The Role of Tourism Investment in Shaping Algeria's Economic and Sustainable Development Trajectory: *An Econometric Approach*

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ARTICLE INFORMATION

Original Research Paper
Received: 08/ 06 /2025
Accepted: 18/ 08 /2025
Published: 21/ 09 /2025

Keywords:
Keyword.1: Sustainable growth
Keyword.2: Tourism
Keyword.3: Granger causality
Keyword.4: least squares method
JEL Classification Codes: C01, C52.

Abstract :

This study examines the role of tourism investment in fostering sustainable economic growth in Algeria, with a specific focus on the Horizon 2025 national strategy. It combines a theoretical framework with an empirical approach, utilizing econometric models based on the Ordinary Least Squares (OLS) method and the Granger causality test. The objective is to analyze the relationship between the development of the tourism sector and key indicators of economic and sustainable development The findings indicate that despite substantial public investment, the tourism sector remains underutilized, showing no significant statistical correlation with most sustainable development indicators. These results suggest the need for a more coherent tourism policy aligned with long-term economic goals.

Mots clés:
Mot clé.1: Croissance durable
Mot clé.2: Tourisme
Mot clé.3: Causalité de Granger
Mot clé.4: Méthode des moindres carrés.
Codes de classification JEL :
C01, C52.

Résumé :

Cette étude examine le rôle de l'investissement touristique dans la promotion de la croissance économique durable en Algérie, avec un accent particulier sur la stratégie nationale Horizon 2025. Elle combine un cadre théorique à une approche empirique, en s'appuyant sur des modèles économétriques fondés sur la méthode des moindres carrés ordinaires (MCO) et le test de causalité de Granger. L'objectif est d'analyser la relation entre le développement du secteur touristique et les principaux indicateurs de croissance économique et de développement durable. Les résultats montrent que, malgré d'importants investissements publics, le secteur du tourisme reste sous-exploité, ne présentant aucune corrélation statistiquement significative avec la plupart des indicateurs de développement durable. Ces conclusions soulignent la nécessité d'une politique touristique plus cohérente, en adéquation avec les objectifs économiques à long terme.

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1- The introduction:

Given the significant importance of the tourism sector and the services it provides in the economic and social development process, tourism is widely regarded as a key indicator of a nation's progress and its level of social well-being. This reality makes it imperative for countries to engage in proper and effective planning of this sector to provide tourism services that meet the expectations of their users. Investment in this sector must be carefully managed, as no matter how advanced technology becomes, the human element must never be overlooked.

Tourism has now become one of the most strategic and sensitive sectors relied upon to stimulate development dynamics especially with the emergence of concepts such as green growth, sustainable growth, and sustainable development. Tourism plays a central role in the development cycle, acting as a cluster hub for various other economic sectors. In fact, tourism promotes and supports other sectors by serving as a marketplace for a wide range of goods and services.

As a result, global economies have increasingly prioritized this highly sensitive sector, which contributes significantly to gross domestic product (GDP) in countries that rely on tourism. This sector also has the potential to generate employment opportunities, for both university graduates and vocational training institute graduates, thereby helping to absorb a large number of job seekers and contribute to reducing unemployment.

Hence, it is essential to treat tourism as a profitable industry, and to adopt a clear investment policy for the sector. This includes the establishment of a dedicated legal and regulatory framework for tourism investment, and the promotion of tourism entrepreneurship. These needs prompt us to examine the mechanisms and tools that finance this sector, particularly those related to tourism investment and entrepreneurship.

Accordingly, this research seeks to explore the extent to which tourism contributes to sustainable economic development in Algeria. It raises the following central question: **To what extent does the tourism sector influence key indicators of sustainable economic growth in Algeria?**

In addressing this main question, the following sub-questions are posed:

- What are the conceptual foundations of sustainable development and sustainable tourism?
- What strategic vision does Algeria adopt for tourism within the Horizon 2025 plan?

- What is the empirical relationship between tourism sector performance and development indicators such as unemployment, foreign currency inflows, and the Sustainable Development Index?

The main goal of this modest research is to reach a set of conclusions, including highlighting the role and importance of the sustainable tourism industry in activating the mechanisms of sustainable development, or more specifically, understanding how sustainable tourism contributes to inclusive and long-term economic growth. From an academic perspective, the study seeks to clarify key concepts and terminology in the field of sustainable tourism and development; it also provides a brief yet comprehensive overview of Algeria's national tourism strategy.

Additionally, the research also aims to build econometric models that examine the relationship between the tourism sector and growth and development indicators in Algeria, using the least squares method and the Granger causality test.

The concept of sustainable tourism has recently gained prominence, carrying with it important economic, social, and developmental implications. Its core purpose is to support both local and national economies, in the short and long term. As a result, academics, policymakers, and government bodies have all recognized the need to address this topic, not just as a concept, but as a set of practical tools and mechanisms to be implemented on the ground.

Therefore, the significance of this research lies in its contribution to a topic that remains rich for further study, particularly in demonstrating the relevance of sustainable tourism as a human-centered approach.

- **Research Hypothesis:**

H1: Tourism activity has a statistically significant impact on key indicators of sustainable development in Algeria, specifically unemployment, foreign currency inflows, and the Sustainable Development Index

1.1. Literature review:

Defined by the (United Nations Brundtland Commission , 1987), sustainable development is the "*Development that meets the needs of the present without compromising the ability of future generations to meet their own needs*." This definition emphasizes the balance of economic, social, and environmental dimensions, ensuring intergenerational equity and long-term well-being. Sustainable tourism applies this principle to tourism, balancing ecological health, cultural integrity, social equity, and economic viability. According to (United Nations World Tourism Organization, 2018) report on tourism and the sustainable development goals, *"Tourism is a catalyst for economic growth, job creation, and social inclusion, and plays a key role in promoting cultural exchange and sustainable development."* This report emphasizes tourism's contribution to economic growth, employment,

cultural understanding, and community development while highlighting the need for sustainable practices.

In developing countries, sustainable tourism is viewed not only as a driver of economic growth but also as a mechanism for social inclusion and environmental preservation (Medjdoub & Tawiti, 2019). The broader international literature on sustainable tourism, emphasizes the need to integrate economic, social, and environmental dimensions simultaneously. Studies such as (Torres-Delgado & Palomeque, 2021) underline the importance of innovation, integrated indicators, and participatory governance to guide sustainable tourism strategies and monitor impacts over time.

In Algeria, the need to link tourism and sustainable development has been increasingly recognized since the 2003 law on sustainable tourism development. (Belaidi & Zouache, 2022) note that the state has begun incorporating ecological and economic measures, but implementation remains constrained by institutional challenges and a lack of strategic vision. Similarly, (CHERIF & BELAIDI, 2022) emphasize tourism's potential in supporting economic diversification beyond hydrocarbons and its contribution to job creation, while highlighting the sector's weak infrastructure and limited global visibility.

Local case studies illustrate both opportunities and challenges. (Berreghioua & Khalfallah, 2022), using a SWOT analysis, found that Bou-Saâda possesses strong tourism potential (natural and cultural resources), but suffers from a lack of planning and local stakeholder engagement. Likewise, (Medjdoub & Tawiti, 2019) emphasize the promise of desert tourism in promoting community engagement and environmental heritage, provided ecological balance is respected.

1.2. The strategic vision for tourism in Algeria:

Algeria's strategic vision for tourism is primarily framed by the National Plan for the Development of Tourism (SDAT 2025- Schéma Directeur d'Aménagement Touristique). This plan aims to make Algeria a sustainable and competitive tourist destination in the Euro-Mediterranean region by developing a tourism model rooted in sustainability, inclusiveness, and solidarity. The SDAT sets out short-, medium-, and long-term goals (2009–2025) that align with national efforts to diversify the economy and reduce dependency on hydrocarbons. The plan emphasizes the importance of integrating tourism into the country's broader economic and social development agenda, viewing it as a vital sector for generating employment, income, and regional development (Zermane, Benmehaia, & Touazi , 2021).

Key components of the SDAT include the development of tourism infrastructure, promotion of public-private partnerships, and the creation of seven regional tourism poles, each designed to promote the natural, historical, and cultural richness of Algeria. These goals are supported by initiatives to improve the quality of tourism services, develop a skilled tourism workforce, and position Algeria through strong marketing and branding efforts under the "Algeria Destination" identity. The plan also places strong emphasis on environmental sustainability, requiring tourism development to respect ecological balance and cultural preservation (Ministry of Tourism and Handicrafts, n.d.).

Despite these ambitions, several challenges hinder the effective implementation of the strategy. These include weak infrastructure, limited investment incentives, administrative complexities, and a lack of coordination across sectors. Furthermore, tourism in Algeria remains underperforming in terms of sustainability indicators, despite high levels of public spending. Researchers and policymakers have emphasized the need for stronger governance, better use of technology, and streamlined procedures to improve investor confidence and align the sector more closely with the principles of sustainable development and economic inclusion (Boumelit, 2022). To succeed, Algeria must translate its strategic vision into measurable action and ensure consistent follow-up on policies and investments.

2- Research Methods, tools and measures:

To carry out this study and achieve its objectives, a descriptive and analytical approach was adopted, in line with the nature of the research topic. The descriptive method was used to clarify the theoretical and academic concepts related to sustainable tourism and sustainable economic development. The analytical method, on the other hand, was employed to present and briefly analyze the national tourism strategy in Algeria. Additionally, to build econometric models, the quantitative, mathematical, and econometric approach was used to analyze the functional relationships between the tourism sector, growth, and development in Algeria.

First, the Granger causality test was applied to examine the dynamic relationship between the tourism sector and economic development in Algeria. This test is particularly relevant in time series analysis, as it helps determine whether one variable can be used to predict another. In this context, it allows us to assess whether changes in tourism activity provide statistically significant information for forecasting economic growth indicators such as GDP. The test does not imply a causal relationship in the philosophical sense, but rather a predictive link, which is essential for understanding the direction and strength of the interaction between these

two variables. The annual data series used in this analysis were processed using EViews software, and the results offer valuable insights into whether the tourism sector acts as a driver of economic development, or vice versa. This approach strengthens the empirical foundation of our study by providing evidence-based directionality in the tourism–growth relationship.

Then, we tested the stationarity of the time series related to tourism demand using the Augmented Dickey-Fuller (ADF) test, in order to determine the order of integration of each variable. This was necessary to ensure the validity of the subsequent econometric modeling. The test results guided the transformation of non-stationary series through differencing when needed, thereby allowing us to proceed with models that rely on stationary data.

Once the series were confirmed to be integrated of the same order (typically I(1)), we conducted a cointegration analysis to examine the existence of a long-term equilibrium relationship between variables such as tourism activity and economic growth. Upon confirming cointegration, we estimated an Error Correction Model (ECM)**.** The ECM allows us to capture both the short-term dynamics and long-term equilibrium between the variables. This model is particularly suited for analyzing how deviations from the long-run equilibrium are corrected over time and how shocks in the tourism sector affect economic growth, and vice versa. The estimation was performed using EViews, based on annual data, and enabled us to quantify both immediate and lagged effects, thus offering a comprehensive view of the tourism-growth nexus in Algeria.

3- Results:

3.1. The impact of tourism on certain development indicators in the Algerian economy:

At this stage of the study, we aim to build mathematical models to analyze the relationship between tourism in Algeria and selected development indicators. This step is intended to support the research paper with additional quantitative findings on the topic.

3.1.1. The impact of tourism on economic growth in Algeria:

It is often stated that the tourism industry plays a role in stimulating economic growth through the economic advantages it provides. In this part of the research, we attempt to construct an econometric model to assess the relationship between tourism and economic growth in Algeria. To represent the tourism sector, we used tourism expenditure as a proxy variable, while economic growth rates were used as the second variable.

Using the Ordinary Least Squares (OLS) method, we obtained the following model:

$$TC_t = 12{,}547 + 0{,}112TR_t$$

It was found that there is a positive relationship between tourism expenditure in Algeria and economic growth rates. However, this relationship is very weak, indicating the limited effectiveness of the tourism sector in driving economic growth. This also reflects the absence of a strategic vision to develop the sector in a way that could significantly contribute to the national GDP.

After the correlation results indicated a relative relationship between the variables, it became necessary to study causality in order to identify the nature of the models to be estimated, that is, whether a relationship exists between the variables in the short term, and whether this relationship extends into the long term. For this purpose, the Granger causality test was applied. Based on the annual data available and using EViews software, we obtained the following results:

Table n°1: Causality Test Between the Tourism Sector and Economic Growth Rates

Null Hypothesis:	Obs	F-Statistic	Prob.
TR does not Granger Cause TC	23	0.76023	0.3333
TC does not Granger Cause TR		16.9653	0.0031

Source: EViews

Where:

TR = Tourism Expenditure
TC = Economic Growth (GDP Growth Rate)

In the first case, where changes in tourism expenditure are tested for causing changes in economic growth, the corresponding p-value (0.3333) is greater than 5%, indicating no causality from tourism expenditure to economic growth. In the second case, where changes in economic growth are tested for causing changes in tourism expenditure, the p-value (0.0031) is less than 5%, which means economic growth does Granger-cause tourism expenditure.

This finding reflects the reality of the Algerian economy, where the state increases its spending on the tourism sector whenever national revenues rise. However, the tourism sector itself has not proven effective in stimulating economic growth, in other words, it has not yet contributed significantly to driving the economic engine.

3.1.2. The impact of tourism on unemployment rates in Algeria:

The tourism sector is considered one of the most important sectors in terms of employment, providing hundreds, if not thousands, of jobs across all skill levels. As such, tourism is seen as a key sector in the fight against unemployment in many, if not all, countries. In this part of the study, we construct an econometric model to assess the extent to which the tourism sector contributes to job creation in Algeria.

To examine this relationship, two variables were used: unemployment rates and tourism expenditure in Algeria. After conducting the necessary tests and estimations, the following econometric model was obtained:

$$Tc\,\text{hom}_t = 7.99 - 1.223TR_t$$

From this model, we observe a negative relationship between tourism expenditure and unemployment rates in Algeria. This indicates that the tourism sector does indeed contribute to reducing unemployment; however, the effect is very limited in magnitude, suggesting that while tourism has a role in alleviating unemployment, its impact remains relatively weak in the Algerian context.

After the correlation analysis revealed a relative relationship between the variables, it was necessary to explore the causality between them to determine the nature of the econometric models to be estimated, specifically, whether a short-term relationship exists and whether it extends into the long term. For this purpose, the Granger causality test was conducted using annual data and the EViews software. The results are presented in the following table :

Table n°2: Causality Test Between the Tourism Sector and Unemployment Rates

Null Hypothesis:	Obs	F-Statistic	Prob.
TR does not Granger Cause Tc hom	23	0.5412	0.3333
Tc hom does not Granger Cause TR		22.8723	0.4390

Source: EViews

Where:

TR = Tourism Expenditure

Tc_hom = Unemployment Rate

In the first case, where changes in tourism expenditure are tested for causing changes in unemployment rates, the p-value (0.3333) is greater than 5%, indicating that tourism expenditure does not Granger-cause unemployment**.** In the second case, where changes in unemployment rates are tested for causing changes in tourism expenditure, the p-value (0.4390) is also greater than 5%, indicating that unemployment does not Granger-cause changes in tourism expenditure either. These results suggest that there is no causal relationship between tourism expenditure and unemployment rates in Algeria, at least within the observed period and data used.

3.1.3. the impact of tourism on the sustainable development index in Algeria :

In this section, we aim to construct an econometric model to examine the relationship between the tourism sector and the sustainable development

dimension in Algeria. After conducting the necessary estimations and analysis, the following model was obtained:

$$dc_t = 0.05 - 0.691TR_t$$

The model indicates a negative relationship between tourism activity and the sustainable development dimension in Algeria. This suggests the absence of a clear strategic vision for sustainable tourism or for integrating sustainability principles into tourism policy and planning in the country.

Following the correlation analysis that showed a relative relationship between the variables, it was necessary to explore causality to understand the nature of the relationship over both the short and long term. To do so, we applied the Granger causality test using annual data and EViews software, with the following results:

Table n°3 : Causality Test Between the Tourism Sector and Unemployment Rates

Null Hypothesis:	Obs	F-Statistic	Prob.
TR does not Granger Cause dc	23	0.1403	0.6320
dc does not Granger Cause TR		2.9962	0.4000

Source: EViews

Where:

TR = Tourism Expenditure

DC = Sustainable Development Index (or proxy variable used)

In the first case, the p-value (0.6320) indicates that tourism expenditure does not Granger-cause changes in the sustainable development index. In the second case, the p-value (0.4000) also exceeds the 5% threshold, meaning that changes in the sustainable development index do not Granger-cause changes in tourism expenditure either. These results reveal a lack of short-term causal linkage between the tourism sector and sustainable development in Algeria, reinforcing the conclusion that the country lacks a coherent strategic integration of sustainability within its tourism development policies.

3.1.4. The impact of tourism on attracting foreign currency:

Tourism may be the fundamental and important pillar in attracting foreign currency to the country, as well as raising the value of the national currency by increasing the demand for the national currency in case of a growing number of tourists arriving in Algeria. From this perspective, tourism may be the main factor influencing this field. Therefore, we decided here to present a measurement model that expresses the relationship between tourism expenditure and the volume of foreign currency coming into Algeria. Based on the least squares method, the following model was formed: $y_t = 2{,}98 + 1{,}33TR_t$

Where "y" represents the volume of foreign currency coming into Algeria, and "TR" represents the volume of tourism expenditure in Algeria.

Through the model, we observe that tourism has a positive relationship with the volume of foreign currency entering Algeria, but the percentage is small and does not reflect the scale of international transactions in the tourism sector today.

After the correlation coefficient results showed the relative correlation between the variables, it became necessary to study the causality between the variables to deduce the nature of the models intended to be estimated. Specifically, whether there is a relationship between the variables in the short term, and whether this relationship extends to the long term or not. Therefore, we perform the Granger causality test. Using the annual data available to us and with the help of the Eviews software, the results shown in the following table were obtained:

Table n°4 : Causality Test Between the Tourism Sector and Attracting Foreign Currency:

Null Hypothesis:	Obs	F-Statistic	Prob.
TR does not Granger Cause Y	23	0.2225	0.4123
Y does not Granger Cause TR		3.1112	0.1987

Source: EViews

If the change in spending on the tourism sector causes a change in foreign currency, we record that the probability corresponding to Fisher's F statistic is greater than 5%, meaning that the change in spending on the tourism sector does not cause a change in foreign currency in Algeria, while if the change in foreign currency causes a change in spending on the tourism sector, we record that the probability corresponding to Fisher's F statistic is greater than 5%, meaning that the change in the amount of foreign currency in Algeria does not cause a change in spending on the tourism sector.

3.2. An attempt to model time series of tourism demand:

To test the stationarity of the time series, we use the ADF (Augmented Dickey-Fuller) test. After entering the data into the EViews program, we obtained the following results:

Table n°5 : ADF test

Decision	Statistical Value ADF_{cal}						ADF_{tab}	Series
	Critical	Values	Critical	Values	Critical	Values		
	1%		5%		10%			
Stable	-2.64		-3.00		-3.76		-2.20	D

Source: EViews

The tabulated Student's t-value, estimated at –4.75, is smaller than the critical t-values at the significance levels of 1%, 5%, and 10%, respectively. Therefore, we reject the null hypothesis of a unit root, which indicates that the time series is stationary of order zero.

- **Simple Linear Model:** This model relies on only two variables: time and tourism demand. The simple linear model can be built as follows:

$$D_t = \beta_0 + \beta_1 T + \varepsilon_t$$

Where: D : represents the supply of transport services ; T: represents time.

After conducting estimations using the Ordinary Least Squares (OLS) method and with the help of EViews, the following simple linear model was obtained: $D_t = 2169 + 98\ T$

- **Simple Logarithmic Model:** This model also relies on two variables: time and tourism supply. What distinguishes it from the previous simple linear model is that the time variable enters the model in logarithmic form. The simple logarithmic model can be built as follows: $Otr_t = \beta_0 + \beta_1 \ln(T) + \varepsilon_t$

After conducting estimations using the OLS method and EViews, the following simple logarithmic model was obtained: $Otr_t = 160 + 65\ \ln(T)$

- **Simple Exponential Model:** The main feature of the simple exponential model is that the time variable appears as an exponent in the model. The standard form of this model can be written as follows: $Otr_t = \beta_0\ e^{\beta_1 T} + \varepsilon_t$

After conducting the estimations using the OLS method and EViews, the following simple exponential model was obtained: $Otr_t = 66\ e^{21T}$

- **Statistical Comparison Between the Estimated Models:** To determine which of the three models is suitable for explaining the development of tourism demand in Algeria, we use some well-known statistical tests. The following table illustrates this:

Table n°6 : Statistical Comparison Between the Estimated Models

Estimated Model	Coefficient of Determination (R^2)	Model Significance	Constant Significance	Slope Significance
$Otr_t = 220 + 81\ T$	0,345	0,6658	0,6732	0,76502
$Otr_t = 160 + 65\ \ln(T)$	0.332	0,7561	0,5478	0,43210
$Otr_t = 66\ e^{21T}$	0,210	0,8043	0,6763	0,54637

Source: EViews

Based on the obtained results, we observe that the most appropriate econometric model for modeling the tourism demand function in Algeria is the simple linear model. Statistically, this is the best-performing model, as clearly shown by the coefficient of determination (R^2) as well as the significance probability of the estimated model. Additionally, the

significance probabilities of the constant and the slope, in the simple linear model, are more favorable compared to those of the other two models.

3.3. Econometric approach using the error correction model (ECM) for tourism sector variables and their relationship with economic growth:

In this part of the study, we adopt an econometric approach based on the Error Correction Model (ECM) to analyze the relationship between variables of the tourism sector and economic growth in Algeria. The ECM is particularly suitable when variables are non-stationary in levels but cointegrated, meaning they share a long-term equilibrium relationship.

- **Model 1: error correction model for the determinants of economic growth**

D(TC) = - 0.445345760263*(TC(-1) - 3.06244017179e-06*DTR(-1) - 1.41986394104*TCTR(-1) + 0.00133155147521*RSTR(-1) - 1.21106906166) - 0.120522726857*D(TC(-1)) + 0.105340970105*D(TC(-2)) - 1.30504237456e-06*D(DTR(-1)) - 2.8910894754e-06*D(DTR(-2)) + 0.698485174528*D(TCTR(-1)) + 0.57312234691*D(TCTR(-2)) + 0.00925179987829*D(RSTR(-1)) + 0.0247807456161*D(RSTR(-2)) + 0.183616339328

- **Model 2: error correction model for the determinants of tourism sector expenditure**

D(DTR) = - 237051.106014*(TC(-1) - 3.06244017179e-06*DTR(-1) - 1.41986394104*TCTR(-1) + 0.00133155147521*RSTR(-1) - 1.21106906166) + 136943.403831*D(TC(-1)) + 98580.9881507*D(TC(-2)) - 0.759319315471*D(DTR(-1)) - 0.374691167446*D(DTR(-2)) - 185564.067166*D(TCTR(-1)) + 46731.5560902*D(TCTR(-2)) - 2955.59544732*D(RSTR(-1)) + 6381.53110034*D(RSTR(-2)) + 104715.126643

- **Model 3: error correction model for the determinants of growth in the tourism sector**

D(TCTR) = 0.235161371151*(TC(-1) - 3.06244017179e-06*DTR(-1) - 1.41986394104*TCTR(-1) + 0.00133155147521*RSTR(-1) - 1.21106906166) - 0.159361349745*D(TC(-1)) + 0.046395406989*D(TC(-2)) + 1.10545591318e-06*D(DTR(-1)) - 4.271110558e-07*D(DTR(-2)) - 0.376265597739*D(TCTR(-1)) + 0.0456740704242*D(TCTR(-2)) + 0.00497070329893*D(RSTR(-1)) + 0.00314028398681*D(RSTR(-2)) + 0.0618825967598

- **Model 4: Error Correction Model for the Determinants of Tourism Sector Revenues**

D(RSTR) = - 11.0454829582*(TC(-1) - 3.06244017179e-06*DTR(-1) - 1.41986394104*TCTR(-1) + 0.00133155147521*RSTR(-1) - 1.21106906166) + 7.29373733057*D(TC(-1)) + 7.95996931912*D(TC(-2)) - 9.98116608069e-06*D(DTR(-1)) - 2.32747061989e-05*D(DTR(-2)) - 4.53686385047*D(TCTR(-1)) + 8.19262666402*D(TCTR(-2)) - 0.272180064874*D(RSTR(-1)) - 0.158298127519*D(RSTR(-2)) + 2.62030454936

Figure n°1: Causality test for study variables error correction model (ECM)

Dependent variable: D(DTR)

Excluded	Chi-sq	df	Prob.
D(TC)	2.239218	2	0.3264
D(TCTR)	5.108729	2	0.0777
D(RSTR)	5.770757	2	0.0558
All	15.37080	6	0.0176

Dependent variable: D(TC)

Excluded	Chi-sq	df	Prob.
D(DTR)	9.006922	2	0.0111
D(TCTR)	5.220367	2	0.0735
D(RSTR)	8.074761	2	0.0176
All	24.23570	6	0.0005

Dependent variable: D(RSTR)

Excluded	Chi-sq	df	Prob.
D(TC)	1.733810	2	0.4203
D(DTR)	0.714935	2	0.6994
D(TCTR)	2.188084	2	0.3350
All	4.414908	6	0.6207

Dependent variable: D(TCTR)

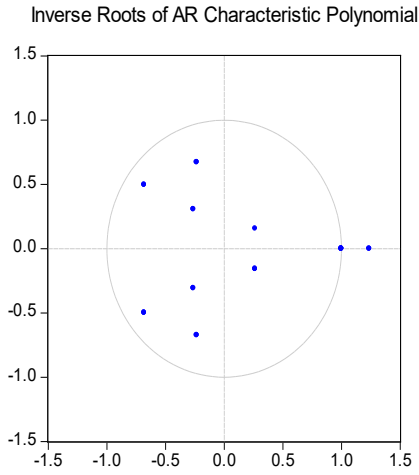
Excluded	Chi-sq	df	Prob.
D(TC)	2.212446	2	0.3308
D(DTR)	7.639016	2	0.0219
D(RSTR)	1.014842	2	0.6020
All	9.084232	6	0.1689

Source: EViews

Figure n°2: The extent of the model roots' dispersion from the critical circle

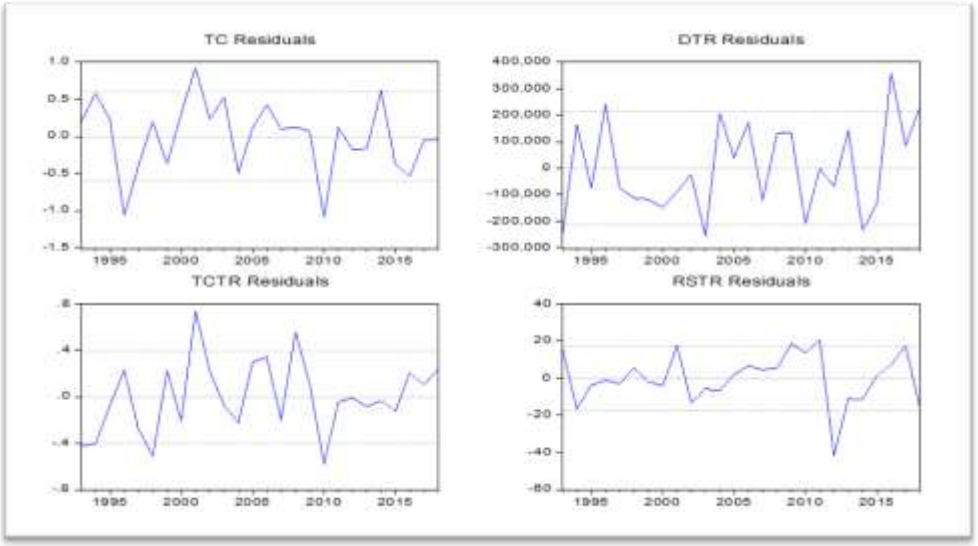
Roots of Characteristic Polynomial
Endogenous variables: TC DTR TCTR RSTR
Exogenous variables:
Lag specification: 1 2
Date: 03/28/20 Time: 09:47

Root	Modulus
1.236557	1.236557
1.000000	1.000000
1.000000	1.000000
1.000000	1.000000
-0.682402 - 0.496803i	0.844089
-0.682402 + 0.496803i	0.844089
-0.234699 - 0.673099i	0.712843
-0.234699 + 0.673099i	0.712843
-0.262873 - 0.306629i	0.403886
-0.262873 + 0.306629i	0.403886
0.263553 - 0.156108i	0.306317
0.263553 + 0.156108i	0.306317



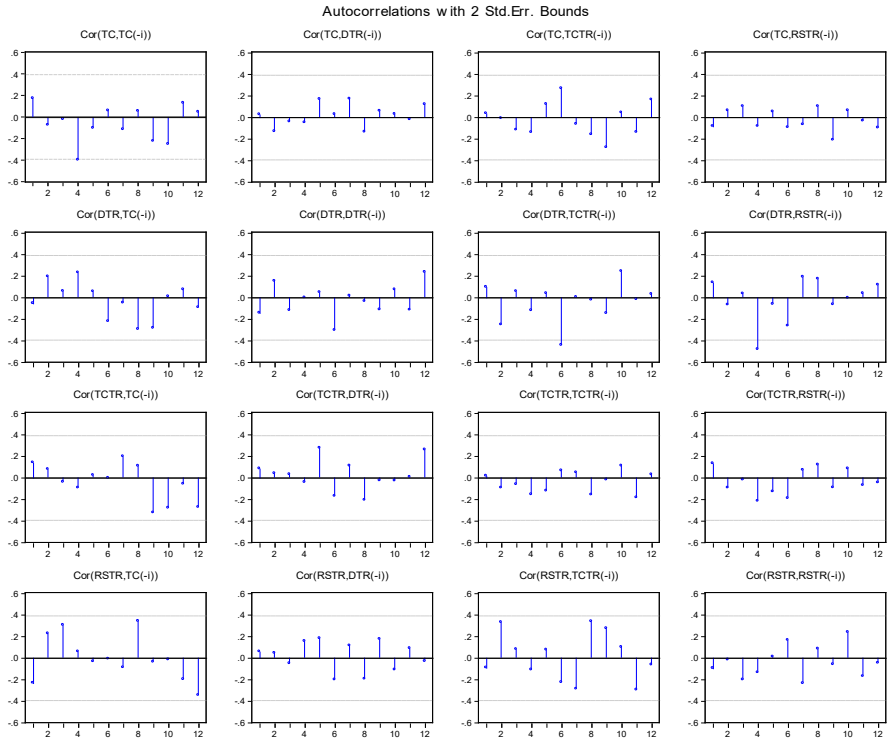
Source: EViews

Figure n°3: The behavior of error trends in the estimated models



Source: EViews

Figure n°4: An attempt to analyze the relationship of variables with themselves over different periods



Source: EViews

4- Discussion:

Literature review shows that sustainable tourism, especially in Algeria, can serve as a driver of inclusive and long-term development, if supported by strategic planning, participatory governance, and measurable performance indicators. Academic findings converge on the idea that sustainable tourism must go beyond policy documents and be effectively implemented across national, regional, and local levels.

The results of our study clearly indicate that the tourism sector in Algeria is still far from fulfilling its intended role. Despite substantial investments, the sector remains underdeveloped, and crucially, there is no significant statistical relationship between tourism and key indicators of sustainable growth in Algeria. Specifically, the study's hypothesis was not confirmed:

For H1: The data showed no significant effect of tourism on overall economic growth. The study found no meaningful correlation between tourism activity and development indicators in Algeria (such as economic

growth, unemployment rates, the sustainable development index, and foreign currency inflow).

Several factors contribute to this outcome:

- Tourism expenditures are not efficiently managed or strategically aligned with broader development goals.
- Focus has been limited to infrastructure development (hotels, buildings), with insufficient attention to sustainable, inclusive tourism models.
- Environmental considerations and community engagement are largely absent in tourism policies.
- The sector remains largely ceremonial or protocol-driven, offering limited socioeconomic benefits.
- Tourism revenues do not sufficiently cover the sector's needs, making it an unsustainable investment.

These results suggest that, despite its potential, tourism in Algeria currently fails to contribute effectively to sustainable economic and social development.

5- Conclusion:

Tourism, when approached as a comprehensive and human-centered activity, plays a critical role in sustainable development. It not only generates economic benefits such as employment, income, and foreign currency, but also contributes to the formation of responsible, active citizens who are engaged and productive. In this sense, tourism supports both economic growth and human development.

However, the applied results of the study clearly show that the tourism sector in Algeria is still far from achieving its intended role. Despite the significant financial resources allocated to this sector, it remains underdeveloped and inefficient. Most importantly, there is no evident relationship between tourism and the core indicators of sustainable growth in Algeria, such as environmental preservation, inclusive economic development, and local community empowerment.

Nonetheless, tourism continues to be a vital component of economic infrastructure. When aligned with sustainable development goals, it holds the potential to become a powerful engine for economic diversification, job creation, and cultural enrichment.

Given Algeria's diverse nature, culture, and human resources, the country holds enormous potential to become a leader in sustainable tourism. However, this requires a fundamental shift in strategy and policy. The following recommendations are proposed to support this transformation:

- Position Algeria as a destination for all forms of sustainable tourism, including religious, cultural, eco, mountain, sports, and solidarity tourism.
- Shift focus from superficial tourism development to substantive, people-centered policies that foster real economic and social impact.
- Raise awareness among stakeholders about the deeper meaning and strategic value of tourism as a tool for development.
- Rationalize public expenditure in the tourism sector to ensure efficiency and long-term impact.
- Promote tourism services and marketing as vital indicators of socio-economic progress.
- Incentivize and support tourism businesses through recognition, facilitation, and priority access to resources.
- Revise legal frameworks to offer better benefits, exemptions, and incentives to investors in sustainable tourism.
- Simplify access to tourist areas and modernize transportation and border infrastructure using advanced technologies.
- Invest in training and capacity-building to ensure a skilled tourism workforce.

- Update tourism laws and regulations, especially those related to environmental standards and quality certification.
- Strengthen tourism security and visitor safety as a core component of the tourism experience.
- Preserve and enhance museums and heritage sites, recognizing their importance as cultural and economic assets.

In conclusion, a well-planned and inclusive approach to sustainable tourism can serve as a powerful engine for economic diversification, social development, and national identity reinforcement in Algeria.

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