Voice of Teacher, Vol. 9, No. 1, December 2024
DOI: https://doi.org/10.3126/vot.v9i1.89485
ISSN 2362-1419

Relationship Between Tourism and Economic Growth of Nepal

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Received date: 30 Nov. 2025 | Reviewed date: 20 Dec. 2025 | Accepted date: 30 Dec.2025

Abstract:

The tourism industry in Nepal is endowed with a lot of natural beauty and cultural heritage that has a great economic potential in the economic development of Nepal. The paper discusses the correlation between tourism and economic growth in Nepal based on Barro growth regression and ARDL model based on time series data (1975- 2023). The result reveals that a short-run positive impact of tourist arrivals on GDP is observed, whereas foreign exchange earnings on tourism are not significantly related to growth. The low rate of adjustments indicates low long-run effects. The findings are not congruent with the tourism-led growth hypothesis, signifying that Nepal has not used the full potential of tourism in relation to its economic benefits. The policies need to target greater expenditure and stay by tourists.

Keywords: *Tourism earnings through foreign exchange, tourist arrival, economic growth, ARDL model, tourism-led growth.*

1. Introduction

Nepal was famous with its natural beauty, cultural wealth and spiritual heritage and has a great potential in terms of economic development of tourism. Nepal boasts of eight out of ten highest peaks in the world, Mount Everest, and sacred places such as Pushupatinath, Lumbini and Janaki temple among others, all of which receive a wide variety of tourists- adventure seekers, pilgrims, and cultural enthusiasts alike (Adhikari, 2021). Its popularity is also increased by iconic trekking trails and colourful festivals (Gurung & Scholz, 2020).

Although the efforts have been made, the role of tourism industry to GDP is still small (Chaudhary, 2024). Due to the richness of its natural, cultural, and religious heritage, Nepal has a great potential on tourism as it has all the necessary 5A's' to be perfect tourism destination, namely, access, accommodation, attractions, activities, and amenities (Camilleri, 2018). Ministry of Culture, Tourism and Civil Aviation [MOCTCA] (2024) state that on average, FXT exceeding 49 years equals about 22,230 million. Nevertheless, in 2021, FXT plummeted to extremely low levels of 7266.3 million because of the COVID 19 pandemic. It has revealed the extreme effect of the global health crisis on the tourism industry in Nepal. It is lowest since the early 1990s.

The main objective of this study is to explore the contribution of tourism sector to the economic growth of Nepal through scrutiny of short-run and long-run dynamics of tourism sector. The results in the Nepal context are more mixed as Bhattarai and Karmacharya (2022) did not find a relationship between tourism and growth, whereas other authors (Gautam, 2008, 2011, 2014; Kumar, 2019; Paudyal, 2012) did. According to Dhungana (2023), there were bidirectional and unidirectional causality. Therefore, the current research has aimed at filling this gap by examining the precise impact of tourism industry. It will attempt to investigate the contribution of tourism towards the economic development of Nepal.

This article is separated into six parts. The section two provides the literature review. Section Three presents the research methodology that was used to analyze it. Section Four the estimates of the results and interprets them. Section Five provides the diagnostic results and interprets them. Lastly, there is a conclusion and policy implications given in Section Six.

2. Literature Review

2.1 Theoretical Review on Economic Growth

Adam Smith also focused on specialization, accumulation of capital, and trade as the factors of growth based on labor productivity (Bertholet, 2021). Malthus (1798) gave warnings regarding resource constraints as a result of population increase whereas Ricardo (1817) advanced in terms of comparative advantage and decays in returns (Skousen, 2006). Tourism is not an exception and fits this theory with capital investment and creation of jobs (Sharpley, 2020).

It is also essential that Keynes (1936) stated that economic growth relies on effective demand where government expenditure and reduced rates of interest are employed in countering recessions (Sachs & Larrain, 1993). Fiscal stimulus and employment creation all positively affect tourism because it has a multiplier effect (Hall, 2019). The Cobb-Douglas function emphasized capital, labor and exogenous technology as long-run factors of growth (Solow, 1956). Tourism helps in accumulating capital and development of human capital (Barro,1990).

In the meantime, such an approach as the Endogenous Growth Theory formulated by Romer (1986) gives rise to the explanation of long-term growth in terms of internal factors, such as human capital, innovation, and favorable policies (Hall, 2019). Tourism supports through infrastructure, development of skills, and inflows of FDI.

Equally, Barro (1990) incorporates the concept of government policy, human capital, and publicly funded needs as drivers of growth since using productive expenditure will enhance the productivity of the private sector, but excessive taxes can restrain its growth (Barro & Lee, 1994). It is the condition of growth based on good institutions and human capital (Barro, 2001).

2.2 Theoretical Review on Tourism

The Tourism Area Life Cycle (TALC) model developed by Butler describes the process of destination evolution at its discovery point, peaks and declines, and helps in sustaining the destination as a thriving business product, which includes sustainable management (Butler, 1980) Plog psychographic model distinguishes tourists as allocentric, psychocentric, or mid-centric visitors in terms of travel behavior and personality and is useful in marketing the destination as a successful business product (Singh, 2011). The push-pull model of tourist motivation proposed by Dann describes the internal push motivation (e.g. escape, adventure) and the external pull motivation (e.g. attractions, climate) factors as recognition of tourist motivation (Money & Crotts, 2003). The Leakage concepts imply that leakage is the loss of local benefits as a result of tourism revenue going out of the local economy because of either its imports, foreign ownership or labor (Haddad et al., 2013).

Similarly, the socio-cultural impacts theory of tourism demonstrated how tourism may change the values, behaviors and traditions of the locals, both positively (culture exchange, revitalization) and negatively (commodification, social issues) (Chen & Chen, 2012). Weaver focuses on sustainability in its entirety at the economic, environmental, and socio-cultural levels, and for the practical use of mass tourism greening (Shi et al., 2019). According to Pine and Gilmore (1998) there is a move to experience based tourism, with emotional value and memorable, immersive experiences in four dimensions of entertainment, educational, escapist, esthetic tourism (Pine & Gilmore, 2000).

The multiplier effect theory suggests that the indirect income and employment created during initial spending generated by tourism owing to local linkages and small leakage in economies with various local linkages (Hall, 2019).

2.3 Tourism-Growth Hypothesis

According to Tourism-Led Growth Hypothesis (TLGH), tourism leads to development of the economy due to foreign exchange, employment, and investment (Dritsakis, 2004). Research in Spain and Greece proves the positive long-run impact of tourism on GDP (Brida et al., 2016). Economy-Driven Tourism Growth Hypothesis (EDTGH) is a hypothesis that explains that economic growth enhances tourism through higher income and infrastructure (Dhungana, 2023). The economies that are developed such as the U.S experience growth in tourism after economic growth (Narayan, 2004). Reciprocal/Feedback Hypothesis View of tourism development assumes a two-way relationship: tourism and economic growth strengthen each other (Dogru & Bulut, 2018). There is evidence in Greece, China and Thailand that bidirectional causality holds (Dritsakis, 2004). Neutrality Hypothesis of tourism-growth explained that tourism has no insignificant impact on economic growth depicted that tourism has no significant impact on economy growth in certain economies, which are abundance in resources particularly in resource-riched economies (Solow, 1956). In the case of 12 of 16 countries in the Mediterranean, they are neutral (Narayan, 2004).

2.4 Global Empirical Review

The empirical research conducted in several nations validates the conflicting yet informative trends in terms of tourism-economic growth nexus. Akan et al. (2007) in Turkey discovered that there is bidirectional causality and both hypothesis of tourism-led growth and growth-led growth are proven right. In the same way, BRICS (Rasool et al., 2021) and some of China (Wu & Wu, 2019) found two-sided causality, whereas Malaysia (Puah et al., 2018), Benin (Pan & Dossos, 2019), and Mauritius (Lie et al., 2018) confirmed the growth led by tourism.

On the other hand, growth came first in Sri Lanka (Suresh & Senthilnathan, 2013) and Saudi Arabia (Naseem, 2021), which is consistent with the hypothesis of the economy. The study by Singh et al. (2010) did not have much evidence in the Caribbean countries, suggesting that there was regional variation. Khan et al. (2020) found in Pakistan that tourism is a major contributor to various industries and poverty minimization, and Jayaraman and Makun (2022) asserted the presence of the long- and short-term advantages of tourism in the Maldives.

Diversification of tourism has also proved to be prospective. Solarin et al. (2024) emphasized that market diversification particularly that of Oceania has a positive influence on the long-run growth of New Zealand, but its over-reliance on some areas or functions can be detrimental to it. In general, there is an indication of contextual use of the tourism-growth hypothesis which is influenced by geography, the economic structure and tourism strategies.

2.5 National Empirical Review

There are various empirical studies in Nepal which provide mixed evidence of the nexus between tourism and growth. Gautam (2014) managed to conclude that financing of tourism and foreign exchange earnings affect GDP in a positive way, and causality is unidirectional and bidirectional. Estimating the tourism multiplier, Paudyal (2012) estimated that it was 1.21 and tourism resulted in Granger-caused key macroeconomic variables. Kumar (2019) found some positive effects of tourism on growth in the short-run but not in the long-run by ARDL models. No notable relationship was found by Bhattarai and Karmacharya, (2022), and Dhungana (2023) found negative short-run interaction, but long-run cointegration.

Collectively, these works suggest that tourism has the potential to stimulate economic performance in Nepal, its long-term effects depend on policy, structure and complementary investments that in either case are consistent with the rest of the international evidence on tourism-led and feedback hypotheses.

3. Research Methodology

The nexus between tourism and growth is a difficult concept to measure because of the different proxies such as the number of visitors, tourist receipts, and length of stay, which tend to give inconsistent results. Coming to the context of Nepal, we develop our methodology to investigate whether tourism

has an important role to play in the economic development of the landlocked developing economy.

3.1 Model, Variables and Data

This paper uses a neoclassical growth frame work to discuss how tourism has influenced economic growth in Nepal and has applied some concepts of the endogenous and exogenous growth theory. The model uses human capital-augmented Cobb-Douglas production function to include real foreign exchange earnings of tourism (RFXT), tourist arrivals (TA) and secondary education participation (SEC) as the key explanatory variables and the dependent variable is the real GDP (RGDP). Based on the time-series literature already available and according to the specifics of Nepal, the study employs the reduced-form growth regression model, first introduced by Barro (1991) and Sala-i-Martin (1997) and later applied by Cortes-Jimenez (2008) in an endogenous growth framework and, is presented as the following equations.

$$\ln RGDP_t = \alpha_0 + \alpha_1 \ln RFXT_t + \alpha_2 \ln SEC_t + \varepsilon_t \quad (1)$$

$$\ln RGDP_t = \alpha_0 + \alpha_1 \ln TA_t + \alpha_2 \ln SEC_t + \varepsilon_t \quad (2)$$

Normalization of the variable as well as interpretation of elasticity is given through the use of logarithmic transformation (Sala-i-Martin, 1997; Durlauf et al., 2005). The model not only captures the short and long term effects but it is also context-specific to Nepal.

This study employs annual data from 1975 to 2023 to assess the tourism-growth nexus in Nepal using time-series analysis. Data for RFXT and TA (proxy for tourism) are taken from Nepal Tourism Statistics (2023) and, RGDP (proxy for economic growth) is taken from various publications of economic survey and, data for secondary education participation (SEC) as a proxy for labor force is collected from world development indicators as given in World Bank (2024).

3.2 Unit Root Test

The next step involves examining the time-series characteristics of the data by conducting unit root tests to determine whether each variable is stationary or exhibits a unit root. For this purpose, the Augmented Dickey- Fuller (ADF) test (Dickey & Fuller, 1981), and the Phillips-Perron (PP) test (Phillips & Perron, 1988) are employed. The ADF test checks for stationarity by adding lagged differences to address autocorrelation (Paudel & Alharthi, 2021; Khatri et al., 2024; Poudel et al., 2024). It is applied in three forms:

$$\Delta y_t = \alpha + \gamma y_{t-1} + \sum_{i=1}^{p} \Delta y_{t-i} + u_t; \text{ At constant} \quad (3)$$

$$\Delta y_t = \alpha + t\beta_t + \gamma y_{t-1} + \sum_{i=1}^{p} \Delta y_{t-i} + u_t; \text{ At constant and trend} \quad (4)$$

$$\Delta y_t = \gamma y_{t-1} + \sum_{i=1}^{p} \Delta y_{t-i} + u_t; \text{ At none} \quad (5)$$

Where:

y_t = Time series variable

Δy_t = First difference ($y_t - y_{t-1}$)

α = Constant term (drift)

β_t = Time trend (if included)

γ = Coefficient of lagged level (tests for unit root)

u_t = Error term

The PP test also tests for unit roots, correcting for serial correlation and heteroskedasticity without adding lags. The basic regression model is:

$$\Delta Y_t = \alpha + \beta_t + \rho Y_{t-1} + \epsilon_t \quad (6)$$

The PP test statistic adjust the t-statistic of ρ from the OLS regression to account for autocorrelation:

$$Z_t = \left(\frac{\hat{\sigma}^2}{\hat{\lambda}^2}\right)^{1/2} t_p - \frac{1}{2}\left(\frac{\hat{\lambda}^2 - \hat{\sigma}^2}{\hat{\lambda}^2}\right)\left(\frac{T \cdot SE(\hat{\rho})}{\hat{\sigma}^2}\right) \quad (7)$$

Where:

$\hat{\sigma}^2$ = Variance of residuals

$\hat{\lambda}^2$ = Long-run variance (Newey-West estimator)

t_p = t-statistic for ρ

T = Sample size

SE ($\hat{\rho}$) = Standard error of ρ

The unit root tests for both ADF and PP tests assume the null hypothesis (H_0) of non-stationarity and the alternative (H_1) of stationarity. A variable is considered stationary if the test statistic is more negative than McKinnon's critical value at 5% or 10% level of significance. To ensure robustness, tests are performed at both level and first difference, using models with intercept and trend, as illustrated in the equations (3 to 7).

Table 1 summarizes unit root test results using ADF and PP tests to assess stationarity of economic variables at level and first difference under constant and trend specifications. At level, lnRFXT is stationary in both cases; lnRGDP and lnTA are trend-stationary, lnSEC is non-stationary. After first differencing, all variables become stationary, including lnSEC. These results confirm the variable are I(0) or I(1), suitable for ARDL modeling, which excludes I(2) series.

Table 1: *Unit Root Test*

Unit root test at level: I(0)	**Test with constant**		**Test with constant and trend**	
Variables	ADF	PP	ADF	PP
lnRGDP	0.25	0.22	-3.69**	-3.64**
lnRFXT	-3.14**	-3.02**	-3.65**	-3.52**
lnTA	-2.08	-1.89	-5.67***	-3.30*
lnSEC	-1.26	-2.29	-2.12	-1.84
Critical value at 5%	-2.92	-.292	-3.51	-3.51
Critical value at 5%	-3.57	-3.57	-4.16	-4.16
Unit root test at first difference: I(1)	Test with constant		Test with constant and trend	
Variables	ADF	PP	ADF	PP
lnSEC	-7.59***	-8.14***	-7.82***	-10.56***
Critical value at 5%	-2.93	-2.93	-3.51	-3.51
Critical value at 1%	-3.58	-3.58	-4.17	-4.17

Source: Researcher's computation using Eviews 12

Note: ***,** and * indicate the statistics are significant at 1%, 5%, and 10% level of significance respectively.

3.3 Econometrics Analysis

After analyzing the time series characteristics, the next crucial step is cointegration testing to understand the long-run and short-run relationships between the dependent and independent variables in equation (1) and (2). This method is ideal because it handles a mix of stationary [I(0)] and first-difference stationary [I(1)] variables and allows for simultaneous estimation of both short-run and long-run dynamics, which is perfect for assessing how tourism affects economic growth (Pesaran et al., 2001; Poudel et al., 2023a).

Following Pesaran et al. (2001), an ARDL representation of equation (1) and (2) can be written as:

$$\Delta \ln RGDP_t = \gamma_0 + \delta_1 \ln RGDP_{(t-1)} + \delta_2 \ln RFXT_{(t-1)} + \delta_3 \ln SEC_{(t-1)} + \sum_{j=1}^{p} \gamma_{1j} \Delta \ln RGDP_{(t-j)} + \sum_{j=0}^{q} \gamma_{2j} \Delta \ln RFXT_{(t-j)} + \sum_{j=0}^{r} \gamma_{3j} \Delta \ln SEC_{(t-j)} + \xi_t \quad (8)$$

$$\Delta \ln RGDP_t = \gamma_0 + \delta_1 \ln RGDP_{(t-1)} + \delta_2 \ln TA_{(t-1)} + \delta_3 \ln SEC_{(t-1)} + \sum_{j=1}^{p} \gamma_{1j} \Delta \ln RGDP_{(t-j)} + \sum_{j=0}^{q} \gamma_{2j} \Delta \ln TA_{(t-j)} + \sum_{j=0}^{r} \gamma_{3j} \Delta \ln SEC_{(t-j)} + \epsilon_t \quad (9)$$

Where, is the first difference operator, is drift component. The coefficients: δ_1, δ_2 and $\delta_3$represent the long-run relationship and, γ_{1j}, γ_{2j} and γ_{3j}represents the short-run dynamics of the model. ξ_t and $_t$are usual white noise error terms which captures the effects that cannot be explained.

In the same way, the short-run error correction version of model of equation (8) and (9) is

$$\Delta \ln RGDP_t = \gamma_0 + \sum_{j=1}^{p} \gamma_{1j} \Delta \ln RGDP_{(t-j)} + \sum_{j=0}^{q} \gamma_{2j} \Delta \ln RFXT_{(t-j)} + \sum_{j=0}^{r} \gamma_{3j} \Delta \ln SEC_{(t-j)} + \lambda ECM_{t-1} + \xi_t \quad (10)$$

$$\Delta \ln RGDP_t = \gamma_0 + \sum_{j=1}^{p} \gamma_{1j} \Delta \ln RGDP_{(t-j)} + \sum_{j=0}^{q} \gamma_{2j} \Delta \ln TA_{(t-j)} + \sum_{j=0}^{r} \gamma_{3j} \Delta \ln SEC_{(t-j)} + \lambda ECM_{t-1} + \epsilon_t \quad (11)$$

In the above equation the coefficients of the lag variables i.e. and give the short-run relation of variables.is the speed of adjustment parameter of error correction model (ECM) and demonstrates the divergence or convergence in the direction of the long-run equilibrium. Positive value of points out divergence and negative value points out convergence. To ensure robustness of the ARDL model, diagnostic tests were conducted: the LM test checked for serial correlation, heteroskedasticity tests assessed error variance stability, the Jarque-Bera test verified residual normality, and model stability was confirmed using CUSUM and CUSUMQ tests (Ghimire & Paudel, 2024).

4. Results and discussion

In this section, we discuss the results of the econometric estimation. Table 2 presents the long-run relationship results for the model of different specifications in columns (1) as

ARDL (1, 0, 2) model, and (2) as ARDL (2, 2, 2). Similarly, Table 3 present the results for the ECM (Error Correction Model) version in different specifications (columns (1) as the ECM (Error Correction Model) version in different specifications (columns (1) as ARDL (1, 0, 2) model, and (2) as ARDL (2, 2, 2) model) of the benchmark model. These tables show the long-run and short-run coefficients of ARDL with different lags as shown in their headings for the given model.

Table 2 shows that in ARDL (1, 0, 2) model, foreign exchange earnings from tourism (lnRFXT) show a statistically insignificant negative impact on economic growth (coefficient = -0.03, SE = 0.12). This aligns with observations of Nepal's tourism sector, where a significant portion operates informally, leading to substantial leakage and limited integration with other productive sectors, thereby diluting its overall contribution to GDP despite its substantial share (WTTC, 2020). Conversely, secondary education participation (lnSEC) demonstrates a robust, statistically significant positive relationship, with a 1% increase in participation correlating with a 0.75% rise in GDP (coefficient = 0.75, significant at 1%).

The ARDL (2, 2, 2) model, which substitutes tourist arrivals (lnTA) for foreign exchange earnings, presents an unexpected outcome. Tourist arrivals show a large negative coefficient (-4.94) but are statistically insignificant due to a very high standard error (15.48). This suggests an unstable or non-existent relationship, potentially reflecting challenges in measuring the quality of tourism (e.g., length of stay, expenditure patterns) despite increased visitor numbers. Similarly, while secondary education participation's coefficient becomes substantially larger (3.67), it also loses its statistical significance (SE = 9.20).

Table 2: *ARDL Model, Long-Run Coefficients Results*

Dependent variable: LnRGDP	**(1)**	**(2)**
LnRFXT	-0.03	
	(0.12)	
LnTA		-4.94
		(15.48)
LnSEC	0.75***	3.67
	(0.09)	(9.20)

Source: Researcher's computation using Eviews 12

Note: **, ** and are used to indicate that the statistics is significant at the level of 1, 5 and 10 percent of significance respectively. The standard error are given in the figures in parenthesis.

These results imply that foreign exchange earnings include tourism and tourist arrivals are not significant in the long-run economic growth of Nepal, which refutes some previous studies (Lekshmi & Mallick, 2020; Dhungana, 2023; Poudel et al.,2023) but supports other studies (Bhattarai & Karmacharya, 2022). This difference could be due to the fact that Nepal relies heavily on imports in the tourism industry, which cancels the possible domestic demand and job increases due to the influx of

tourists or foreign exchange. The steady, positive and at times substantial value of education in the end points to the value of human capital formation in sustainable economic development in Nepal indicating that the influence of tourism is confounded by the broader educational development.

In Table 3, there is the short-run determinants of economic growth (D(lnRGDP)) in Nepal in the form of ARDL (1, 0, 2) in column (1), and ARDL (2, 2, 2) in column (2). The lagged dependent variable (D(lnRGDP(-1)) in both models is statistically significant with the coefficient being negative (-0.34 at 1% significance). This implies that historical alterations of the GDP growth are likely to attenuate the present growth implying that there might be a mean-reversion or correction process in the economy.

Table 3: *ARDL Model, ECM Results*

Dependent variable: D(LnRGDP)	**ARDL (1, 0, 2)**	**ARDL (2, fin2, 2)**
D(LnRGDP(-1))		-0.34***
		(0.13)
D(LnTA)		0.07***
		(0.01)
D(LnTA(-1))		-0.05***
		(0.01)
D(LnSEC)	0.02	0.01
	(0.04)	(0.03)
D(LnSEC(-1))	-0.12***	-0.07**
	(0.04)	(0.03)
ECT(-1)	-0.08***	-0.01***
	(0.008)	(0.001)

Source: Researcher's computation using Eviews 12

Note: The significance of the statistics at the 10% level of significance in statistics indicate that the statistics is significant at the level of 1% and 5% respectively. The standard error is presented in the figures in the parenthesis.

Regarding the ARDL (2, 2,2) model, the first difference of the number of tourists (D(lnTA)) has a positive and significant effect on the present GDP growth (coefficient = 0.07, significant at 1%). Nonetheless, it has a significant negative coefficient (-0.05) in its lagged value (D(lnTA(-1)) and this implies that tourist arrivals in the short run give an immediate rise, but the positive impact of tourist arrivals on growth is not sustained in the long-run. This is a contradiction to some studies as well as a confirmation to others, indicating that the quantity of tourists is significant in the short run, but the volume of foreign currency spent and retained could be of greater significance to long-term growth.

Both models (ARDL (1, 0, 2): -0.08; ARDL (2, 2, 2): -0.01; both at 1% significance) demonstrate a negative error correction term (ECT(-1)) that is significant and has a significant effect on both. This proves that disequilibrium is warranted and the ARDL (1, 0, 2) model adjusts much faster (8%) than ARDL (2, 2, 2) model (1%). It means that the ARDL (1, 0, 2) model is more receptive to restore the

equilibrium but the ARDL (2, 2, 2) has a slower adjustment rate.

However, unlike within the immediate period, secondary education participation (D(LnSEC)) and the period it is currently in is not statistically significant. The lagged effect of secondary education participation however, is important and negative in both models (ARDL (1, 0, 2): -0.12 at 1%; ARDL (2, 2, 2): -0. 07 at 5%). This implies that education may not initially give an immediate effect to the growth of GDP, but its delayed adverse effect may be explained by the lags in absorbing the labor market or inefficiency on converting education benefits into productivity.

In short-term analysis, it is possible to note that the effect of tourist foreign exchange earnings on economic development in Nepal is not direct, which is consistent with Bhattarai and Karmacharya (2022) but not with numerous other studies (Gautam, 2008, 2011, 2014; Khan et al., 2020; Kumar, 2019; Pan & Dossou, 2019; Paudyal, 2012). On the other hand, there is a high short-term effect on the economic growth of tourist arrivals. This indicates that while the volume of tourists matters, the spending and retention of foreign currency are likely more crucial for sustained economic benefit. Furthermore, the significant error correction term (ECT) confirms Nepal's economy exhibits a self-correcting mechanism over time, influenced by vital structural factors such as education, investment efficiency, and fiscal management.

5. Diagnostic and Stability Tests

Considering the post estimation tests statistic such as serial correlation (Breusch-Godfrey), heteroskedasticity (Breusch-Pagan-Godfrey), normality (Jarque-Bera) test and, stability tests (CUSUM/ CUSUMSQ), the robustness of the model is confirmed (Acharya et al.,2024).

Table 4: *LM Correlation Test*

	ARDL (1, 0, 2)		**ARDL (2, 2, 2)**	
Statistics	Value	p-value	Value	p-value
F-stat	1.57	0.22	1.08	0.35

Source: Researcher's computation using Eviews 12

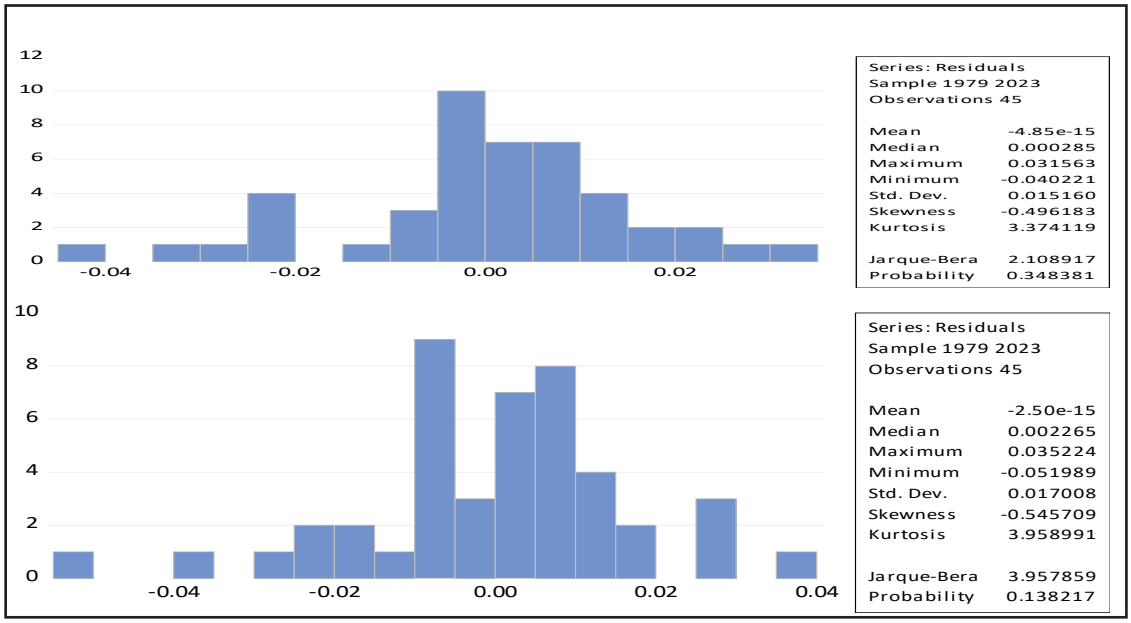
Table 4 and 5 shows the moderately high value of R-square confirming that both the ARDL models are free from serial correlation and heteroskedasticity. Meanwhile, the results of Jarque-Bera Normality Test, CUSUM Test and CUSUMSQ Test are shown in the Figure 4, 5 and 6 respectively. Figure 4 shows that the residuals are normally distributed in both the ARDL (1, 0, 2) and ARDL (2, 2, 2) models.

Table 5: *Heteroskedasticity Test*

	ARDL (1, 0, 2)		**ARDL (2, 2, 2)**	
Statistics	Value	p-value	Value	p-value
F-stat	0.98	0.51	0.46	0.88
Obs* R-square	16.11	0.44	4.16	0.84

Source: Researcher's computation using Eviews 12

Figure 4: *Jarque-Bera Normality Test*



Source: Researcher's computation using Eviews 12

Figure 5: *CUSUM Test*

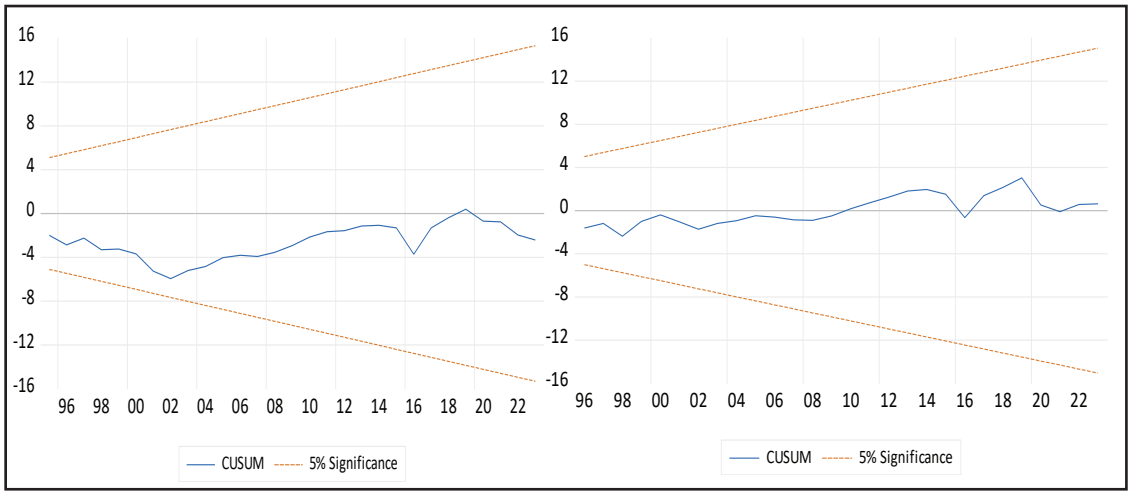
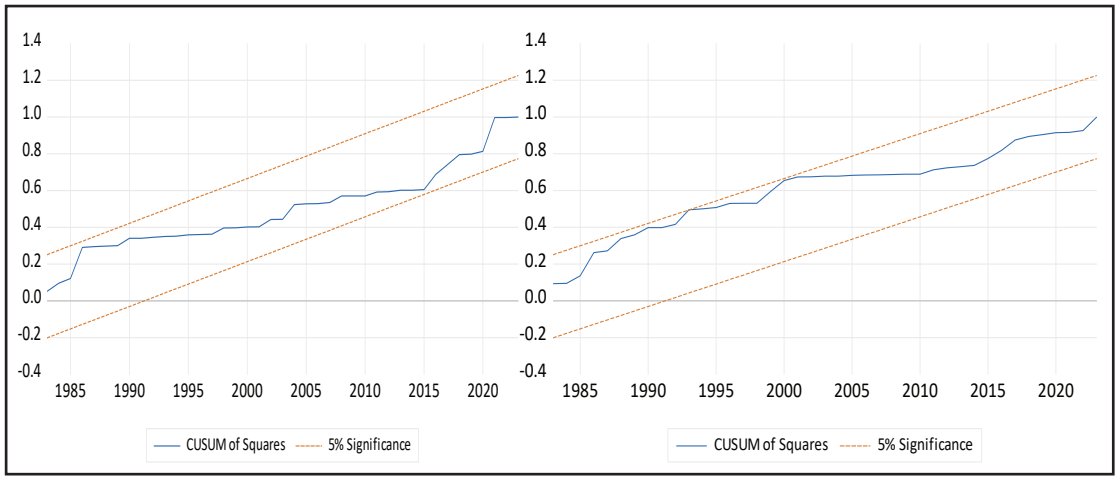


Figure 6: *CUSUMSQ Test*



Source: Researcher's computation using Eviews 12

The CUSUM and CUSUMSQ stability tests for both the ARDL (1, 0, 2) and ARDL (2, 2, 2) models confirm their structural stability. As depicted in Figures 5 and 6, the plotted results remain consistently within the 5% significance bounds. This indicates that the models are well-specified and stable throughout the estimation period, providing robust evidence against issues of misspecification or instability in the econometric analysis.

6. Conclusions

Tourism-growth relationship in Nepal has attracted more and more attention of the policymakers as the country depends largely on tourism as a major cause of foreign exchange and employment. With this realization, a concise discussion of tourism development has been given in terms of foreign exchange earnings gained due to tourism and number of tourist arrivals. Thereafter, descriptive analysis of its contribution to the Nepalese economic development has been given. By so doing, the main trends, structural issues, and policy interventions have been brought into the fore that have influenced the tourism industry over the decades. This has been followed by evaluation of time-series properties of the macroeconomic variables of interest to form an empirical framework of an acceptable standard. The effects of tourism on the growth of the economy have subsequently been looked into by utilizing the ARDL cointegration model, utilizing detailed measures of tourist arrivals, foreign exchange earnings through tourism and involvement in secondary schooling, between 1975 and 2023.

The analysis verifies the correctness of the hypothesis of tourism-led growth in the short-run whereby the foreign exchange earnings and the tourist arrivals have a positive impact on the real GDP. Especially, the contribution of tourist arrivals is consistent and statistically significant, which shows the potential of the sector to activate instant economic operations by means of employment opportunities, development of the service sector, and multiplier impacts. These benefits, however, are in themselves

not stable considering that tourism is prone to international shocks such as political instability, economic slumps as well as health outbreaks.

Tourism in itself, in the long run, does not contribute to sustainable economic growth substantially. Rather, the involvement of human capital especially secondary education is central in determining the long run development outcomes. This underscores the need to incorporate tourism policy with the general socio-economic policies that will facilitate stronger education, labor productivity and institutional resilience.

The research also reveals inherent flaws in the tourism industry in Nepal including dependency on imports, informal economy, and lack of internal connectivity that limits maintenance of foreign exchange revenues. These issues are seen to point to the necessity of a redefined policy that provides a balance in stimulating tourism in the short term and structural transformation in the long term. Some of the policy recommendations are the encouragement of high-value and diversified tourism, reinforcement of local supply chains, expansion of education-employment bridges and facilitation of formalization of tourism economy.

Finally, although tourism is a significant source of Nepal economy, it should be re-evaluated in the context of an overall development approach. With the policy of tourism being in line with investment in human capital, infrastructure and institutional stability, Nepal is able to make its tourism industry a formidable and integrative contributor to sustainable growth. The results enrich the existing body of literature on tourism economics and provide a conceptual framework in the future study of the multifacetedness of tourism in the developing economies.

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