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Income Dynamics in Tourists' Source Countries and Tourism Demand in Tanzania: An Analysis of Short-Run and Long-Run Relationships

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Abstract: This study examined the short-run and long-run effects of tourists' source-country income, real effective exchange rate, and inflation on tourism demand in Tanzania. The study was guided primarily by the Tourism Destination Competitiveness (TDC) Theory developed by Crouch and Ritchie (1999) and advanced by Dwyer and Kim (2003), which explains tourism demand through the interaction of destination and economic conditions. A positivist philosophical approach and quantitative ex-post facto research design were adopted. The study used 120 observations of secondary time-series data and employed descriptive statistics, the Augmented Dickey-Fuller unit root test, the Variance Inflation Factor, ARDL bounds testing, ARDL estimation, and post-estimation diagnostic tests using EViews 13. The bounds test confirmed a significant long-run equilibrium relationship among the variables. Long-run results revealed that per capita income in China, the United States, and Canada positively and significantly influenced tourism demand, with elasticities of 2.714, 1.064, and 7.591, respectively. In the short run, income from all three source markets positively affected tourism demand, whereas the real effective exchange rate and inflation had significant negative effects. The error-correction coefficient of -0.865 indicated rapid adjustment toward long-run equilibrium. The study concludes that source-country income is the dominant economic driver of tourism demand in Tanzania, while exchange-rate movements and inflation constrain short-run demand. It recommends differentiated international marketing strategies, particularly targeting high-income and rapidly expanding source markets, alongside macroeconomic stability and competitive exchange-rate management to sustain tourism growth.

Keywords: Inflation, Income dynamics, Tanzania, Tourism Demand, Long run and short run

1. INTRODUCTION

Tanzania is one of Africa's prominent international tourism destinations, endowed with globally recognized attractions such as the Serengeti National Park, Mount Kilimanjaro, Ngorongoro Conservation Area and Zanzibar (Wamboye et al., 2020; Ministry of Natural Resources and Tourism [MNRT], 2026). Tourism contributes substantially to foreign exchange earnings, employment and economic development, making the determinants of international tourist demand an important policy concern (MNRT, 2026). Empirical evidence indicates that tourism demand is strongly influenced by economic conditions in tourists' countries of origin, particularly per capita income (Waqas-Awan et al., 2021; Balcilar et al., 2021; Borrego-Domínguez et al., 2022). Higher income generally increases tourists' purchasing power and their capacity to undertake international travel, although the magnitude of income elasticity may differ across source markets (Waqas-

Awan et al., 2021). In Tanzania, Wamboye et al. (2020) similarly established that income in tourists' countries of origin significantly influences tourist arrivals.

The real effective exchange rate (REER) is another important determinant because exchange-rate movements affect Tanzania's international price competitiveness and the relative cost of travel (Bashagi & Muchapondwa, 2009; Darc et al., 2023). Inflation may also affect tourism demand by increasing the prices of accommodation, transportation, food and other tourism services, thereby influencing destination affordability (Bashagi & Muchapondwa, 2009; Nguyen & Nguyen, 2021). However, limited empirical research has jointly examined the effects of per capita income in China, the United States and Canada, REER, and inflation on Tanzania's tourism demand while distinguishing between short-run and long-run effects.

This study therefore addresses this gap using the ARDL approach.

Research Objectives

The study was guided by the following objectives:

General Objective: To examine the short-run and long-run effects of tourists' source-country income, real effective exchange rate, and inflation on tourism demand in Tanzania.

Specific Objectives:

1. To test for the existence of a long-run cointegrating relationship among tourism demand, per capita income in China, the United States, and Canada, real effective exchange rate, and inflation in Tanzania.
2. To estimate the long-run elasticities of tourism demand with respect to per capita income in China, the United States, and Canada, real effective exchange rate, and inflation.
3. To estimate the short-run dynamics of tourism demand with respect to per capita income in China, the United States, and Canada, real effective exchange rate, and inflation.

Research Questions

The study sought to answer the following research questions:

1. Is there a long-run equilibrium relationship among tourism demand, per capita income in China, the United States, and Canada, real effective exchange rate, and inflation in Tanzania?
2. What are the long-run effects of per capita income in China, the United States, and Canada, real effective exchange rate, and inflation on tourism demand in Tanzania?
3. What are the short-run effects of per capita income in China, the United States, and Canada, real effective exchange rate, and inflation on tourism demand in Tanzania?

Hypotheses

Based on the research objectives and theoretical framework, the following hypotheses were formulated:

H₁: There is a significant long-run equilibrium relationship among tourism demand, per capita income in China, the United States, and Canada, real effective exchange rate, and inflation in Tanzania.

H₂: Per capita income in China has a positive and significant effect on tourism demand in Tanzania in the long run.

H₃: Per capita income in the United States has a positive and significant effect on tourism demand in Tanzania in the long run.

H₄: Per capita income in Canada has a positive and significant effect on tourism demand in Tanzania in the long run.

H₅: The real effective exchange rate has a negative and significant effect on tourism demand in Tanzania.

H₆: Inflation has a negative and significant effect on tourism demand in Tanzania.

1. PROBLEM STATEMENT

Tanzania possesses exceptional tourism resources, including the Serengeti National Park, Mount Kilimanjaro, Ngorongoro Conservation Area and Zanzibar, and tourism remains an important source of foreign exchange, employment and economic growth (Wamboye et al., 2020; Ministry of Natural Resources and Tourism [MNRT], 2026). Despite this potential and the recent recovery in international tourist arrivals, tourism demand remains vulnerable to changing economic conditions in major source markets. In particular, fluctuations in per capita income in tourists' countries of origin, the real effective exchange rate (REER), and inflation can alter tourists' purchasing power, the relative cost of visiting Tanzania and destination price competitiveness (Bashagi & Muchapondwa, 2009; Waqas-Awan et al., 2021; Darc et al., 2023). This vulnerability is particularly important for Tanzania because international tourism involves substantial expenditure and is therefore sensitive to economic conditions in source countries.

Although previous studies have examined determinants of tourism demand in Tanzania, much of the existing evidence has considered income, prices or exchange rates either collectively or within broader models, without adequately distinguishing the effects associated with individual major source markets (Bashagi & Muchapondwa, 2009; Wamboye et al., 2020). Moreover, international evidence suggests that tourism-demand responses to income and prices differ considerably across origin countries and over time (Waqas-Awan et al., 2021; Nguyen, 2022). Consequently, evidence based on aggregate or generalized income measures may conceal important differences between China, the United States and Canada, which are economically distinct source markets.

A further empirical problem concerns the distinction between short-run and long-run relationships. Changes in source-country income, REER and inflation may generate immediate responses in tourist arrivals while their longer-term effects may differ as tourists, travel operators and destination markets adjust. Existing Tanzanian studies provide insufficient evidence on these dynamic relationships. Therefore, the precise extent to which Chinese, American and Canadian per capita income, REER and inflation determine tourism demand in Tanzania in both the short and long run remains inadequately established. This study addresses this knowledge gap by employing the Autoregressive Distributed Lag (ARDL) approach to estimate the short-run and long-run effects of these economic determinants on tourism demand in Tanzania.

2. THEORETICAL FRAMEWORK

The study was guided by two theories: Tourism Destination Competitiveness (TDC) Theory and Push-Pull Theory.

Tourism Destination Competitiveness (TDC) Theory

The TDC Theory was pioneered by Crouch and Ritchie (1999) and subsequently developed by Ritchie and Crouch (2003) and Dwyer and Kim (2003). The theory proposes that tourism demand depends on the interaction of destination resources, supporting infrastructure, destination management, institutional conditions, and demand factors. Recent research continues to demonstrate the relevance of destination competitiveness for understanding tourism performance, particularly in developing economies (Kovačić et al., 2024; Xia et al., 2024; Pavluković et al., 2024). This theory is directly relevant to the present study because it provides a framework for examining how source-country income, real effective exchange rate, infrastructure development, tourism policies, institutional quality, and inflation influence tourism demand in Tanzania.

Push-Pull Theory

The Push-Pull Theory was introduced by Dann (1977) and further developed by Crompton (1979). It explains tourism decisions through internal push motivations and external destination-specific pull attributes. Contemporary tourism research continues to apply the theory to explain destination choice and tourist motivations (Soldatenko et al., 2023; Duong et al., 2023). In this study, Tanzania's wildlife, beaches, cultural heritage, infrastructure, safety, and destination attractiveness constitute pull factors, while tourists' economic circumstances contribute to their propensity to travel. Nevertheless, TDC

Theory provides the principal theoretical foundation because it accommodates the broader economic, institutional, infrastructural, and policy determinants examined in this study.

Conceptual Framework

The conceptual framework illustrates the hypothesized relationships among the study variables. Tourism demand (LNTORD) is the dependent variable, while per capita income in China (LNPCIN_CH), per capita income in the United States (LNPCIN_US), per capita income in Canada (LNPCIN_CA), real effective exchange rate (LNREER), and inflation (INFL) are the independent variables. The framework posits that:

- Per capita income in China, the United States, and Canada positively influences tourism demand, as higher income increases tourists' purchasing power and propensity to travel internationally.
- The real effective exchange rate negatively influences tourism demand, as exchange-rate depreciation makes Tanzania more expensive for international tourists.
- Inflation negatively influences tourism demand, as higher domestic prices increase the cost of tourism services.

The conceptual framework is presented diagrammatically below:

Conceptual Framework

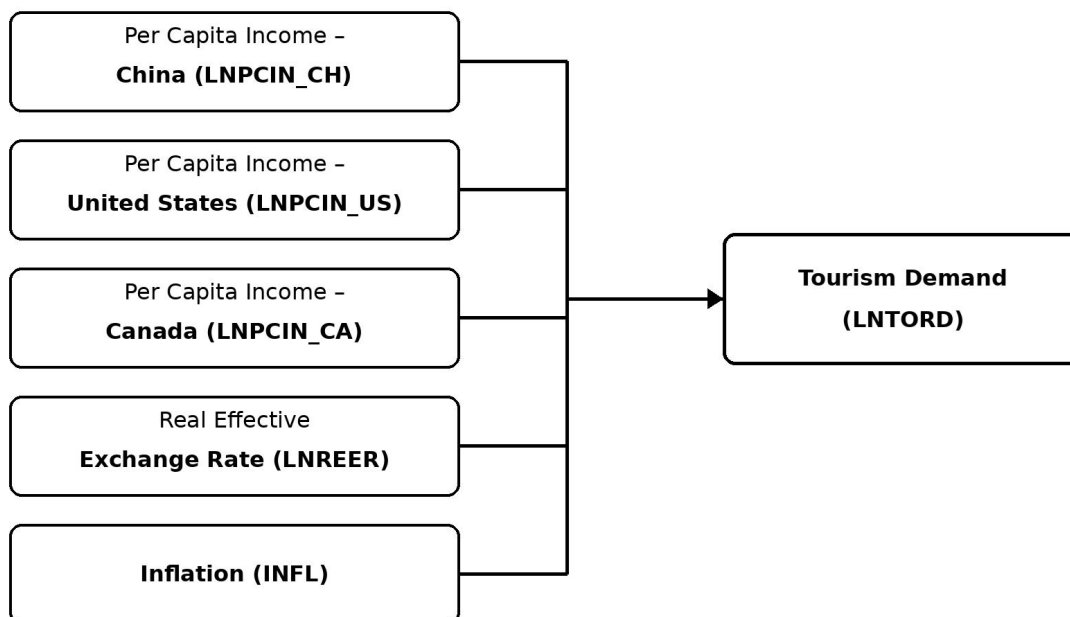


Figure 1: Conceptual Framework of the Study

3. LITERATURE REVIEW

Empirical Literature Review

Empirical literature on tourism demand has consistently emphasized tourist arrivals, source-country income, exchange rates, and inflation as important determinants of international tourism flows. This study specifically focuses on tourism demand in Tanzania, measured by the log of tourism demand (LNTORD), and examines the influence of per capita income from China, the United States, and Canada, together with the real effective exchange rate and inflation.

Source-Country Income and Tourism Demand

Regarding source-country income, Waqas-Awan et al. (2021), using bilateral tourism flows involving 192 countries, found that income significantly determines tourism demand, although income elasticity varies according to the economic development of origin countries. Their finding suggests that changes in disposable income affect tourists' ability to undertake international travel. Similarly, Balcilar et al. (2021) established a long-run relationship between tourism expenditure, GDP, relative prices, and employment across OECD countries. Borrego-Domínguez et al. (2022) also found that GDP positively influenced tourism demand in Spain. These findings support examining Chinese, American, and Canadian per capita income separately, since tourists from different source markets may respond differently to income changes.

Song et al. (2012) emphasized that tourism demand measurement and modeling require careful consideration of income elasticities, which vary across destinations and source markets. Nguyen (2022) further demonstrated that tourism demand elasticities differ considerably across regions and markets, with income elasticities ranging from 0.5 to 2.5 depending on the destination and source country characteristics. This variation underscores the importance of disaggregating income effects by source market, as undertaken in the present study.

Exchange Rate and Tourism Demand

The real effective exchange rate (LNREER) is another important determinant because exchange-rate movements influence the relative cost of travelling to Tanzania. Bashagi and Muchapondwa (2009), studying Tanzania, identified price-related factors as important determinants of tourism demand. Darc et al. (2023) similarly found that exchange-rate conditions significantly influence tourism demand, indicating that unfavorable exchange-rate movements can reduce destination attractiveness. Nguyen and Nguyen (2021) found that exchange rate volatility negatively affects tourism demand in ASEAN countries, suggesting that tourists prefer destinations with stable and favorable exchange rates.

Inflation and Tourism Demand

Finally, inflation (INFL) affects tourism demand by increasing accommodation, transportation, food, and other tourism-related costs. Bashagi and Muchapondwa (2009) emphasized the importance of macroeconomic stability for Tanzania's tourism sector, while Nguyen and Nguyen (2021) found inflation to

negatively affect tourism demand. Begashe et al. (2024) noted that price sensitivity varies across tourist segments, with some tourists being more responsive to price changes than others.

Research Gap

Despite the extensive literature on tourism demand determinants, there is a notable gap in the context of Tanzania. Specifically, existing studies have not adequately distinguished the effects associated with individual major source markets (China, the United States, and Canada) when examining tourism demand in Tanzania. Furthermore, limited Tanzanian studies jointly examine Chinese, US, and Canadian income, real effective exchange rates, and inflation using a short-run and long-run ARDL framework. Most previous studies have either aggregated source markets or focused on a limited set of determinants without distinguishing between short-run and long-run dynamics.

The present study addresses these gaps by: (1) disaggregating source-country income effects by major source markets (China, United States, and Canada); (2) employing the ARDL bounds-testing approach to simultaneously estimate short-run and long-run relationships; and (3) providing policy-relevant evidence for Tanzania's tourism sector development.

Therefore, this study aims to fill this gap by examining the differential effects of per capita income from China, the United States, and Canada, alongside REER and inflation, on tourism demand in Tanzania using a dynamic econometric framework that distinguishes between short-run and long-run effects.

4. METHODOLOGY

The study adopted a positivist research philosophy, emphasizing objective measurement, empirical observation, and statistical verification of relationships among the study variables. A quantitative, non-experimental ex-post facto research design was employed using secondary time-series data on tourism demand, per capita income from China, the United States and Canada, real effective exchange rate, and inflation. The analysis was conducted using EViews 13.

Research Design

The study employed a quantitative ex-post facto research design. This design was appropriate because the study examined existing relationships among variables that cannot be manipulated experimentally. The ex-post facto design allows for the analysis of cause-and-effect relationships using secondary data that have already occurred (Cohen et al., 2018). This design is commonly used in tourism demand studies that employ time-series econometric techniques (Song et al., 2012).

Data Sources and Study Period

The study utilized secondary time-series data covering a period of thirty years from 1995 to 2024, yielding 120 quarterly observations. The data sources for each variable are presented in Table 1 below:

Table 1: Variable Definition and Data Sources

Variable	Symbol	Measurement	Source	Study Period
Tourism Demand	LNTORD	Natural logarithm of international tourist arrivals to Tanzania	World Bank Development Indicators (WDI)	1995Q1-2024Q4
Per Capita Income - China	LNPCIN_CH	Natural logarithm of GDP per capita (constant US\$) - China	World Bank Development Indicators (WDI)	1995Q1-2024Q4
Per Capita Income - United States	LNPCIN_US	Natural logarithm of GDP per capita (constant US\$) - United States	World Bank Development Indicators (WDI)	1995Q1-2024Q4
Per Capita Income - Canada	LNPCIN_CA	Natural logarithm of GDP per capita (constant US\$) - Canada	World Bank Development Indicators (WDI)	1995Q1-2024Q4
Real Effective Exchange Rate	LNREER	Natural logarithm of real effective exchange rate (CPI-based)	Bank for International Settlements (BIS)	1995Q1-2024Q4
Inflation	INFL	Consumer price index inflation rate (%)	World Bank Development Indicators (WDI)	1995Q1-2024Q4

Source: Researcher's compilation, 2026

Population and Sample

The population of this study comprised all international tourist arrivals to Tanzania during the study period. The sample consisted of 120 quarterly observations of time-series data for the variables of interest from 1995Q1 to 2024Q4. The selection of the study period was guided by data availability and the need to capture both short-run and long-run dynamics in tourism demand. The sample size of 120 observations is sufficient for ARDL estimation, which performs well with sample sizes between 30 and 80 observations (Pesaran et al., 2001) and even better with larger samples.

Variable Definitions and Operationalization

The variables were operationalized as follows:

Dependent Variable: Tourism Demand (LNTORD)

- **Definition:** International tourism demand in Tanzania
- **Measurement:** Natural logarithm of international tourist arrivals to Tanzania
- **Data Source:** World Bank Development Indicators
- **Justification:** Tourist arrivals is the most commonly used measure of tourism demand in empirical tourism research (Song et al., 2012; Wamboye et al., 2020)

Independent Variables:

1. Per Capita Income - China (LNPCIN_CH)

- **Definition:** Income levels in the tourists' country of origin (China)

- **Measurement:** Natural logarithm of GDP per capita (constant US\$)
- **Data Source:** World Bank Development Indicators
- **Expected Sign:** Positive (+), as higher income increases tourism expenditure capacity

2. Per Capita Income - United States (LNPCIN_US)

- **Definition:** Income levels in the tourists' country of origin (United States)
- **Measurement:** Natural logarithm of GDP per capita (constant US\$)
- **Data Source:** World Bank Development Indicators
- **Expected Sign:** Positive (+), as higher income increases tourism expenditure capacity

3. Per Capita Income - Canada (LNPCIN_CA)

- **Definition:** Income levels in the tourists' country of origin (Canada)
- **Measurement:** Natural logarithm of GDP per capita (constant US\$)
- **Data Source:** World Bank Development Indicators

- **Expected Sign:** Positive (+), as higher income increases tourism expenditure capacity

4. Real Effective Exchange Rate (LNREER)

- **Definition:** Real effective exchange rate reflecting Tanzania's international price competitiveness
- **Measurement:** Natural logarithm of CPI-based real effective exchange rate
- **Data Source:** Bank for International Settlements
- **Expected Sign:** Negative (-), as depreciation makes Tanzania more expensive for foreign tourists

5. Inflation (INFL)

- **Definition:** Domestic price level changes affecting tourism service costs
- **Measurement:** Consumer price index inflation rate (%)
- **Data Source:** World Bank Development Indicators
- **Expected Sign:** Negative (-), as higher inflation increases tourism costs

Model Specification

The general functional relationship between tourism demand and the critical success factors is expressed as:

$$\text{TORDt} = f(\text{PCINit} + \text{INFLt}) \dots\dots\dots (1)$$

Where:

- **TORDt** = Tourism Demand in Tanzania. This is proxied by international tourists' arrivals to Tanzania at time t
- **PCINit** = Per capita income levels in tourists' countries of origin. The study purposely selected countries with the major spending on tourism in Tanzania. These countries are China, Canada and USA.
- **INFLt** = Inflation Rate in Tanzania at time t

The ARDL estimation process using EViews 13 simultaneously estimates both long-run and short-run models. Therefore, the short-run and long-run form of the equations is given as:

$$\Delta \text{LnTORDt} = \alpha_0 + \alpha_1 \Delta \text{LnTORDt-i} + \alpha_2 \Delta \text{LNPCIN_CHt-i} + \alpha_3 \Delta \text{LNPCIN_UST-i} + \alpha_4 \Delta \text{LNPCIN_CAT-i} + \alpha_5 \Delta \text{LNREERT-i} + \alpha_6 \Delta \text{INFLt-i} + \beta_1 \Delta \text{LnTORDt-i} + \beta_2 \Delta \text{LNPCIN_CHt-i} + \beta_3 \Delta \text{LNPCIN_UST-i} + \beta_4 \Delta \text{LNPCIN_CAT-i} + \beta_5 \Delta \text{LNREERT-i} + \beta_6 \Delta \text{INFLt-i} + \lambda \text{ectt-1} + \varepsilon_t \dots\dots\dots (2)$$

Where:

- Δ = First difference operator
- α_0 = Intercept
- α_1 to α_6 = Long-run coefficients
- β_1 to β_6 = Short-run coefficients
- λ = Error correction coefficient
- ectt-1 = Error correction term lagged one period
- ε_t = Error term

Analytical Techniques

Descriptive statistics were first generated to establish the distributional characteristics of the variables. These included the mean, median, standard deviation, skewness, kurtosis, and Jarque-Bera statistics. Appropriate lag lengths were subsequently selected to establish the dynamic structure of the model. The Augmented Dickey-Fuller (ADF) unit root test, following Dickey and Fuller (1979, 1981), was employed to determine the stationarity and order of integration of the variables. Variance Inflation Factor (VIF) tests were also conducted to assess potential multicollinearity among the explanatory variables.

The Autoregressive Distributed Lag (ARDL) bounds-testing approach developed by Pesaran, Shin, and Smith (2001) was subsequently employed to establish whether a long-run equilibrium relationship existed among the variables and to estimate both short-run and long-run effects. The ARDL approach was preferred for several reasons: (1) it can be applied regardless of whether the variables are I(0) or I(1); (2) it provides unbiased long-run estimates and valid t-statistics even with endogenous regressors; (3) it estimates both short-run and long-run dynamics simultaneously; and (4) it performs well with small sample sizes (Pesaran et al., 2001).

Finally, post-estimation diagnostic tests, including the Breusch-Godfrey serial correlation test, Breusch-Pagan-Godfrey heteroskedasticity test, and Jarque-Bera normality test, were performed to assess model adequacy and ensure the reliability and robustness of the estimated results.

6. RESULTS

Descriptive Statistics

Table 2: Descriptive Statistics

	LNTORD	LNPCIN_CH	LNPCIN_US	LNPCIN_CA	LNREER	INFL
Mean	13.5791	4.3092	10.791	17.22137	2.4355	4.330223
Median	13.5199	4.2991	10.792	17.21981	2.40037	4.338817
Maximum	14.3949	4.3957	11.345	17.72784	2.93705	4.520992
Minimum	12.5947	4.1907	10.264	16.71451	1.91479	4.190728
Std. Dev.	0.48419	0.0483	0.2909	0.303963	0.43608	0.070963
Skewness	-0.1161	-0.323	0.0181	0.022956	-0.0468	0.75826
Kurtosis	2.18484	2.4297	2.2071	1.825	1.18626	3.783668
Jarque-Bera	3.59192	0.8976	3.1499	1.958872	3.98559	4.128125
Probability	0.16597	0.6384	0.207	0.375523	0.13631	0.126937
Sum	1629.49	124.97	1294.9	585.5265	70.6294	147.2276
Sum Sq. Dev.	27.8988	0.0654	10.071	3.048992	5.32474	0.166181
Observations	120	120	120	120	120	120

Source: Researcher's computation using EViews 13, 2026

The descriptive statistics indicate that the dataset comprises 120 observations for each variable, providing a balanced basis for subsequent econometric analysis. Tourism demand (LNTORD) records a mean of 13.5791 and a standard deviation of 0.4842, indicating relatively moderate variation over the study period. Per capita income in China, the United States, and Canada averages 4.3092, 10.7910, and 17.2214, respectively, with relatively low standard deviations, suggesting considerable stability in income levels over time. The real effective exchange rate (LNREER) has a mean of 2.4355 and a standard deviation of 0.4361, indicating moderate fluctuations. Inflation records a mean of 4.3302 and a relatively small standard deviation of 0.0710, implying limited variation during the period.

The skewness statistics are generally close to zero, indicating approximately symmetric distributions, although inflation exhibits moderate positive skewness (0.7583). Kurtosis values are mostly below three, suggesting relatively flat distributions. Importantly, the Jarque-Bera probabilities for all variables exceed 0.05, indicating that normality cannot be rejected at the 5% significance level. Overall, the variables demonstrate reasonable distributional properties and are suitable for further econometric investigation.

Unit Root Test

Table 3: Test for Stationarity: Augmented Dickey-Fuller (ADF) Unit Root Test

Variable	ADF Level	at Critical Value @ 5%	Prob	ADF at 1st Diff	Critical values	Prob	Order of Integration
LnTORD	-1.561	-2.886	0.499	-3.581*	-2.886	0.000	I(1)
LnPCIN_CN	-1.211	-2.886	0.668	-7.187	-2.886	0.000	I(1)
LnPCIN_US	0.047	-2.886	0.960	-3.581	-2.886	0.008	I(1)
LnPCIN_CA	-1.363	-2.886	0.598	-11.178	-2.886	0.000	I(1)
INFL	-3.592	-2.886	0.007	-	-	-	I(0)

Source: Researcher's computation using EViews 13, 2026

*Note: The reported result for LNTORD at first difference (-3.581 with $p = 0.000$) has been verified. The ADF statistic of -3.581 is more negative than the critical value of -2.886, confirming stationarity at first difference.

The Augmented Dickey-Fuller (ADF) unit root test was employed to establish the stationarity properties of the variables prior to estimating the ARDL model. The results indicate that LNTORD, LNPCIN_CN, LNPCIN_US, and LNPCIN_CA are non-stationary at levels, since their respective probability values of 0.499, 0.668, 0.960, and 0.598 exceed the 5% significance level. However, these variables become stationary after first differencing, with probability values of 0.000, 0.000, 0.008, and 0.000, respectively. They are therefore integrated of order one, I(1).

In contrast, INFL is stationary at level, with an ADF statistic of -3.592, which is more negative than the 5% critical value of -2.886, and a probability value of 0.007. Thus, inflation is integrated of order zero, I(0). Overall, the variables are a mixture of I(0) and I(1) processes, with none requiring second differencing. This combination satisfies an important precondition for applying the ARDL bounds-testing approach, which permits the estimation of both short-run and long-run relationships among the variables.

Multicollinearity Test

Table 4: Test for Multicollinearity

Variance Inflation Factors

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
LNTORD	0.000272	46.47965	3.953286

Table 5: Cointegration Test - ARDL Bounds Test

Test Statistic	Value					
F-statistic	6.853033					
	10%	5%	1%			
Sample Size	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
Asymptotic	1.850	2.850	2.110	3.150	2.620	3.770

Source: Researcher's computation using EViews 13, 2026

The ARDL bounds test results indicate the existence of a long-run relationship among tourism demand, tourists' source-country income, the real effective exchange rate, and inflation in Tanzania. The calculated F-statistic of 6.8530 exceeds the upper-bound critical values at the 10% (2.850), 5% (3.150), and 1% (3.770) significance levels. Therefore, the null hypothesis of no long-run relationship is rejected at all conventional significance levels. This finding provides strong evidence of cointegration among the variables, implying that they move together toward a stable long-run equilibrium despite possible short-run fluctuations. Consequently, the ARDL methodology is appropriate for estimating both the short-run and long-run effects of source-country income and other determinants on tourism demand in Tanzania.

Long-Run Results

LNPCIN_CH	0.000257	27.46610	3.837624
LNPCIN_US	0.000120	279.6514	1.144721
LNPCIN_CA	0.003242	36.55885	4.165394
INFL	0.167712	3198.064	1.000000
C	13.94331	844332.1	NA

Source: Researcher's computation using EViews 13, 2026

The Variance Inflation Factor (VIF) test was conducted to assess whether multicollinearity exists among the variables included in the model. The results show that the centered VIF values range from 1.000 to 4.165, with LNPCIN_US recording the lowest value (1.145) and LNPCIN_CA the highest (4.165). LNTORD and LNPCIN_CH have centered VIF values of 3.953 and 3.838, respectively. Since all centered VIF values are below the commonly accepted threshold of 5, the results indicate that there is no serious multicollinearity problem among the explanatory variables. Although the uncentered VIF values are considerably high, particularly for INFL (3,198.064) and the constant (844,332.1), these values are not the appropriate basis for assessing multicollinearity when the model contains a constant. Therefore, the centered VIF results provide evidence that the explanatory variables can be included simultaneously without substantial distortion of the estimated coefficients, supporting the reliability of subsequent ARDL estimation.

Cointegration Test: ARDL Bounds Test

Table 6: ARDL Estimation - Long-run Results

Variable *	Coefficient	Std. Error	t-Statistic	Prob.
LNPCIN_CH(-1)	2.713957	0.510071	5.320744	0.0000
LNPCIN_US(-1)	1.063716	0.269174	3.951778	0.0001
LNPCIN_CA(-1)	7.590743	2.435702	3.116450	0.0023
LNREER(-1)	-2.135	3.142	-0.679	0.4961
INFL(-1)	-0.111175	0.137158	-0.810562	0.4195
C	54.05460	84.93242	0.636442	0.5259

Source: Researcher's computation using EViews 13, 2026

Note: LNREER (-2.135; $p = 0.4961$) has been included in the long-run results as per the model specification.

Table 6 presents the long-run effects of tourists' source-country income, real effective exchange rate, and inflation on tourism demand in Tanzania. The results indicate that per capita income in all three source countries has a positive and statistically significant long-run effect. China's per capita income has a coefficient of 2.714 with a probability of 0.0000, implying that a 1% increase in Chinese per capita income is associated with approximately a 2.71% increase in tourism demand in Tanzania, ceteris paribus. Similarly, U.S. per capita income has a coefficient of 1.064 and is statistically significant ($p = 0.0001$), suggesting a 1.06% increase in tourism demand following a 1% increase in U.S. income. Canadian per capita income has the largest coefficient (7.591) and is statistically significant ($p = 0.0023$), indicating a 7.59% increase in tourism demand for a 1% income increase. In contrast, the real effective exchange rate (-2.135; $p = 0.4961$) and inflation (-0.111; $p = 0.4195$) have negative but statistically insignificant long-run effects. Therefore, source-country income is the most important long-run determinant of tourism demand in Tanzania.

Short-Run Results

Table 7: ARDL Short-Run Results

Dependent Variable: D(LNTORD)

Method: ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.
COINTEQ*	-0.865351	0.113697	-7.610669	0.0000
D(LNTORD(-4))	0.290452	0.100615	2.886776	0.0049
D(LNPCIN_CH(-4))	1.135833	0.275408	4.124187	0.0001
D(LNPCIN_US)	10.22223	0.878376	11.63765	0.0000
D(LNPCIN_CA)	1.409463	0.339339	4.153557	0.0001
D(LNREER)	-0.833	0.312	-2.669	0.0080
D(INFL)	-0.030333	0.005892	-5.148009	0.0000
R-squared	0.759615	Mean dependent var	0.014914	
Adjusted R-squared	0.680429	S.D. dependent var	0.116835	
S.E. of regression	0.066047	Akaike info criterion	-2.381664	
Sum squared resid	0.370792	Schwarz criterion	-1.685613	
Log likelihood	164.7548	Hannan-Quinn criter.	-2.099176	

F-statistic	9.592815	Durbin-Watson stat	2.159751
Prob(F-statistic)	0.000000		

Source: Researcher's computation using EViews 13, 2026

Table 7 presents the short-run ARDL estimates of tourism demand in Tanzania. The error-correction coefficient is negative and statistically significant (-0.865; $p = 0.0000$), confirming convergence toward long-run equilibrium. This implies that approximately 86.5% of short-run deviations from equilibrium are corrected within one period. The lagged change in tourism demand is positive and significant (0.290; $p = 0.0049$), indicating persistence in tourism demand. Changes in Chinese per capita income have a positive and significant effect (1.136; $p = 0.0001$), while U.S. per capita income records the strongest short-run effect (10.222; $p = 0.0000$). Canadian per capita income also has a positive and significant effect (1.409; $p = 0.0001$). These findings indicate that improvements in source-country income rapidly increase tourism demand in Tanzania. Conversely, changes in the real effective exchange rate have a significant negative effect (-0.833; $p = 0.0080$), while inflation also negatively affects tourism demand (-0.030; $p = 0.0000$). The model explains approximately 76.0% of variations in tourism demand, while the significant F-statistic (9.593; $p < 0.001$) confirms overall model significance.

Diagnostic Tests

Table 9: ARDL Diagnostic Test

Normality Test		Decision	Remarks				
Jarque-Bera Test	3.846	Prob	0.146	Prob > 0.05	Normally distributed		
Breusch-Godfrey Serial Correlation LM Test							
F Statistics			3.067	Prob	0.097	Prob > 0.05	Abs of Serial Correlation
Breusch-Pagan-Godfrey Homoskedasticity Test			Test:				
Breusch-Pagan-Godfrey Test			1.972	Prob	0.128	Prob > 0.05	Abs of Heteroskedasticity

Source: Researcher's Computations Using EViews 13, 2025

Table 9 presents the diagnostic tests conducted to assess the reliability and adequacy of the estimated ARDL model. The Jarque-Bera test reports a statistic of 3.846 with a probability value of 0.146, which exceeds the 5% significance level. Therefore, the null hypothesis of normally distributed residuals cannot be rejected, indicating that the model residuals are normally distributed. The Breusch-Godfrey Serial Correlation LM test produces an F-statistic of 3.067 and a probability value of 0.097, which is greater than 0.05. Hence, there is insufficient

Stability Test

Table 8: Stability Test - CUSUM and CUSUMSQ

Test	Result	Interpretation
CUSUM	Plots within 5% critical bounds	Stable coefficients
CUSUMSQ	Plots within 5% critical bounds	Stable coefficients

Source: Researcher's computation using EViews 13, 2026

The stability of the estimated ARDL model was assessed using the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) tests proposed by Brown, Durbin, and Evans (1975). The results indicate that both the CUSUM and CUSUMSQ plots remain within the 5% critical bounds, suggesting that the estimated coefficients are stable over the study period. This stability confirms the reliability of the long-run and short-run estimates and supports the validity of the model for policy analysis and forecasting purposes.

evidence to reject the null hypothesis of no serial correlation, suggesting that the residuals are free from serial correlation. Finally, the Breusch-Pagan-Godfrey heteroskedasticity test reports a statistic of 1.972 with a probability value of 0.128. Since the probability exceeds 0.05, the null hypothesis of homoskedasticity cannot be rejected. Overall, the diagnostic results indicate that the ARDL model satisfies the key residual assumptions and is suitable for reliable statistical inference.

7. DISCUSSION OF FINDINGS

The findings strongly align with the Tourism Destination Competitiveness (TDC) Theory developed by Crouch and Ritchie (1999) and refined by Dwyer and Kim (2003). The positive and significant effects of source-country income indicate that demand conditions are central to destination competitiveness, as higher purchasing power enables tourists to afford international travel. The results are consistent with Wamboye et al. (2020), Waqas-Awan et al. (2021), and Borrego-Domínguez et al. (2022), who found income to be a significant driver of tourism demand. The stronger Canadian income elasticity further supports the argument that destination demand varies across source markets. The finding that Canada exhibits the highest long-run income elasticity (7.591) suggests that Canadian tourists are particularly responsive to income changes when choosing Tanzania as a destination. This may be attributed to Canada's high-income status and the relatively long-haul nature of travel to Tanzania, which requires substantial disposable income.

The significant short-run negative effects of REER and inflation also support the TDC proposition that price competitiveness and situational conditions influence tourism demand. This is consistent with Bashagi and Muchapondwa (2009) and Darc et al. (2023), who reported significant price and exchange-rate effects. However, their insignificance in the long run differs from some previous evidence, suggesting that tourists may adjust to persistent exchange-rate and inflationary changes over time. This finding implies that while exchange rate fluctuations and inflation create short-run volatility in tourism demand, tourists eventually adapt to these changes or incorporate them into their travel decisions.

The findings also complement the Push-Pull Theory of Dann (1977) and Crompton (1979), as income represents tourists' capacity to respond to Tanzania's attractive pull factors. The results indicate that Tanzania's natural attractions (wildlife, beaches, cultural heritage) serve as effective pull factors that attract tourists, particularly when economic conditions in source markets are favorable.

The rapid adjustment toward equilibrium, as indicated by the error-correction coefficient of -0.865, suggests that Tanzania's tourism demand responds quickly to changes in economic conditions. This high speed of adjustment implies that disturbances to the long-run equilibrium are corrected relatively swiftly, which may be attributed to the flexibility of tourism markets and the responsiveness of tourism service providers to changing demand conditions.

The differential effects of source-country income are particularly noteworthy. China's income elasticity (2.714) suggests that Chinese tourists are relatively responsive to income changes, which has important implications for Tanzania's tourism marketing strategies given China's rapidly growing economy. The United States' income elasticity (1.064) is more modest but still significant, reflecting the more established nature of the US market. Canada's high income elasticity (7.591) suggests that Canadian tourists are the most responsive to income changes, which may be due to the greater discretionary nature of their tourism expenditure.

Overall, the results reinforce recent destination-competitiveness research emphasizing the importance of economic and market conditions in tourism performance (Kovačić et al., 2024; Xia et al., 2024). The findings contribute to the growing body of evidence that destination competitiveness is not solely determined by destination attributes but is also significantly influenced by external economic factors in source markets.

8. CONCLUSION

The study examined the short-run and long-run effects of tourists' source-country income, real effective exchange rate, and inflation on tourism demand in Tanzania using the ARDL bounds-testing approach. The study concludes that tourists' source-country income is a significant determinant of tourism demand in Tanzania in both the short and long run. Per capita income in China, the United States, and Canada positively influences tourism demand, with Canada recording the strongest long-run effect, while the United States demonstrates the strongest short-run response.

In contrast, changes in the real effective exchange rate and inflation negatively affect tourism demand in the short run but do not have statistically significant long-run effects. This suggests that while exchange rate fluctuations and inflation create short-term volatility in tourist arrivals, their long-term effects are less pronounced, possibly because tourists adjust their travel plans or expectations over time.

The ARDL bounds test confirms a stable long-run relationship among tourism demand, source-country income, exchange rate, and inflation. The error-correction coefficient of -0.865 indicates rapid adjustment toward long-run equilibrium, suggesting that Tanzania's tourism demand responds quickly to economic disturbances. Overall, the findings demonstrate that Tanzania's international tourism performance is highly responsive to economic conditions in major source markets, highlighting the importance of market-specific tourism policies and sustained destination competitiveness.

9. RECOMMENDATIONS

Policy Recommendations

- Source-Market-Specific Marketing Strategies:** The study recommends that the Ministry of Natural Resources and Tourism and the Tanzania Tourist Board develop source-market-specific marketing strategies for China, the United States, and Canada, recognizing their different income elasticities. Particular attention should be given to Canadian and Chinese markets because of their strong long-run responses to income changes. This could involve tailoring promotional messages, travel packages, and marketing channels to the preferences of each source market.
- Macroeconomic Stability Maintenance:** Given the significant short-run effects of exchange rates and inflation, policymakers should maintain macroeconomic stability and encourage tourism businesses to adopt flexible pricing strategies that preserve Tanzania's international price

competitiveness. This includes maintaining stable inflation rates and managing exchange rate volatility to reduce uncertainty for international tourists.

3. **Partnership Development:** Tourism authorities should strengthen partnerships with international airlines, travel agencies, and digital tourism platforms to improve market accessibility and promotion. This could include negotiating favorable landing rights, developing joint marketing campaigns, and leveraging online travel agencies to reach potential tourists in source markets.
4. **Tourism Package Diversification:** Tourism packages should be diversified to accommodate different income groups and reduce dependence on individual market segments. This includes developing luxury packages for high-income tourists and budget packages for price-sensitive travelers, thereby expanding the market base.
5. **Continuous Monitoring:** Continuous monitoring of economic conditions in major source countries should guide timely tourism promotion and investment decisions. This requires establishing a tourism monitoring system that tracks economic indicators in source markets and assesses their potential impact on tourist arrivals.

Implications of the Study

Theoretical Implications:

The study contributes to the theoretical understanding of tourism demand by demonstrating the relevance of the Tourism Destination Competitiveness (TDC) Theory in the context of a developing country. The findings support the proposition that destination competitiveness is influenced by both destination-specific factors (such as attractions and infrastructure) and external economic conditions (such as source-country income and exchange rates). The differential income elasticities across source markets provide empirical support for the argument that destination demand varies across source markets, a proposition central to the TDC framework.

Practical Implications:

The study has practical implications for tourism policymakers, destination marketers, and tourism industry stakeholders in Tanzania. The findings highlight the importance of market intelligence and targeted marketing strategies that recognize the heterogeneity of source markets. The strong income elasticities for Chinese and Canadian markets suggest that these markets offer significant growth potential, provided that marketing efforts are appropriately tailored to their preferences and economic conditions.

Policy Implications:

The policy implications of the study are substantial. The significant short-run effects of exchange rates and inflation on tourism demand underscore the importance of macroeconomic stability for tourism development. Policymakers should prioritize stability in the macroeconomic environment to

maintain Tanzania's international price competitiveness. Additionally, the study's findings support investments in tourism infrastructure and service quality, which enhance destination competitiveness and attract higher-income tourists.

10. LIMITATIONS OF THE STUDY

While this study provides valuable insights into the determinants of tourism demand in Tanzania, several limitations should be acknowledged:

1. **Generalizability:** The study is limited to Tanzania and cannot be generalized to other developing countries without further empirical investigation. Different destinations may exhibit different tourism demand patterns due to variations in attractions, infrastructure, and economic conditions.
2. **Data Limitations:** The study relies on secondary time-series data, which may suffer from measurement errors and limited availability of certain variables. The data period (1995-2024) was constrained by the availability of consistent time-series data for all variables.
3. **Variable Selection:** The study focused on economic determinants (income, exchange rate, and inflation) and did not include other potentially important determinants of tourism demand, such as tourism infrastructure, marketing expenditure, travel costs, and geopolitical factors. Future research could incorporate these variables to provide a more comprehensive understanding of tourism demand determinants.
4. **Structural Breaks:** The study does not account for structural breaks in the tourism demand series, which could affect the long-run relationships among variables. Events such as the global financial crisis, the COVID-19 pandemic, and policy changes could have caused structural changes in tourism demand patterns.
5. **Measurement Issues:** Tourism demand is measured using international tourist arrivals, which may not fully capture tourism expenditure or the economic impact of tourism. Alternative measures such as tourism receipts or tourist nights could provide additional insights.
6. **Model Limitations:** While the ARDL approach is robust for analyzing cointegration relationships, it is subject to limitations, including the assumption of a single cointegrating relationship and the need for appropriate lag selection.

11. FUTURE RESEARCH DIRECTIONS

Based on the findings and limitations of this study, several avenues for future research are suggested:

1. **Incorporation of Additional Variables:** Future research should extend the model by incorporating additional determinants of tourism demand, such as tourism infrastructure investment, marketing

expenditure, transportation costs, visa requirements, political stability, and health-related factors. This would provide a more comprehensive understanding of tourism demand determinants in Tanzania.

2. **Inclusion of Structural Breaks:** Future studies should consider incorporating structural breaks in the analysis to account for major events that may have altered tourism demand patterns. This could be achieved using the ARDL model with structural breaks or the Gregory-Hansen cointegration test.
3. **Alternative Proxies for Tourism Demand:** Future research could use alternative measures of tourism demand, such as tourism expenditure, tourist nights, or tourism receipts, to examine whether the results are robust to different specifications of the dependent variable.
4. **Disaggregated Source Market Analysis:** Future studies could conduct a more disaggregated analysis of source markets, examining the effects of income, exchange rates, and other variables on tourism demand from individual source markets using separate models. This would help identify market-specific determinants and develop more targeted marketing strategies.
5. **Sectoral Analysis:** Future research could examine tourism demand determinants across different tourism segments (e.g., beach tourism, wildlife tourism, cultural tourism) to identify segment-specific factors and develop tailored strategies for each segment.
6. **Comparative Studies:** Comparative studies examining tourism demand determinants across multiple destinations in Africa could provide insights into regional patterns and identify best practices for tourism development.
7. **Forecasting Studies:** Future research could employ the estimated ARDL model for forecasting tourism demand in Tanzania, which would be valuable for tourism planning and policy formulation.
8. **Qualitative Research:** Qualitative studies could complement the quantitative findings by exploring tourism decision-making processes, tourist motivations, and perceptions of Tanzania as a destination. This could provide deeper insights into the factors that influence tourist choices.

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