONOMIC IMPACTS IN NEPAL THROUGH TOURISM DEVELOPMENT: AN ECONOMETRIC ANALYSIS

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## ABSTRACT

Nepal aims to transform its tourism sector into one of the largest foreign exchange earners in 2016 by attracting 2.5 million high spending tourists. Tourism was ranked as the fifth largest source of foreign exchange earnings in 2012 and third largest in 2013 contributing 5.2 percent to total foreign earnings of the country. Nepal government also identified tourism as a major hub of given the country's multi-dimensional impact economy the sector has on the country's economy, be examined systematically it has. This paper develops an econometric model based on the Cobb-Douglas function of regression to analyze the relation between foreign exchange earnings, tourist arrivals, tourist prices, and tourist spending and direct employment in tourism. These variables of tourism are estimated utilizing model parameters such as R-Studio based on data from the sample period from 2004 to 2014. The formula presented in this study can be used by policy makers to calculate future foreign exchange earnings, employment, arrivals and prices related to tourism in Nepal. The analysis shows that tourism generates significant revenue for the socio economic development of Nepal. Directly employs tourism sector provided direct employment to 427,000 people in 2016 which is 2.9 percent of the total employed population of the country. This includes employment generated by hotels, travel and tour agencies, airlines and other passenger transportation services.

**Keywords:** Employment, foreign exchange, R-Studio, Nepal, tourism industry, socio-economic impacts.

JE Codes: C22, F43, L83, O53

## 1. INTRODUCTION

Nepal is tourist's heaven for adventure, cultural and environmental enrichment. The World of Wanderlust had also listed Nepal on 19th position in their 'Top 25 Best Destinations in the World List' for 2016. Nepal tourism consists of many wonderful places to visit and the country is loaded



with spectacular views of various landscapes and highly popular as it has the highest mountain peak of the world, the Mount Everest. Tourism industry is the largest service industry and source of foreign exchange and revenue; it is the main source of economic sustenance after agriculture in Nepal.

Tourism in Nepal has been seeing increase in the number of visitors each year which only reflects the growth of this industry in Nepal. Nepal welcomed 940,218 foreign tourists in 2017. By the end of July, the country has already witnessed arrivals of 593,299 foreign tourists, according to Nepal Tourism Board. Direct contribution of travel and tourism sector to the country's Gross Domestic Product (GDP) is estimated to have increased by 6.8 percent to Rs 91 billion in 2017, a study conducted by World Travel & Tourism Council (WTTC) shows. According to a study report entitled Travel & Tourism Impact 2017, direct contribution of tourism to Nepal's GDP was Rs 85.2 billion in 2016. As of 2015, there are more than 917 hotels across the country with total bed capacity and room capacity of 35,920 and 22,860, respectively.

The Nepali travel and tourism business has considerably evolved over the past five decades. From the arrival of tourists to the expansion of hospitality businesses and incorporating new and emerging trends, the sector has seen a sea change over the past half century. There are almost 1,000 quality hotels, 23,000 rooms and more than 35,000 beds altogether. WTTC report has also stated that travel and tourism sector created 427,000 jobs in 2016 which is expected to grow by 6 percent in 2017 to 452,500. Tourism could be treated as a key instrument of economic development as it generates foreign exchange earnings and direct and indirect employment opportunities along with a range of other economic activities. Strongest growth was reported in the Americas (+8 percent) followed by Asia, the Pacific (+5 percent) and Europe (+4 percent). Looking at sub-regional growth figures, (UNWTO, 2014) calculated a 9 percent growth in North America and an 8 percent growth in South Asia, establishing these regions as star performers.

Accounts for 6 percent of the exports, worlds and creates 1 in 11 jobs according to UNWTO. After reaching the one billion mark in 2012 an2013, international arrivals grew by over 5 percent by reaching a record 1087 million. UNWTO forecasts 1.8 billion tourists for the year 2030. Among the South Asian countries, Nepal maintained a soiled 27 percent growth in 2013 followed by Maldives (17 percent).India, which is the largest tourist destination in South Asia, managed to have a 4 percent growth (UNWTO, 2014). In 2013, Lonely Planet identified Nepal as the first among the top 10 countries to visit. Other ranking agencies also ranked Nepal among the top ten countries to travel. Tourism was the 3rd largest foreign exchange earner for the country in 2013. Tourist earnings have increased over the past, and the current figure shows over US\$1.7 billion of foreign exchange earnings to Nepal in 2013.

### Historical Background

Tourism is a human activity, which has proved important for all nations since it fosters international brotherhood and understanding. The inflow of Visitors for different purpose was there for very early periods, the study of the inflow of foreign visitors to Nepal can be classified in the following three stages. In Nepal, tourism is not only important economic sources of foreign currency but also a major employment generator. By the medium of tourism people, can exchange knowledge.

And create understanding among the people of the world. Tourism provided an opportunity to understand society, habits, food and the way of lifestyle of different nations. Directly and indirectly Nepalese people are getting benefits from the tourism, many people are getting employment from this sector. Because of the demands of local products, incentives to the local crafts and industries and artistic skills of the people is increased. Socially culturally, Tourism is product, which encourages intellectual curiosity among people and nations and develops a healthy respect for another's beliefs and custom.



#### Tourism: An Economic Backbone of Country

As per a World Trade Organization (WTO) finding, one tourist creates jobs for 12 people directly or indirectly. A major source of foreign currency earnings, the travel and tourism business has been strongly contributing to the Nepali economy. The sector's direct contribution was Rs 83.7 billion or 4.3 percent of the country's GDP in 2014. In 2015, the amount was Rs 85.3 billion accounting for four percent of the GDP. In 2016, it is expected to grow to Rs 91.3 billion or seven percent of the GDP. A 2016 World Travel and Tourism Council (WTTC) report ranks Nepal third among 184 countries in terms of direct contribution to the GDP by travel and tourism. WTTC in its report forecasts that the direct contribution of the sector will grow by an annual rate of five percent to Rs 149.4 billion or 4.7 percent of the GDP by 2026.

### 2. LITERATURE REVIEW

The Organization for Economic Co-operation and Development (OECD) have recognized the relevance of tourism and stated that over the past years, travel and tourism have been an important economic sector in the world economy. The socio economic growth rate of international tourism has been faster than the world economy and this trend seems likely to continue in next decades (OECD, 2010). Researchers are saying that tourism is becoming the world's second largest industry, directly accounting for 3.8% of global growth domestic product in 2009 as explained by World Travel and Tourism Council (WTTC, 2010).

According to (UNWTO 2012), in 2010, some 940 million international tourists were recorded. Tourism is one of five top export earners in over 150 countries, while in 60 countries it is the number one export. It is also the main source of foreign exchange for one third of developing countries and half of least developed countries (LDC). President & CEO World Travel and Tourism Council, Scowsill (2014) stated that "the measure of money spent by these international tourists, rose by 3.9% at a global level year on year, to US\$1.3 trillion, and in 2013, Travel & Tourism's total contribution to the global economy rose to 9.5% of global GDP (US \$7 trillion), not only outpacing the wider economy, but also growing faster than other significant sectors such as financial and business services, transport and manufacturing. In total, nearly 266 million jobs were supported by Travel & Tourism in 2013, and with predicted growth rates of over 4% annually, the industry is a very viable sector and countries, investors and practitioners are encouraged to see the tourism sector as a boost in growth and development.

Tourism expenditures generate income to the host economy and stimulate the investment necessary to finance growth in other economic sectors. Some countries accelerate this growth by requiring visitors to bring in a certain amount of foreign currency for each day of their stay. An important indicator of the role of international tourism is its generation of foreign exchange earnings. Tourism is one of the top five export categories for as many as 83% of countries and is a main source of foreign exchange earnings for at least 38% of countries (Machel McCatty & Prudence Serju, 2006). According to the literature there is valuable growth potential in tourism and other related variables including economic, demographic, technological, psychological, social-political and cultural values. The expansion of tourism contributes to a range of other economic activities as well. Increased tourism will provide an impetus to these industries as well as the construction of hotels of various sizes in varied locations generating numerous job opportunities.

## 3. OBJECTIVES OF THE PAPER

While it is impossible to quantify some of the variables and interrelationships among them, it is important to recognize interlinks between selected economically significant variables related to tourism to further understand and develop the sector. Therefore, this study attempts to quantify the relationship between tourism related foreign earnings and four other important variables for Nepal. The main objective of this paper is to develop an econometric model based on the Cobb-Douglas



function regression to analyze the relationship between foreign exchange earnings, tourist arrivals, tourist prices, tourist spending and direct employment in tourism. The importance of this research is in the outcome of this formula, which can be used to forecast future tourism related foreign earnings and four variables apart from establishing linear relationships among tourism related variables in Nepal.

- To estimate the number and types of employment generated by tourism industries.
- To document the problems and challenges faced by the tourism sector and potential ways to overcome the problems.
- To examine and find out the socio- economic development factors responsible for primitiveness in selected study areas.
- Estimates of the contribution of tourism to overall employment and also the contribution to employment for local people living near tourism sites.
- To assess the impact of tourism in Nepalese economy.
- To identify and analyzed the major problem of tourism development in Nepal.

## 4. RESEARCH METHODOLOGY

Econometrics refers mainly to the statistical apex of the economic theory-mathematicsstatistics triangle but it is a statistics that is centrally conditioned by economic theory. Econometrics is the quantitative application of statistical and mathematical models using data to develop theories or test existing hypotheses in economics and for forecasting future trends from historical data. It measures past relationships among such variables as consumer spending, household income, tax rates, interest rates, employment, and the like, and then tries to forecast how changes in some variables will affect the future course of others. These methods rely on statistical inferences to quantify and analyze economic theories by leveraging tools such as frequency distributions, probability distributions, statistical inference, correlation analysis, regression analysis, simultaneous equations models and time series methods and others.

This study applies annual time series data of total foreign exchange earnings from tourism, total arrivals of tourists, index of tourist prices for all items and income received per tourist per day in Nepal for the period of 2004-2015. The above data were obtained from Nepal Tourism Board (NTB), Nepal Statistical Year Book and the World Tourism Organization (UNWTO). The key data include the following:

- Total foreign exchange earnings
- Total arrivals of tourists
- Index of tourist prices for all items
- Income per tourist per day
- Direct employment in the tourism industry

## Fitting of model:

The estimation of unknown parameters using appropriate method provides the values of the parameter. Substituting these values in the equation gives us a usable model. This is termed as model fitting. The estimates of parameters in the model  $\beta_1$ ,  $\beta_2$ ,..., $\beta_k$ .

 $Y=f(X_{1}, X_{2}, ...., X_{k}, \beta_{1}, \beta_{2}, ...., \beta_{k})+ \varepsilon$ 

Are denoted by  $\beta_1, \beta_2, \ldots, \beta_k$  which gives fitted model as

 $Y=f(X_1, X_2, ...., X_k, \beta_1, \beta_2, ..., \beta_k)$ 

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To examine the relationship between foreign exchange earnings and other independent variables of tourist arrivals, foreign tourist price, income received per tourist per day and employment in the tourism trade, the study used the following log-linear model of Cobb-Douglas function.

 $\ln Y = a + \beta_1 \ln x_1 + \beta_2 \ln x_2 + \beta_3 \ln x_3 + \beta_4 \ln x_4 + \varepsilon$ 

In this model, Y denotes total foreign exchange earnings (Rs. million), a is the intercept,  $X_1$  represents total tourists arrivals,  $X_2$  indicates the index of tourist prices for all items,  $X_3$  stands for income per tourist per day (in Rs),  $X_4$  stands employment in the tourism industry and  $\varepsilon$  denotes residual error. Since the study focuses on establishing the relationships, it is important to examine the correlation between independent variables.

Calculation of regression coefficients:

 $X_1: \Sigma X_1^2 \beta_1 + \Sigma X_1 X_2 \beta_2 + \Sigma X_1 X_3 \beta_3 = \Sigma X_1 y$ 

 $X_2: \Sigma X_2^2 \beta_2 + \Sigma X_1 X_2 \beta_1 + \Sigma X_2 X_3 \beta_3 = \Sigma X_2 y$ 

 $X_3: \Sigma X_3^2 \beta_3 + \Sigma X_1 X_3 \beta_1 + \Sigma X_2 X_3 \beta_2 = \Sigma X_3 y$ 

The following matrices are used to solve this set of equations

	[∑ <i>X</i> 12	$\sum X 1 X 2$	$\sum X 1 X 3$	<u>[β1</u> ]	$\sum X1y$	
A	$\sum X1X2$	∑ <i>X</i> 22	$\sum X2X3$ ,	$B=\beta 2$	$C = \Sigma X 2 y$ ,	Where A*B=C
	$\sum X 1 X 3$	$\sum X2X3$	$\sum X32$	Lβ3]	$[\Sigma X3y]$	

To solve for B, multiply both sides of the equation by the inverse of A, A-1

A-1\*A\*B=C, Since A-1\*A=I, the identity matrix.

#### Population of Nepal and Growth rate per decade

The census of 2001 introduced sampling in the census for the first time. The National Population Census of 2011 is the eleventh census and marks 100 years in the history of census taking in the country. The total population of Nepal, as of 22 June 2011, was 26.5 million with a decadal increase of 14.4% from 2001. The population a decade age, or in 2001, was 23.2 million. The average annual growth rate of the population from 2001 to 2011 was 1.35%, a sharp decline from the 2.25% of the previous decade 1991-2001. The number of households stands at 5.4 million in 2011.

Year	Population	Growth Rate (%)
1961	94,12,996	1.32
1971	1,15,55,986	2.07
1981	1,50,22,893	2.66
1991	1,84,91,097	2.01
2001	2,27,36,934	2.10
2011	2,64,94,504	1.35

Table 1: Population of Nepal and Growth rate

Source: CBS, Population Census, 2011

Tab	ole 2	: Total	capital	l in	various	sectors
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Types	F	Y 2017	FY 2018	
	Number	Total Capital	Number	Total Capital*
Agro and forestry based	25	3.3	22	2.5
Construction	3	1.7	4	4.7
Energy based	20	82.4	39	233.9
Information technology	14	0.9	24	0.7



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Manufacturing	125	43.9	130	77.3
Mineral	3	0.08	4	2.4
Service	166	15.9	114	5.1
Tourism	154	15.0	159	23.8
Total	510	163.2	496	350.5

\**Capital:* NRs.billion, Source: Department of Industry

Table 3: Tourism	Earnings
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Fiscal Year	Earnings	
2007-08	Rs. 20.33 billion	
2008-09	Rs. 27.95 billion	
2009-10	Rs. 28.13 billion	
2010-11	Rs. 24.61billion	
2011-12	Rs. 30.70 billion	
2012-13	Rs. 34.21 billion	
2013-14	Rs. 46.37 billion	
2014-15	Rs. 53.42 billion	
2015-16	Rs. 41.76 billion	
2016-17	Rs. 58.52 billion	
2017-18	Rs67.09 billion	

Source:http://kathmandupost.ekantipur.com/news/2017-08-25/tourism-earnings-hit-record-rs5852b-last-fiscalyear.html

The Tourism Ministry statistics showed that the average length of stay in Nepal stood at 12.6 days last year. Their average spending has been recorded at \$54 per day. The World Travel and Tourism Council in its report said that the total contribution of the travel and tourism industry to the GDP was 7.8 percent in 2017. The federal budget this fiscal year has announced the launch of Visit Nepal campaign version in 2020 with the goal of attracting 2 million foreign tourists. The government plans to increase the tourism earnings to Rs200 billion by attracting 2 million tourists. Nepal's tourism industry is regarded as a significant contributor to employment generation and foreign exchange earnings.

The tourism industry has had to evolve quickly to keep up with changing trends. Social sharing sites like Instagram, Facebook and Twitter have given travelers more options as they can check out images, affordability and hassle-free arrangements to choose their destination. In recent years, the Nepal's tourism industry has witnessed positive signals along with the increase in inflow of foreign tourists. Intending to promote the country's tourism further and give continuity to the growth momentum, the government has announced 'Visit Nepal 2020' tourism campaign. Statistics provided by the foreign exchange management department of Nepal Rastra Bank, income per visitor on an average dropped \$22 per visitor per day. On an average, a tourist spent \$65.3 in 2009 but only \$43.2 last year.

Nepal had registered as high as \$79.1 per day per visitor in 2003 which declined to \$45.1, \$58.5 and \$55 in succeeding years. The average income from per tourist was \$45 and \$73 in 2007 and 2008 respectively. "Also, number of tourists from South Asia and China who comparatively spend less than European and American tourists, has gone up," the NTB said. Similarly, number of arrivals



increased 18.2 percent during this period. The purpose of visit by tourist interests has been pilgrimage, trekking and mountaineering, and holiday/pleasure at 19.9 percent, 13.8 percent and 12.4 percent respectively.

Nepal recently carried out tourism promotional campaigns in India, China and Europe. The current pattern of tourist arrivals has changed dramatically moving from traditional western countries to Asian countries. Out of total tourist arrivals, five countries occupy more than 50 percent. The proportion of tourists from these countries are; India (17.1%), China (11.1%), USA (8.4%), United Kingdom (5.4%) and Sri Lanka (4.8%). Seasonality exists in tourist arrivals and the highest number of arrival is observed in October followed by February. There is no major change in sex and age group of tourist arrivals. By sex male (54%) and about two third arrivals were of age category 16-45 (74%) in year 2017. According to these statistics most of the tourists come to Nepal from India.

### 5. DATA ANALYSIS AND FINDINGS

## **Regression results and analysis**

Variable	lnx1	lnx2	lnx3	lnx4
lnx1	1	0.628174	0.730392	0.826489
lnx2	0.628174	1	0.941833	0.6686
lnx3	0.730392	0.941833	1	0.736729
lnx4	0.826489	0.6686	0.736729	1

Table 4: Covariance matrix of the independent variables.

All independent variables are positively interrelated indicating a positive correlation. Positive correlation indicates significant interdependence between variables. Table 4 presents the parameters estimates results obtained from R-Studio (Version-0.98.1091). This gives an estimated correlation of the regression model.

Coefficients	Estimate	Std.	t value	Pr(> t )	
		Error			
(Intercept)	-12.6843	0.54239	-23.386	4.63E-10	***
lnx1	0.98183	0.08882	11.055	6.30E-07	***
lnx2	-0.20095	0.11896	-1.689	0.12207	
lnx3	1.08884	0.1639	6.643	5.76E-05	***
lnx4	0.19397	0.05231	3.708	0.00405	**
Signific	Significant codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				

Table 5: Estimated coefficients of the regression model.

Significant codes. 0 0.001

Residuals:

Min	1Q	Median	3Q	Max	
-0.114676	-0.01277	0.006049	0.021429	0.059307	
Residual standard error: 0.05415 on 10 degrees of freedom					
Multiple R-squared: 0.9959, Adjusted R-squared: 0.9943					
F-statistic: 611 on 4 and 10 DF, p-value: 6.719e-12					

All the variables are significant at different confidence levels and the model is fitted with R-squired 99.5 percent, indicating that independent variables explain 99.5 percent of the variation in the dependent variable. Adjusted R squired is 99.4, and the model is more appropriate for correlation estimates that count for the presence of multiple independent variables. Table 4 presents the estimated parameter's level confidence. This confirms that all the variables are significant at 95



percent confidence level. Thus the estimated value lies between lower bound 2.5 percent and upper bound 97.5 percent.

Variable	Estimate	2.50%	97.50%
(Intercept)	-12.6843	-13.8929	-11.4758
lnx1	0.981832	0.783936	1.179729
lnx2	-0.20095	-0.466	0.064111
lnx3	1.088837	0.72364	1.454033
lnx4	0.193971	0.077426	0.310516

Table 6:	Estimated	parameters.
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The analysis of variance table (ANOVA) is presented in Table5. ANOVA table also confirms the significance of the model under different confidence levels.

Response: lny		Analysis of Variance Table				
Source	of	Sum of squres	Mean of squres	F value	Pr(>F)	
lnx1	1	6.7271	6.7271	2294.239	3.80E-13	***
lnx2	1	0.2668	0.2668	90.98	2.45E-06	***
lnx3	1	0.1319	0.1319	44.997	5.31E-05	***
lnx4	1	0.0403	0.0403	13.752	0.004052	**
Residuals	10	0.0293	0.0029			

Table 7: Analysis of variance table.

Significance Codes: 0\*\*\* 0.001, \*\*0.001,\* 0.05

According to Table 6, F statistics for the hypothesis confirms that all the estimated coefficients are jointly zero. Combining with the coefficient estimates, this model suggests that foreign exchange earnings of Nepal well described by the model.

## Residual analysis and remedial measures

A residual analysis was employed to find out whether the estimated model has errors or not. According to the current study, there is a random trend pattern and the model has a constant variance of residuals, and therefore variables are independent. Figure 6, illustrates the residual behavior.

Durbin Watson statistics indicates correlation between error terms and violation of serial correlation. Table 6 shows the DW statistics of the current study.

Table 6: Test results of DW. Durbin-Watson test

Data:  $lny \sim lnx1 + lnx2 + lnx3 + lnx4$ 

DW = 1.4664, p-value = 0.03518

Alternative hypothesis: true autocorrelation is not 0

H<sub>0</sub> - No serial correlation (auto correlation): Durbin-Watson statistic = 1.4664, p-value<0.05

This demonstrates there is serial correlation since the P value is calculated at 5 percent significance level. Critical values are DW lower level, dL=0.685 (rejection zone for positive serial correlation) and upper level, dU=1.977 (rejection zone for negative serial correlation). The Estimated DW value of the current study is then between: dl<DW<dL.

## Model validation

The Model Validation technique is applied here to verify whether there is any difference between actual and estimated value of foreign exchange earnings. Figure 6 validates the results. As



indicated in the figure, the predicted foreign exchange earnings and the observed foreign exchange earnings are non-overlapping according to the current study. This reveals the estimated model matches the utilized sample.

According to the above equation, an increase in the percentage share of arrivals of tourists  $(X_1)$  will increase the foreign exchange earnings exponent by 0.98183 percent. A 1 percent increase in the number of index of tourist prices  $(X_2)$  will decrease the foreign exchange earnings by the power of 0.20095 percent. At a 1 percent increase in foreign receipt per tourist per day  $(X_3)$ , the share of foreign exchange will increase the power of 1.08884 percent. An Increase in one percentage of the employment in the tourism sector  $(X_3)$  will increase foreign exchange earnings by exponent 0.19397 percent.

#### CONCLUSION

Nepal has always attracted and become best tourist destination in the world mainly due to their excellent hospitality, friendly people, unique cultures and awe-inspiring Himalayas and mountains. This study developed the best-suited econometric model to understand the relationship between 5 important variables linked to the tourism sector in Nepal. The model obtained in the study is well fitted (99.4 percent) during the examined period of 1999-2013 in Nepal. There is a random pattern between variables according to the derived model. This model also satisfied constant variance of residuals and therefore variables of total foreign exchange earnings, total arrivals of tourist, index of tourist prices for all items, receipt per tourist per day and employment in the tourism industry are independent. Thus, the relationship between foreign exchange earnings and other key variables are established making to possible to conclude that foreign exchange earnings are significantly influenced by arrivals of tourists, index of tourist prices, receipt per tourist per day and employment in the tourism sector in Nepal. This study could further be applied to establish a relationship of the future value of foreign exchange earnings if all other four variables are known. These findings demonstrate how variables in the tourism sector hold tremendous potential to influence the economic progress of the country. The current trend of increasing tourist arrivals should not be taken for granted as there are several possible pitfalls. Several factors could result in a reversal of the tourist trends. Deterioration in the security situation due to ethnic or religious conflicts can deter tourists. Therefore, the government has to maintain a harmonious socio-political situation and provide related infrastructure development crucial for the sector to thrive.

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