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Article

Measuring The Impact Of The Tourism Sector On Economic Growth In Iraq For The Period (2005-2021) Using The Logarithmic Function

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Abstract: The economic literature suggests a positive relationship between certain tourism sector indicators and Gross Domestic Product (GDP). This study aims to assess the impact of these indicators on Iraq's GDP from 2005 to 2021, starting from the premise that the tourism sector in Iraq contributes only a small percentage to economic growth. Higher tourism revenues positively affect GDP levels in Iraq. The research found that increasing tourism revenues by one unit, with other factors constant, contributes to a GDP increase of 1.60 million dinars. Conversely, an increase in tourism expenditures by one unit, with other factors constant, results in a GDP decrease of 2.24 million dinars due to improper allocation of tourism expenses by the government. Increasing the number of workers by one unit, with other factors constant, contributes to a GDP increase of 4.27 million dinars. The research recommends that the government properly direct tourism expenditures to enhance the tourism sector's image in Iraq.

Keywords: Tourism Sector, Economic Growth, Gross Domestic Product, Logarithmic Function

1. Introduction

Tourism in Iraq has garnered significant attention aimed at its development and enhancement by organizing and directing all resources and capabilities that aid in advancing the tourism sector. This focus is primarily reflected in launching fundamental structural development projects, such as the strategic plan for tourism preparation, which seeks to secure a position in the global market due to Iraq's natural and cultural potential.

This study attempts to highlight the importance of the tourism sector as one of the promising economic sectors that Iraq looks to for supporting economic growth and diversifying income sources, given its heavy reliance on the oil sector. There is an economic and geographical climate that acknowledges the vital role of tourism in promoting economic growth in Iraq.

2. Materials and Methods

Research Problem: The Iraqi economy heavily relies on the oil sector for budget financing and covering expenditures, neglecting an important and vital sector like tourism. The research investigates the impact of tourism in Iraq on The Gross Domestic Product (GDP)for the period (2005-2021).

Research Importance: The significance of the research lies in studying tourism sector indicators and their role in supporting economic activity, as well as their impact on the economic variables that constitute Iraq's economy, particularly the GDP.

Research Hypothesis: The hypothesis suggests that the tourism sector in Iraq contributes a small percentage to supporting economic growth. An increase in tourism revenues has a positive effect on the GDP in Iraq.

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Research Objective: The objective is to measure the impact of tourism sector indicators on Iraq's GDP for the period (2005-2021).

Research Methodology: The researcher adopts a statistical approach using various statistical and econometric tests to derive results.

Study Boundaries:

Spatial Boundaries: Study of the relationship between tourism indicators and GDP in Iraq.

Temporal Boundaries: The study covers the period (2005-2021).

3. Results

Chapter One: Theoretical Framework of Tourism and Economic Growth

First: The Theoretical Framework of Tourism

1. Concept of Tourism: Tourism is considered a human phenomenon that has existed since ancient times, as old as human life itself, characterized by dynamic periods of travel in pursuit of stability, security, and livelihood. Due to tourism's multifaceted nature and its intersection with various economic activities, it is challenging to establish a unified definition. Researchers have focused on different aspects: some view it as an economic phenomenon, others as social, cultural, or psychological (Rashid, Saeed: 2020, 482).

It is also described as a modern, evolving phenomenon stemming from the growing need for recreation, relaxation, and a change of scenery, appreciating the beauty of nature, and enjoying unique locations (Rabab: 2021, 8).

The tourism sector is considered essential due to its direct impact on other economic, social, and cultural sectors. It facilitates cultural exchange, fosters understanding, and builds friendships, promoting tolerance among nations and peoples. The World Tourism Organization also regards tourism as a symbol of peace (Jaradat: 2020, 21).

The aforementioned definitions indicate that tourism has multiple interpretations, each differing based on perspective. Some see it purely as a social phenomenon, others as economic, or as a means of strengthening human and cultural relations globally. However, many definitions agree that tourism is pursued for leisure rather than work and should not result in permanent residence (Al-Amrawi: 2021, 97).

2. Types of Tourism: The tourism sector is characterized by its diverse forms and types, which can be categorized as follows:

A. Tourism by Purpose (Saeed: 2010, 19):

Medical Tourism: Focuses on the need for physical and psychological treatment and other health-related issues.

Recreational Tourism: Involves seeking necessary rest and the rejuvenation of physical and mental strength.

Sports Tourism: Involves traveling to participate in international sports competitions across various sports.

Cultural Tourism: Aims to increase individual knowledge by exploring unfamiliar regions of different countries.

Official Political Tourism: Occurs when delegates or individuals travel to participate in official talks or deliberations with other countries.

Religious Tourism: One of the oldest types, involving visits to religious landmarks or sites.

Social Tourism: Aims to maintain social relationships between individuals, families, and peoples worldwide.

B. Tourism by Age Group (Maryam: 2019, 22):

Youth Tourism: Pertains to the age group of 7-14 years, with trips often occurring during school vacations, such as scouting or nature exploration.

Young Adult Tourism: For individuals aged 16-30, characterized by adventure and excitement.

Mature Tourism: For those aged 30-60, focused on relaxation and escaping work environments.

Retirement Tourism: For individuals over 60, often aimed at health and relaxation.

C. Tourism by Tourist Nationality (Al-Mamouri: 2022, 104):

International Tourism: Traveling outside the country, known as international tourism.

Domestic Tourism: Local travel within the country.

3. Economic Impacts of Tourism: The economic importance of tourism can be highlighted through the following points:

A. Job Creation: Tourism is highly interconnected with various other activities, meaning it can provide job opportunities beyond the tourism sector itself, extending to activities that supply production inputs. The tourism sector can generate more jobs than most traditional industrial sectors, Workers over four times as many people as the automobile industry and ten times as many as the construction sector (Wafida: 2019, 8).

B. Impact on Income: National income, measured by general expenditure, comprises the total amounts spent by individuals on consumer goods and services within a year. Tourist spending includes purchases of both tourism-related and non-tourism-related goods and services during their stay in the host country (Hameed: 2020, 134).

C. Influx of Foreign Capital: The tourism sector contributes to foreign exchange through:

- Investment in tourism-related projects by foreign capital.
- Currency exchange differences.
- Daily tourist spending on services.
- Payments received by the country for issuing entry visas (Wafida: 2019, 8).

Second: Theoretical Framework of Economic Growth

1. Concept of Economic Growth: Economic growth is the total value of goods and services produced in an economy over a specific period. It refers to the continuous increase in the production of goods and services through enhanced economic productivity over time, driven by the development of human and technological capital, increased investment, innovation, and optimal resource use (Khalaf, Taha: 2022, 256).

It is also defined as the process by which a country's average per capita GDP or real national income increases over a long period through sustained productivity growth (Mohammed: 2019, 24).

2. Types of Economic Growth: Researchers differentiate between three types of economic growth:

A. Natural or Spontaneous Growth: Achieved automatically without comprehensive economic planning (Soumaya: 2019, 12).

B. Planned Growth: Results from comprehensive resource and societal needs planning, closely linked to planners' capabilities and the realism of their plans (Haroun: 2022, 71).

C. Transient Growth: Occurs as a response to temporary external factors, which disappear along with the growth they generated (Soumaya: 2019, 12).

3. Indicators of Economic Growth Measurement: The speed of economic growth depends on the availability of human and material resources and productive capacities, divided into:

A. Gross Domestic Product (GDP): A key indicator of a country's economic activity, representing the market value of goods and services produced within a specific geographical area over a set period, usually one year. It includes several sub-indicators, such as real GDP and nominal GDP, and average per capita income (Al-Obaidi: 2018, 22).

B. National Income: A crucial indicator of a country's wealth and economic growth, representing the total income generated from production and ownership of production factors, minus payments made for using production factors owned by the rest of the world. It is operationally related to GDP within a specific period (Haroun: 2022, 78).

C. Average Per Capita GDP: This indicator is GDP divided by the total population, serving as a crucial measure of economic development and overall economic performance. It is also an important metric for assessing the increase in living standards, as economic growth involves rising per capita GDP alongside population growth over a specified period, usually one year, within a certain geographical area (Al-Obaidi: 2018, 23).

Chapter Two: The Relationship Between the Tourism Sector and Economic Growth in Iraq (2005 – 2021)

First: The Reality of the Tourism Sector in Iraq

The reality of the tourism sector in Iraq is reviewed through the following tourism indicators, as shown in Table (1):

1. Tourism Revenues: The total tourism revenues reached 48,740 million dinars in 2006, showing an increase of 0.42% compared to 2005, when tourism revenues were 34,224 million dinars. This increase was due to improved security conditions. In 2015, tourism revenues amounted to 417,199 million dinars, reflecting a 0.22% increase from 2013, when revenues were 261,392 million dinars, again due to the restoration of security and an increase in the number of visitors to religious sites. By 2021, tourism revenues reached 664,933 million dinars, a 0.72% increase from 2020, when revenues were 384,588 million dinars. This significant increase compared to previous years was attributed to government support for the sector, including security provisions and financial support.

2. Tourism Expenditures: Total tourism expenditures were 10,514 million dinars in 2006, representing a decrease of -0.19% from 2005, when expenditures were 13,049 million dinars due to a lack of government interest in this sector. Total expenditures reached 99,975 million dinars in 2015, marking a 0.18% increase from 2013, when expenditures were 69,390 million dinars, indicating slight government attention during this period. In 2021, total expenditures amounted to 256,478 million dinars, a 0.52% increase from 2020, when expenditures were 168,344 million dinars.

3. Number of Guests: The number of guests was 1,434 thousand in 2006, reflecting a decrease of -0.28% from 2005, when the number was 2,003 thousand dues to deteriorating security conditions and a decline in service provision. In 2015, the number of guests reached 4,922 thousand, a -0.12% decrease from 2013, when there were 6,321 thousand guests, also due to inadequate services for tourists and neglect of the sector by the government. However, in 2021, the number of guests rose to 12,130 thousand, a 0.55% increase from 2020, when there were 7,805 thousand guests. This indicates significant improvement in the tourism sector due to enhanced service provision for tourists.

4. Number of Workers: The number of workers in 2006 was 3,349 thousand, showing a -0.30% decrease from 2005, when there were 4,789 workers, attributed to layoffs or reductions in the workforce and reliance on daily wage workers as needed. In 2015, the number of workers reached 8,182 thousand, a -0.03% decrease from 2013, when there were 8,830 workers in the tourism sector, again due to layoffs. In 2021, the number of workers in the tourism sector was 6,827 thousand, a -0.47% decrease from 2020, when there were 12,989 workers in the tourism sector in Iraq. This decline was due to reliance on temporary daily wage workers.

Table 1. Development of the Reality of the Tourism Sector in Iraq (2005 – 2021).

Years	Tourism Revenues	Revenue Change	Tourism Expenditures	Expenditure Change	Number of Guests	Guest Change	Number of Workers	Worker Change
2005	34224	–	13049	–	2003	–	4789	–
2006	48740	0.42	10514	-0.19	1434	-0.28	3349	-0.30
2007	63768	0.30	11744	0.11	2490	0.73	4574	0.36
2008	91402	0.43	17595	0.49	2380	-0.04	5319	0.16
2009	119035	0.30	23446	0.33	2270	-0.04	6065	0.14
2010	144854	0.21	30172	0.28	3050	0.34	6071	0.00
2011	176273	0.21	53471	0.77	3874	0.27	7109	0.17

2012	211492	0.19	64943	0.21	4474	0.15	7491	0.05
2013	261392	0.23	69390	0.06	6321	0.41	8830	0.17
2014	339296	0.29	84682	0.22	5621	-0.11	8506	-0.03
2015	417199	0.22	99975	0.18	4922	-0.12	8182	-0.03
2016	356557	-0.14	122437	0.22	7749	0.57	9132	0.11
2017	316484	-0.11	113511	-0.07	6125	-0.20	10167	0.11
2018	266593	-0.15	56577	-0.50	6097	-0.00	8920	-0.12
2019	577229	1.16	202832	2.58	13992	1.29	14708	0.64
2020	384688	-0.33	168344	-0.17	7805	-0.44	12989	-0.11
2021	664933	0.72	256478	0.52	12130	0.55	6827	-0.47

Reference: Ministry of Planning, Central Statistical Organization.

Second: The Relationship Between the Tourism Sector and GDP in Iraq

The relationship between tourism sector indicators and Gross Domestic Product (GDP) is reviewed through Table (2):

1. Relationship Between Tourism Revenues and GDP: In 2005, total tourism revenues amounted to 34,224 million Iraqi dinars, showing an increase of 0.42%, while GDP was 268,607,024,791 million Iraqi dinars, with an increase of 0.08%. This indicates a positive relationship between tourism revenues and GDP. In 2015, total tourism revenues reached 417,199 million Iraqi dinars, reflecting an increase of 0.22%, while GDP was 182,720,606,764,819 million Iraqi dinars, with a 0.04% increase. By 2021, tourism revenues totaled 664,933 million dinars, a 0.72% increase, while GDP was 196,520,154,157,971 million dinars, with a 0.01% increase. Thus, the relationship between tourism revenues and GDP is positive.

2. Relationship Between Tourism Expenditures and GDP: In 2005, total tourism expenditures were 13,049 million Iraqi dinars, with a decrease of -0.19%, while GDP was 268,607,024,791 million Iraqi dinars, with an increase of 0.08%. This indicates a positive relationship between tourism expenditures and GDP. In 2015, total tourism expenditures reached 99,975 million Iraqi dinars, reflecting an increase of 0.18%, while GDP was 182,720,606,764,819 million Iraqi dinars, with a 0.04% increase. By 2021, total tourism expenditures amounted to 256,478 million Iraqi dinars, a 0.52% increase, while GDP was 196,520,154,157,971 million dinars, with a 0.01% increase. Thus, the relationship between tourism expenditures and GDP is also positive.

Table 2. Development of the Relationship Between the Tourism Sector and GDP in Iraq (2005 – 2021).

Years	Tourism Revenues	Percentage Change in Revenues	Tourism Expenditures	Percentage Change in Tourism Expenditures	Number of Workers	Percentage Change in Workers	Gross Domestic Product (GDP)	Annual Change in GDP
2005	**34224**	**–**	**13049**	**–**	**4789**	**–**	**268607024791**	
2006	**48740**	**0.42**	**10514**	**-0.19**	**3349**	**-0.30**	**292529440221**	**0.08**
2007	**63768**	**0.30**	**11744**	**0.11**	**4574**	**0.36**	**107608093377600**	**366.8**
2008	**91402**	**0.43**	**17595**	**0.49**	**5319**	**0.16**	**124199465595976**	**0.15**
2009	**119035**	**0.30**	**23446**	**0.33**	**6065**	**0.14**	**127725512982262**	**0.028**
2010	**144854**	**0.21**	**30172**	**0.28**	**6071**	**0.00**	**134185349419040**	**0.05**
2011	**176273**	**0.21**	**53471**	**0.77**	**7109**	**0.17**	**142496819248612**	**0.06**
2012	**211492**	**0.19**	**64943**	**0.21**	**7491**	**0.05**	**163452240979643**	**0.14**
2013	**261392**	**0.23**	**69390**	**0.06**	**8830**	**0.17**	**174147519436992**	**0.06**
2014	**339296**	**0.29**	**84682**	**0.22**	**8506**	**-0.03**	**174272659296764**	**0.00**
2015	**417199**	**0.22**	**99975**	**0.18**	**8182**	**-0.03**	**182720606764819**	**0.04**
2016	**356557**	**-0.14**	**122437**	**0.22**	**9132**	**0.11**	**207870213404549.00**	**0.13**

2017	**316484**	**-0.11**	**113511**	**-0.07**	**10167**	**0.11**	**203899947632617**	**-0.01**
2018	**266593**	**-0.15**	**56577**	**-0.50**	**8920**	**-0.12**	**208931144920161**	**0.02**
2019	**577229**	**1.16**	**202832**	**2.58**	**14708**	**0.64**	**221166962719822**	**0.05**
2020	**384688**	**-0.33**	**168344**	**-0.17**	**12989**	**-0.11**	**193551021038331**	**-0.12**
2021	**664933**	**0.72**	**256478**	**0.52**	**6827**	**-0.47**	**196520154157971**	**0.01**

Reference: Ministry of Planning, Central Statistical Organization.

Chapter Three: Measuring the Impact of the Tourism Sector on Economic Growth in Iraq for the Period (2005 – 2021)

First: Description of the Study Variables:

The study includes the following four variables:

1. Dependent Variable (Y): Gross Domestic Product (GDP)
2. Independent Variable (X1): Tourism Revenues
3. Independent Variable (X2): Tourism Expenditures
4. Independent Variable (X3): Number of Workers

$$Y = c + b\,x1 - b\,x2 + b\,x3$$

Second: Results of Statistical Tests:

1. Statistical Test: Pearson Correlation Coefficient:

- A positive correlation exists between tourism revenues and GDP, indicating a direct relationship between them, with a correlation strength of (0.85), which is strong and significant.

- A positive correlation exists between tourism expenditure and GDP, indicating a direct relationship between them, with a correlation strength of (0.79), which is strong and significant.

- A positive correlation exists between the number of workers individuals and GDP, indicating a direct relationship between them, with a correlation strength of (0.84), which is strong and significant.

- A positive correlation exists between the number of guests and GDP, indicating a direct relationship between them, with a correlation strength of (0.89), which is strong and significant.

- A positive correlation exists between the number of guests and GDP, indicating a direct relationship between them, with a correlation strength of (0.84), which is strong and significant.

Table (1): Statistical Test of Pearson Correlation Coefficient

Independent variables		N	Pearson Correlation	Sig
X1	Tourism revenues	17	0.85	0.000
X2	Tourism spending	17	0.79	0.000
X3	Number of Workers	17	0.84	0.000
X4	Number of guests	17	0.89	0.000
X5	Number of hotels	17	0.84	0.000

Reference: Prepared by the researcher using the (e-views10) program.

2. Unit Root Test: It is evident from Table (2) of the Augmented Dickey-Fuller test for the study variables used that each of (Gross Domestic Product, Tourism Revenues, Tourism Expenditures, and Number of Workers) shows that the time series of the variables are not stationary at the original level (At Level), nor are they stationary at the first difference (At First Difference), but they become stable at the second difference (At Second Difference).

Table (2): Stationarity Test – Dickey-Fuller.

Variable	**Difference Two**			**Difference One**			**Original Level**		
	Without a fixed limit or general direction	**Fixed limit and general direction**	**Fixed limit**	**Without a fixed limit or general direction**	**Fixed limit and general direction**	**Fixed limit**	**Without a fixed limit or general direction**	**Fixed limit and general direction**	**Fixed limit**

	Prob*	Prob*	Prob*	Prob*	Prob*	Prob*	Prob*	Prob*	Prob*
Tourism Revenue	**0.1065**	**0.0001**	**0.0000**	**0.4470**	**0.9560**	**0.8722**	**0.9858**	**0.0482**	**0.7608**
Tourism Expenditure	**0.0019**	**0.0650**	**0.0203**	**0.0000**	**0.1242**	**0.0812**	**0.9938**	**0.3213**	**0.9961**
Number of Workers	**0.0001**	**0.0175**	**0.0027**	**0.1789**	**0.0064**	**0.0006**	**0.9964**	**0.0024**	**0.9543**
Gross Domestic Product	**0.0000**	**0.0003**	**0.0002**	**0.3720**	**0.9617**	**0.0113**	**0.9711**	**0.8942**	**0.6138**

Reference: Prepared by the researcher using the (e-views10) program.

Third: Results of Estimating the Multiple Regression Equation for the Study: Results of Some Revenue Indicators on GDP in Iraq for the Period (2005 – 2021).

Table (3): Estimation of the Results of the Multiple Standard Model.

Dependent Variable: LY
Method: Least Squares
Date: 09/29/23 Time: 04:30
Sample: 2005 2021
Included observations: 17

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	32.12797	0.081742	393.0417	0.0000
X1	1.60E-06	5.49E-07	2.909717	0.0122
X2	-2.24E-06	1.37E-06	-1.641015	0.1248
X3	4.27E-05	1.27E-05	3.365930	0.0051

R-squared	0.867585	Mean dependent var	32.69784
Adjusted R-squared	0.837028	S.D. dependent var	0.261186
S.E. of regression	0.105440	Akaike info criterion	-1.459023
Sum squared resid	0.144529	Schwarz criterion	-1.262973
Log likelihood	16.40169	Hannan-Quinn criter.	-1.439535
F-statistic	28.39217	Durbin-Watson stat	1.725854
Prob(F-statistic)	0.000006		

Reference: Prepared by the researcher based on the outputs of the E-Views program.

From the table above, it is noted that all equations have positive signs, indicating a direct relationship. This means that an increase in tourism sector indicators leads to an increase in GDP. It is also observed that all equations are significant and successful in statistical and econometric tests. Therefore, the semi-logarithmic equation was chosen as the best for explaining the relationship between the variables. It explains the relationship between tourism sector indicators and GDP through the R^2 test, as changes in (tourism revenues, tourism expenditures, and number of workers) explain (86%) of the changes occurring in (GDP), while (14%) is attributed to other factors not included in the model, as they are outside the scope of the study.

The results of the standard model showed that the value of (F) is significant, as its value is (0.000), which is less than (0.05). This means that the model used to analyze the relationship between tourism sector indicators (tourism revenues, tourism expenditures, and number of workers) and GDP has a high degree of significance and can be used for planning and forecasting purposes. This indicates that tourism sector indicators (tourism revenues, tourism expenditures, and number of workers) significantly affect GDP in Iraq. As for the (Durbin-Watson) test, its value was (1.72), indicating no autocorrelation problem, and the model succeeded in the (Park test), meaning that the model does not suffer from heteroscedasticity.

In the economic analysis of the model under study, the regression coefficient for (x1) was (1.60), clearly indicating that an increase in tourism revenues by one unit, holding other factors constant, will contribute to an increase in GDP by (1.60) million dinars.

In contrast, the regression coefficient for (x2) was (-2.24), clearly indicating that an increase in tourism expenditures by one unit, holding other factors constant, will contribute to a decrease in GDP by (-2.24) million dinars due to the misdirection of tourism expenditures by the government.

The regression coefficient for (x3) was (4.27), clearly indicating that an increase in the number of workers individuals by one unit, holding other factors constant, will contribute to an increase in GDP by (4.27) million dinars.

Fourth: Model Quality Tests: The model quality tests include three main tests to determine whether the model is free from statistical problems:

1. Normal Distribution Test for Residuals: This test shows the normal distribution of the residuals in the model used in the study. It relies on the p-value (Jarque-Bera). If the probability is greater than (5%), we accept the null hypothesis stating that the residuals of the model are normally distributed, and we reject the alternative hypothesis which states that the residuals are not normally distributed if the p-value is less than (5%). In this model, as shown in Figure (), the p-value was (0.33), which is greater than (5%), indicating that the model is normally distributed. Here, we accept the null hypothesis and reject the alternative hypothesis.

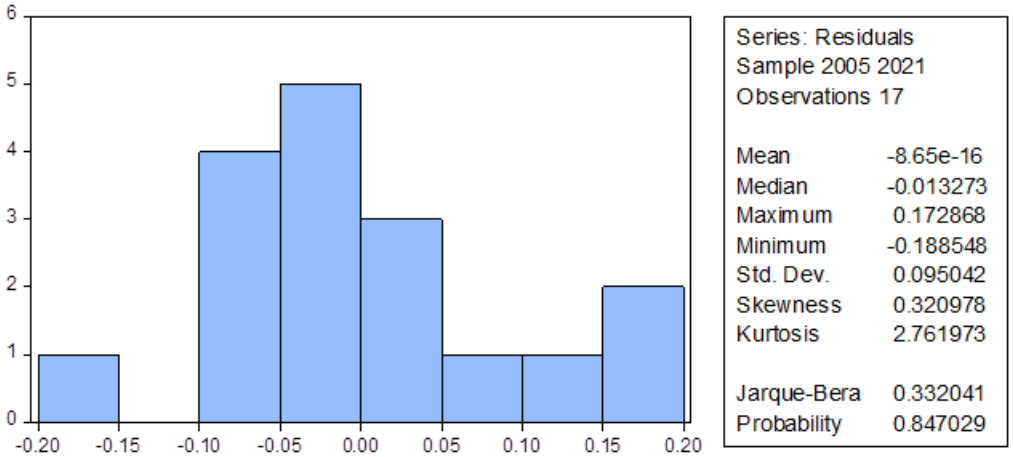

Figure (1): Results of the Normal Distribution Test for the Model Residuals.

Reference: Based on the researcher's work using the outputs of the E-Views program.

2 - Test for Homoscedasticity: There are many tests that indicate the homogeneity of error variance or the lack thereof, one of which is the (ARCH) test that relies on the probability value (Prob. Chi-Square). The results in the table show that the probability of the Chi-Square (Prob. Chi-Square(1)) is (0.03). From this result, which is less than (5%), we reject the null hypothesis (H0) stating that there is no problem with the stability of homogeneity of variance, and we accept the alternative hypothesis (H1) which states that there is a problem with the stability of homogeneity of variance.

Table (4): Results of the Test for the Problem of Stability of Homogeneity of Variance.

Heteroskedasticity Test: ARCH

F-statistic	5.510530	Prob. F(1,14)	0.0341
Obs*R-squared	4.519020	Prob. Chi-Square(1)	0.0335

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 09/29/23 Time: 04:39
Sample (adjusted): 2006 2021
Included observations: 16 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003688	0.003353	1.100023	0.2899
RESID^2(-1)	0.540429	0.230219	2.347452	0.0341

R-squared	0.282439	Mean dependent var	0.008561
Adjusted R-squared	0.231184	S.D. dependent var	0.012011
S.E. of regression	0.010532	Akaike info criterion	-6.152385
Sum squared resid	0.001553	Schwarz criterion	-6.055811
Log likelihood	51.21908	Hannan-Quinn criter.	-6.147439
F-statistic	5.510530	Durbin-Watson stat	1.856319
Prob(F-statistic)	0.034129		

Reference: Based on the researcher's work using the outputs of the E-Views program.

2 – Test for Autocorrelation: This test indicates the presence or absence of an autocorrelation problem based on the probability value of the Chi-Square (Prob. Chi-Square(1)). Table (6) shows the results of the autocorrelation test for the model as follows:

It is evident from Table (6) that the probability value of the Chi-Square (Prob. Chi-Square) is (0.6289), which is greater than (5%). Here, we accept the null hypothesis (H0) stating that there is no autocorrelation problem, and we reject the alternative hypothesis (H1) which states that there is an autocorrelation problem.

Table (5): Results of the Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.317443	Prob. F(2,11)	0.7345
Obs*R-squared	0.927647	Prob. Chi-Square(2)	0.6289

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 09/29/23 Time: 04:41
Sample: 2005 2021
Included observations: 17
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.052572	0.142465	-0.369017	0.7191
X1	1.93E-10	6.43E-07	0.000301	0.9998
X2	-2.63E-07	1.76E-06	-0.149539	0.8838
X3	9.48E-06	2.18E-05	0.435429	0.6717
RESID(-1)	0.075961	0.354118	0.214507	0.8341
RESID(-2)	-0.314731	0.470558	-0.668846	0.5174

R-squared	0.054567	Mean dependent var	-8.65E-16
Adjusted R-squared	-0.375175	S.D. dependent var	0.095042
S.E. of regression	0.111454	Akaike info criterion	-1.279841
Sum squared resid	0.136642	Schwarz criterion	-0.985766
Log likelihood	16.87865	Hannan-Quinn criter.	-1.250610
F-statistic	0.126977	Durbin-Watson stat	2.193887
Prob(F-statistic)	0.983129		

Reference: Based on the researcher's work using the outputs of the E-Views program.

4. Discussion

The findings of this study highlight the significant role of the tourism sector in influencing Iraq's economic growth, particularly its Gross Domestic Product (GDP), during the period from 2005 to 2021. The results of the statistical analysis, including the Pearson correlation coefficient and multiple regression models, provide compelling evidence of both positive and negative impacts associated with various tourism indicators.

The strong positive correlation between tourism revenues and GDP ($r = 0.85$) indicates that increases in tourism income directly contribute to economic growth. This is supported by the regression coefficient (1.60), which suggests that a unit increase in tourism revenues, holding other variables constant, leads to an increase of 1.60 million dinars in GDP. This positive relationship underscores the potential of tourism as a critical revenue-generating sector that can diversify Iraq's economy, reducing its heavy reliance on oil exports.

Conversely, the study reveals a negative impact of tourism expenditures on GDP, as evidenced by the regression coefficient of -2.24. This implies that improper allocation of tourism-related government spending can detract from economic growth. The inefficiency in expenditure management may stem from administrative challenges, lack of strategic planning, or misdirection of funds, highlighting the need for more effective governance in the tourism sector.

The number of workers in the tourism industry also demonstrates a strong positive correlation with GDP ($r = 0.84$), and the regression coefficient (4.27) suggests that increasing employment within the sector substantially boosts economic output. This finding emphasizes the sector's capacity to generate employment opportunities, thereby contributing to economic stability and growth.

Moreover, the stationarity tests and model diagnostics confirm the robustness of the econometric model, with no significant issues related to autocorrelation or heteroscedasticity. The high R-squared value (86%) indicates that the model effectively explains the variability in GDP based on tourism sector indicators.

In conclusion, while the tourism sector presents a valuable avenue for economic growth in Iraq, maximizing its potential requires strategic investment, efficient resource allocation, and comprehensive policy reforms. Enhancing infrastructure, improving security conditions, and promoting Iraq's rich cultural heritage can further strengthen the sector's contribution to the national economy.

5. Conclusion

First: Results of the Pearson Correlation Test:

1. There is a positive correlation between tourism revenues and GDP, indicating a direct relationship. The strength of the correlation is (0.85), which is strong and significant.
2. There is a positive correlation between tourism spending and GDP, indicating a direct relationship. The strength of the correlation is (0.79), which is strong and significant.
3. There is a positive correlation between the number of workers and GDP, indicating a direct relationship. The strength of the correlation is (0.84), which is strong and significant.

Second: Results of the Regression Analysis:

1. The regression coefficient for tourism revenues (x1) is (1.60), clearly indicating that an increase in tourism revenues by one unit, while keeping other factors constant, will contribute to an increase in GDP by (1.60) million dinars.
2. The regression coefficient for tourism spending (x2) is (-2.24), indicating that an increase in tourism spending by one unit, while keeping other factors constant, will lead to a decrease in GDP by (-2.24) million dinars due to the improper allocation of tourism spending by the government.

3. The regression coefficient for the number of workers (x3) is (4.27), indicating that an increase in the number of workers by one unit, while keeping other factors constant, will contribute to an increase in GDP by (4.27) million dinars.

Recommendations:

1. Properly direct tourism spending by the government to improve the image of the tourism sector in Iraq.
2. Develop a strategy to exploit all available tourism resources in Iraq, ranging from natural to cultural and historical assets.
3. Support tourism activities and accompany projects of local and foreign workers and investors.
4. Diversify the tourism product to enhance Iraq's competitiveness and strengthen its share in the tourism markets.

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