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The Nexus between Tourism Sector Revenue and Economic Growth: Insights from Saudi Arabia

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Abstract

The study aims to demonstrate the impact of growth in tourism revenues in achieving economic growth in the Saudi economy. The study relied on the hypothesis that the growth of real tourism revenues causes real economic growth, and that real economic growth causes real tourism revenues growth. A standard model was used to test this causal relationship, based on the joint integration method and using the error correction model (VECM). The results of the test model concluded that the causal relationship is unidirectional from real GDP growth to real tourism revenues in the short and long term. The causal relationship is unidirectional in the long term only from labour supply to real GDP, meaning that labour supply causes real GDP in the long term only. The causal relationship was unidirectional from real GDP growth to real investment spending.

Keywords: Economic Growth; Saudi Arabia; Tourism Sector; Cointegration Analysis; Revenue

Introduction

Tourism has emerged as one of the most dynamic and transformative industries worldwide, impacting countries' economies in multiple ways. Over the past few decades the tourism sector has witnessed significant growth, contributing significantly to the GDP of many countries (Kyara et al., 2021). This growth has not only created jobs, but also led to infrastructure development, thus boosting economic development (Selimi, et al., 2017). However, the relationship between tourism and economic growth is complex and multifaceted, with both positive and negative dimensions (Priyan, 2023: 3720).

The World Travel & Tourism Council (WTCC) 2019 report on the state of the economic impact and employment of the travel and tourism industry worldwide confirms that this sector contributed about 8.9 trillion US dollars, and about 10.3% of the global GDP, and this sector generated about 330 million jobs and contributed to economic growth, and one out of every 10 jobs was created in this sector (Sarwar and Naqvi: 2021). Through the revenues generated by tourism, local communities may generate income for infrastructure, support industries such as hospitality, and promote local businesses. Tourism is an important source of income for so-called "tourist destinations." Tourism also helps maintain the quality of service and other aspects of those places through the reputation of the location. A good reputation is very important for a

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location that aims to attract tourism (Haddad, 2019: 17), and thus helps generate revenue and maintain employment. However, tourism can harm the local environment and negatively impact the host country. Tourism also fluctuates during certain seasons, which can lead to overcrowding and other negative externalities such as crime, pollution, and waste. Furthermore, price levels in tourist destinations can rise, due to increased demand (Stryzhak, 2019).

It is worth noting that the Kingdom of Saudi Arabia has been able to achieve great leaps in the tourism sector recently, as the Kingdom has become more open to the world since the launch of Saudi Vision 2030 and welcomed visitors from all over the world. The launch of electronic visas starting in 2019 has contributed to attracting millions of visitors to the Kingdom, and helped create many job opportunities and drive local economic growth.

The Kingdom has also strengthened its position as a global tourist destination, by implementing initiatives in the fields of antiquities, culture, education and arts, to preserve the Kingdom's rich heritage and natural beauty, and attracted major events such as the Red Sea International Film Festival and the Saudi Car Race. The Kingdom has invested in its distinguished geographical location in the heart of the Arab and Islamic world and worked to raise the quality of facilities and services, so that pilgrims and Umrah performers can enjoy an unforgettable spiritual experience. This has culminated in its reaching 33rd place in the Travel and Tourism Index issued by the World Economic Forum, advancing 10 countries at once compared to 2019. Tourism in the Kingdom of Saudi Arabia has also succeeded in achieving an average revenue of $26 billion in 2022, after revenues in 2020 were estimated at about $6 billion, which was reflected positively on the global impression of Saudi tourism, which received wide international acclaim, most notably the World Bank, which confirmed that the tourism sector is one of the main drivers of Saudi economic growth (World Bank website, Data Bank)

The study aims to test the relationship between the tourism sector and economic growth in the Saudi economy. Although the causes of economic growth vary greatly depending on the country in question, the development of different sectors may be a reason for the rise in the economic level (Hajam et.al, 2023). Development is also closely related to the resources of host countries. Tourism is one of the interesting sectors that should be studied in relation to economic growth (Oleksii, et al, 2020), because it depends on individuals who earn wages in a particular country but choose to spend their disposable income in other countries. The study is based on the hypothesis that the tourism sector, measured by tourism revenues, causes economic growth, and economic growth causes growth in the tourism sector in the Kingdom of Saudi Arabia. The study aims to test the validity of the study hypothesis based on the inductive approach that studies the relationship between the tourism sector and economic growth in the Kingdom of Saudi Arabia. The study also relies on the inductive approach by collecting data and statistics. To achieve the goal of the research.

Literature Review

Ekanayake et.al, (2012) aimed to study the relationship between tourism development and economic growth in developing countries using the cointegration method and using Granger causality tests in a multivariate model and using annual data for the period (1995-2009), and the study did not find any evidence to support the hypothesis of tourism-led growth. The results of the study show that although the elasticity of tourism revenues with respect to real GDP is not statistically significant for all regions, its positive sign indicates that tourism revenues make a positive contribution to economic growth in developing countries.

Suresh and Senthilnathan (2014) aimed to test the causal relationship between economic growth and tourism revenue in Sri Lanka. The study used Granger causality tests and annual time series data covering the period (1977-2012). The results showed that there is a unidirectional causal relationship between economic growth and tourism revenue, from economic growth to tourism revenue.

Du et.al. (2016) developed a tourism growth model that is an extension of the Solow (1956) model to test whether tourism development is an additional determinant of income in the presence of standard income determinants such as capital accumulation. The model was estimated using cross-sectional data from 109 countries. The results of the study concluded that investments in tourism appear to be insufficient to achieve economic growth.

Gamage et.al, (2020) aimed to systematically review the literature on tourism and economic growth during the period (2004-2019). The Scopus database was selected to search the literature to make the process transparent. The results of the study concluded that the literature on multi-country studies faces difficulties in finding a specific relationship compared to studies conducted in a single country. Most studies focused only on relationships but neglected growth strategies. Therefore, the systematic review recommends that future research focus on multi-country studies and growth strategies.

Erdinç and Aydinbaş (2020), which aims to study the determinants of international tourism revenues using the fixed effects panel data analysis method, random effects models and the GMM model, where 16 countries were selected with their annual data for the period (2007-2018), it became clear from the results of the study that there is a statistically significant and positive relationship between international tourism revenues and the gross domestic product, gross capital formation, the rule of law index, and the number of international visitors.

Mete (2022) study attempted to study the relationship between tourism and economic growth in Mediterranean countries in the period 2006-2019. A causal analysis was conducted and the results of the study showed that tourism revenues are the cause of economic growth, which confirms the hypothesis of tourism-oriented growth.

Priyang (2023) aimed to examine the relationship between tourism and economic growth, and provides a multifaceted analysis supported by empirical evidence and scientific insights. The research reveals that tourism is a powerful driver of economic development, contributing significantly to job creation, foreign exchange earnings, and infrastructure development. Moreover, it plays a pivotal role in cultural exchange and understanding while presenting social and cultural challenges that require careful management. The article emphasizes the paramount importance of sustainable tourism practices to mitigate the environmental impact of this dynamic industry. Looking ahead, the future of tourism and economic growth hinges on responsible and sustainable practices, especially in the wake of global events such as the COVID-19 pandemic. Emerging trends, including medical tourism and experiential travel, are reshaping the sector, and the digitization of tourism services holds promise for enhancing traveller comfort, provided these developments are consistent with sustainability principles.

It is clear from the previous presentation of previous studies that, despite their discussion of the relationship between the tourism sector and economic growth, they did not resolve this relationship. Therefore, the current study attempts to test the relationship between the tourism sector and economic growth in the Kingdom of Saudi Arabia. The current study differs from the

previous studies that were presented in that it is applied to the economy of the Kingdom of Saudi Arabia and uses relatively recent data covering the period (2003-2022), in addition to its attempt to rely on the error correction model in testing the causal relationship, which is considered a relatively modern measurement method.

Saudi Government Efforts to Promote the Tourism Sector

The official electronic platform of Vision 2030 clarified the efforts of the Kingdom of Saudi Arabia to advance the tourism sector. There are many initiatives and projects that the Kingdom of Saudi Arabia has implemented and is implementing to advance the tourism sector, including, but not limited to, the Makkah Road Initiative 2018, Prince Mohammed bin Salman's project to develop historic mosques, launching the Visit Saudi Arabia program, the Technical Institute for Traditional Arts, and the Red Sea International Project. The following is an explanation of the most prominent points of these projects:

1. **Makkah Road Initiative 2018:** The pilot phase of the Makkah Road Initiative was launched in 2018, and in 2019, the initiative was launched in its full form, to make a radical change in enriching the experience of pilgrims coming from 7 countries, as a first phase, and enabling them to enjoy high-quality services during their journey to the Kingdom, namely; Morocco, Pakistan, Malaysia, Indonesia, Bangladesh, Turkey and Ivory Coast. Upon the pilgrims' arrival in the Kingdom, they and their luggage are transported directly to their place of residence in Makkah or Madinah. With the Makkah Road Initiative, the Kingdom has shortened the time that pilgrims spend at passport control points to a few minutes.
2. The number of beneficiaries of the Makkah Road Initiative was estimated at about 98,800 beneficiaries in 2022, and flights increased by about 274 flights, and service provision outlets increased to about 55 outlets, and the time required to complete the procedures is estimated at about 1:48 minutes, and the satisfaction rate of beneficiaries of the service is estimated at about 99.45%.
3. Prince Mohammed bin Salman's project to develop historic mosques, the project preserves the identity of the Kingdom's architectural heritage and consolidates the aesthetics of local architecture, through the restoration and development of 130 mosques, some of the most historically, culturally and socially profound mosques in the Kingdom. The project was launched in 2018, with the first phase including the restoration of about 30 mosques, at a financial cost estimated at about 150 million riyals, in addition to 100 mosques under restoration.

The partnership between the Ministry of Hajj and Umrah and the Saudi Tourism Authority resulted in the launch of the "Visit Saudi Arabia" program, so that "Nusuk" became the official platform for booking and planning Hajj and Umrah trips. The platform, available in multiple languages, allows travellers to easily arrange every aspect of their trip, from obtaining electronic visas to booking accommodations and transportation, and viewing educational and enrichment information about Makkah and Madinah. The number of beneficiaries has reached about 842 thousand beneficiaries, and it received about 740 thousand electronic visa applications.

The Royal Institute of Traditional Arts, established in 2020 and honorarily chaired by His Royal Highness Prince Mohammed bin Salman, Crown Prince and Prime Minister, the institute focuses on traditional arts such as calligraphy, embroidery, weaving, jewellery making, and other forms

of visual and performing arts, as these arts are an integral part of the Kingdom's heritage and formation, and have played a major role in shaping its history and culture, and the number of beneficiaries is estimated at about 1,460 beneficiaries.

Red Sea International: The Red Sea destination is not just a magical place that attracts the hearts of tourism seekers, but it is also full of hidden historical and cultural sites that have not yet been discovered and carries a rich heritage legacy. The destination is scheduled to include 50 resorts, providing 8,000 hotel rooms, in addition to more than 1,000 residential properties, when all its phases are completed in 2030.

The efforts of the Saudi economy to focus on the tourism sector have led to the development of the number of tourists and the development of tourism revenues for the Saudi economy. As for the number of tourists for the Saudi economy during the study period, it can be expressed graphically in the Figure (1).

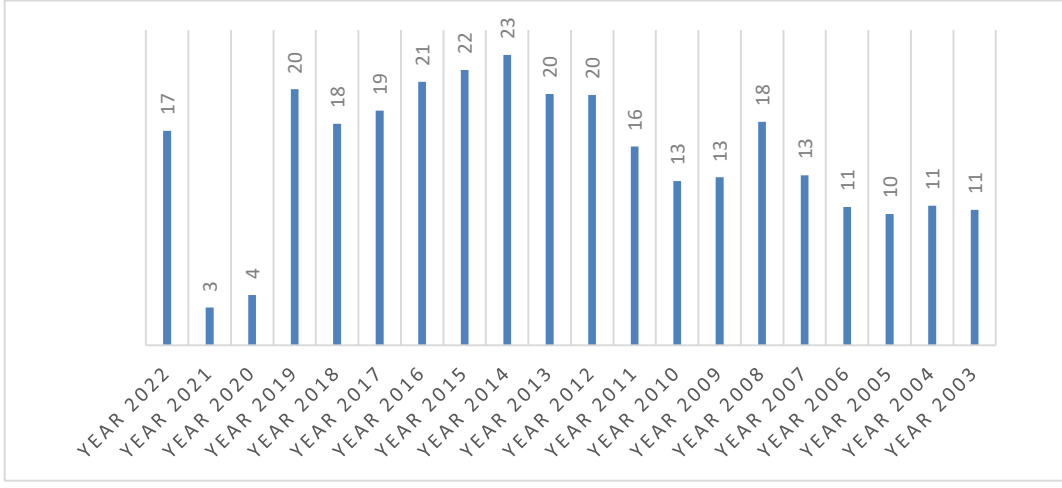

Figure 1: Development of the number of tourists to the Kingdom of Saudi Arabia during the period (2003-2022). Source: Prepared by the researcher based on World Bank data.

Figure (1) shows the development of the number of tourists from about 4 million visitors to the Kingdom of Saudi Arabia in 2020 to about 17 million visitors in 2022, i.e. the number of visitors doubled 4 times in 2022 compared to 2020, and this led to an increase in tourism revenues for the economy of the Kingdom of Saudi Arabia, and the development of tourism revenues for the Saudi economy can be illustrated in Figure (2).

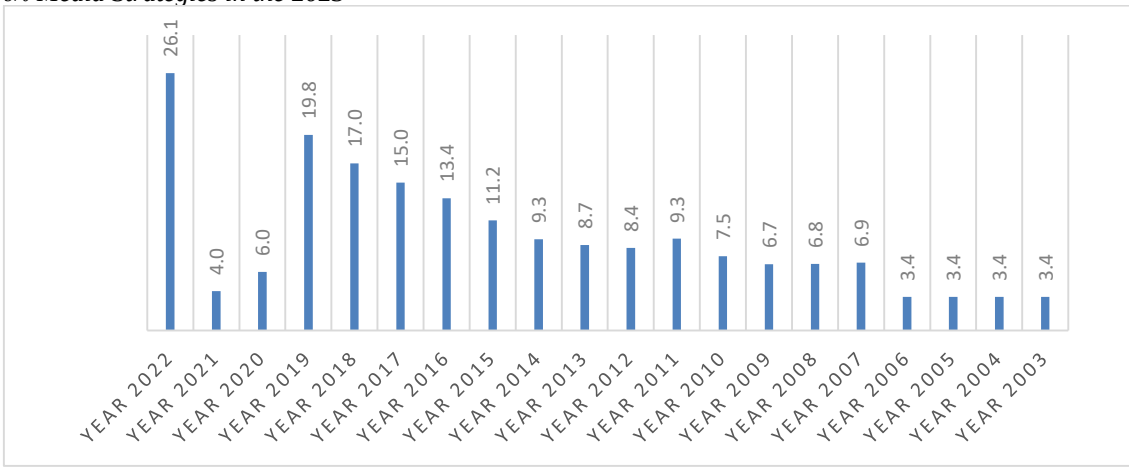

Figure 2. Development of tourism revenues for the Saudi economy during the study period (2003-2022). Source: Prepared by the researcher based on World Bank data.

Figure (2) shows that tourism revenues in the Saudi economy increased from about 6 billion US dollars in 2020 to about 26.1 billion US dollars in 2022, meaning that tourism revenues quadrupled in just 3 years. The year 2022 also witnessed the highest percentage of revenues for the tourism sector during the study period (2003-2022), which illustrates the positive impact of the development projects implemented by the Kingdom of Saudi Arabia recently to advance the tourism sector.

Model Description

In order to achieve the study objective of testing the causal relationship between the tourism sector and economic growth in the Saudi economy, the study variables were identified and the model was formulated by using previous studies in this field, including the study of Mete (2022), and (Ekanayake et.al, 2012) and Long, which relied on the Cobb-Douglas model in formulating the relationship between the tourism sector and economic growth in Saudi. The Cobb-Douglas function can be expressed in the following mathematical form:

$$y_t = \mathrm{A}\ K_t^{\alpha}\ L^{\beta} \qquad (1)$$

It refers to the economic growth rate in the Saudi economy (measured by real GDP), A refers to the technological level (which is constant), K represents real investment spending measured by the change in real capital accumulation, L refers to the labor force, and refers to the coefficient of elasticity of output with respect to real investment spending, refers to the coefficient of elasticity of output with respect to the labor force.

Since the main objective of the study is to test the relationship between the tourism sector and economic growth in the Kingdom of Saudi Arabia, tourism revenues (R) will be added as an explanatory variable for the tourism sector measurement index to equation No. (1) to become as follows:

$$y_t = \mathrm{A}\ K_t^{\alpha}\ L^{\beta} R_t^{y} \qquad (2)$$

The logarithm of both sides of equation (2) is taken to obtain the following linear equation:

$$\log y_t = b_0 + b_1 \log K_t + b_2 \log L_t + b_3 \log R_t + \in_t \ldots\ldots \quad (3)$$

Equation (3) is used as a basis for testing the relationship between each explanatory variable and economic growth in a binary manner in the short and long term. Since the variables are in their logarithmic value, the partial derivatives express the elasticity of the GDP growth rate with respect to the explanatory variables, b1 express the elasticity of real GDP with respect to real investment spending, b2 express the elasticity of real GDP growth with respect to the labor force, b3 express the elasticity of real GDP with respect to real tourism revenues, and Et are the random error limit with the assumption that they achieve the traditional statistical properties with an arithmetic mean equal to zero and a constant variance.

Regarding the data on the variables used in the tests on the state of the Saudi economy during the period (2003-2022) according to the available data collected from international sources "the World Bank", the Consumer Price Index (CPI) (2010=100) was also used to obtain the real values of these variables (real GDP, real investment spending, and real tourism revenues). In addition to local sources including "the Saudi Central Bank".

Study Methodology and Results

According to the methodology used in the study, the methods used consist of three tests: “unit root tests, cointegration test, and error correction models.”

Unit Root Test for Stationarity of Time Series

The unit root test aims to examine the properties of the time series of each of the labor force (L), which is a real variable, and real sustainable development measured by real GDP (y), real investment spending (K), and real tourism revenues (R) in the economy of the Kingdom of Saudi Arabia during the period (2003-2022), in order to identify the extent of their stationarity, and to determine the integration rank of each variable separately. Despite the multiplicity of unit root tests, the current study will use two tests: the Dickey-Fuller test, and the Philip-Perron test. Table (1) shows the results of the ADF test for the unit root of the study variables.

								ADF-test & PP_test
Time series	**level**				**First difference**			
	Section		**Section and general direction**		**Section**		**Section and general direction**	
	t-Statistic	**Prob.***	**t-Statistic**	**Prob.***	**t-Statistic**	**Prob.***	**t-Statistic**	**Prob.***
log(Y)	-1.87	0.34	-2.07	0.53	-3.68	0.01	-3.74	0.05
log(L)	-2.01	0.28	-0.52	0.97	-2.78	0.08	-3.79	0.04
log(K)	-2.33	0.17	-2.54	0.31	-4.60	0.00	-4.59	0.01
log(R)	-1.97	0.30	-4.95	0.00	-5.57	0.00	-5.57	0.00

Table 1. Results of the ADF test for the unit root for the levels and first differences of the variables.
Source: Prepared by the researcher based on the outputs of the EViews program.

Table (1) shows the results of the Dickey-Fuller test, which indicates the instability of all time series for each of the real GDP growth rate, the labor force growth rate, the real investment

spending growth rate, and real tourism revenues, at the level with a segment or a segment and a general trend. That is, the null hypothesis of the existence of a unit root was accepted, meaning that the time series are not stable at the level, whether with a segment or a segment and a general trend, at a significance level of 5%, except for the tourism revenue series, which is stable at the level assuming the existence of a segment or a segment and a general trend. It is also noted that the same time series of the model are stable when taking their initial difference, whether with a segment only or a segment and a general trend, at a significance level of 5% or less. As for the Philip-Byrne test, Table (2) presents the results of the pp test for the unit root on the study variables:

ADF-test & PP_test								
Time series	**level**				**First difference**			
	Section		**Section and general direction**		**Section**		**Section and general direction**	
	t-Statistic	**Prob.***	**t-Statistic**	**Prob.***	**t-Statistic**	**Prob.***	**t-Statistic**	**Prob.***
log(Y)	-2.74	0.09	-2.04	0.55	-3.64	0.02	-3.64	0.06
log(L)	-2.42	0.15	-0.30	0.98	-2.70	0.09	-4.80	0.01
log(K)	-2.24	0.20	-2.54	0.31	-5.97	0.00	-7.84	0.00
log(R)	-1.63	0.45	-2.80	0.22	-0.10	0.94	1.89	1.00

Table 2. Results of the unit root test, levels and first differences of the variables.
Source: Prepared by the researcher based on the outputs of the EViews program.

The results of Table (2) show that the results of the Philip Perron test agree with the Dickey-Fuller test in the instability of all-time series for each of the real GDP growth rate, the labor force growth rate, and the real investment spending growth rate, at the level with a segment or with a segment and a general trend, i.e. the null hypothesis stating the existence of a unit root was accepted, meaning that the time series are unstable at the level, whether with a segment or a segment and a general trend. It is also noted that all-time series of the model are stable when taking their initial difference, whether with a segment only or a segment and a general trend, at a significance level of 5% or less, except for the real tourism revenue series, which is unstable at the level or initial difference according to the Philip Perron test.

Results of the Johansen-Gillis Cointegration Test

The Engle-Granger test can be used to determine whether there is a common integration between the variables under study or not, but the Engle-Granger test does not aim to determine the number of common integration vectors between the variables under study, which is what distinguishes the Johansen test from other common integration tests, through its ability to test the number of common integration vectors between the variables under study, and the Johansen test is considered support for the results obtained from the Engle-Granger test, in the event that the Johansen- Gillis Cointegration test proves the existence of a single integration vector between the variables under study, and when confirming the existence of a single integration vector between the variables under study using the Johansen- Gillis test, then the equations of the error correction models can be estimated (Paltasingh, and Goyar, 2013: 93-94), and Table (3) shows the results of the Johansen- Gillis test.

Trace Test										
Pro.		**Critical Value 1%**		**Critical Value 5%**		**Statistic**		**Eigen Value**		Assuming the number of co-integration vectors (r)
Section and general direction	**Section**	**Section and general direction**	**Section**	**Section and general direction**	**Section**	**Section and general direction**	**Section**	**Section and general direction**	**Section**	
0.00	0.02	71.48	54.68	63.88	47.86	85.44	52.0	0.88	0.88	None
0.01	0.69	49.36	35.46	42.92	29.80	49.80	16.38	0.87	0.41	One at most
0.55	0.55	31.15	19.94	25.87	15.49	15.27	7.27	0.40	0.32	Two at most
0.39	0.40	16.55	6.63	12.52	3.84	6.55	0.72	0.32	0.04	Three at most
Maximal Eigen value Test										
0.02	0.00	37.49	32.72	32.12	27.58	35.65	35.59	0.88	0.88	None
0.00	0.82	30.83	25.86	25.82	21.13	34.53	9.11	0.87	0.41	One at most
0.75	0.54	23.98	18.52	19.39	14.26	8.72	6.55	0.40	0.32	Two at most
0.39	0.40	16.55	6.63	12.52	3.84	6.55	0.72	0.32	0.04	Three at most

Table 3. Results of the Johansen- Gillis test.
Source: Prepared by the researcher based on the outputs of the EViews program.

The results of Table (3) indicate that all the calculated values for the impact test and the maximum value test exceed the critical values for this test at the first hypothesis at a significance level of 5%, assuming the existence of a cross-section or a cross-section with a general trend at a significance level of 5%, which indicates the possibility of rejecting the null hypothesis (r=0) stating that there is no joint integration, and accepting the alternative hypothesis (r0), which means the existence of joint integration between the real GDP growth rate and its determinants represented by real tourism revenues, labor force, and real investment spending. It is also noted that the results of the impact test and the maximum value of the first hypothesis at a significance level of 1% support the same results of the first hypothesis at a significance level of 5% assuming the existence of a cross-section and a general trend together.

As it is clear from the results of Table (3) that the second hypothesis is statistically significant in the case of testing the effect or the maximum value, assuming the existence of a cross-section and a general trend together at a significance level of 5% or a significance level of 1%. It is also noted that all the calculated statistical values for the effect test exceed the critical values for this test, which indicates that the null hypothesis that the number of joint integration vectors does not exceed one is not accepted, i.e. there is a second vector for joint integration between the study variables is not accepted. It is also clear that the results of the effect test agree with the results of the maximum value test, but in the case of a difference in the results of the trace test with the results of the maximum eigenvalue test, the value of the results of the effect test can be relied upon, according to what some studies indicate, including the study (Luutekpohl, et al., 2001).

Error Correction Model Estimation Results

The error correction model assumes the existence of two types of relationships between real GDP and its determinants: a long-run relationship, and a short-run relationship, which is the immediate

or direct relationship that appears between the growth rate of real GDP and its determinants in each time period and is measured through the changes between them in each period. (Ranjan and Goyari, 2013).

By testing the error correction model, the null hypothesis of the absence of a causal relationship between the model variables is tested against the alternative hypothesis of the existence of a causal relationship between the model variables, where the t-statistic value is used for the slow error correction term coefficient to infer the existence of a long-term causal relationship between the variables. As for the F-statistic value for the explanatory variables in the error correction equations, it is used to identify the existence of a causal relationship in the short term between the variables. (Al-Tahera Al-Sayed, 2014: 45) The error correction equations were estimated for the variables between which a joint integration relationship was found, namely real GDP, real government spending, real public revenues, real investment spending rate, and labor force growth rate. The results were prepared in Table (4).

Estimated regression equation	**F-Statistic** **Short run**	**Pro.**	**T-Statistic** **Long run**	**Pro.**	**lag period**	**direction of causality**
GDP and tourism revenues						
D(logY)=D(logR)	0.27	0.84	0.78	0.45	(1)(1)	D(logY) D(logR)
D(logR)=D(logY)	9.60	0.00	4.90	0.00	(1)(1)	D(logR) ⇄ D(logY)
GDP and labour supply						
D(logY)=D(logL)	2.46	0.11	-2.63	0.02	(1)(1)	D(logY) ← D(logL)
D(logL)=D(logY)	0.72	0.56	-0.06	0.95	(1)(1)	D(logL)=D(logY)
Real GDP and Real Capital Accumulation						
D(logY)=D(logK)	1.27	0.32	-1.92	0.08	(1)(1)	D(logY) ← D(logK)
D(logK)=D(logY)	5.25	0.01	-3.28	0.01	(1)(1)	D(logK) ⇄ D(logY)

Table 4. Results of causality test using error correction model.
Source: Prepared by the researcher based on the outputs of the EViews program.

The results of Table (4) illustrate the causal relationships between real GDP and its determinants in the short and long term. As for the causal relationship between real GDP and real tourism revenues, it is noted that the value of the t-test for the error correction limit coefficient is

statistically insignificant at a significance level of 1% in the equation for the change in real GDP and statistically significant in the equation for the change in real tourism revenues, which indicates the existence of a unidirectional causal relationship from real GDP to real tourism revenues in the long term. It is also noted that the calculated F-test value is statistically insignificant at a significance level of 1% in the equation for the change in the growth rate of real GDP and statistically significant in the equation for the change in tourism revenues, which means the existence of a unidirectional causal relationship in the short term from real GDP to tourism revenues, i.e. the unidirectional causal relationship from real GDP growth to real tourism revenues in the short and long term.

As can be seen from the results of Table (4) for testing the causal relationship between real GDP and labor force, the value of the t-test for the coefficient of the slowing error correction term in the equation for the change in the growth rate of real GDP is different from zero and is statistically insignificant, and is statistically significant in the equation for the change in the logistical supply of labor, which means that there is a one-way causal relationship in the long run from the supply of labor to the real GDP. The calculated F-test is also statistically insignificant in the equations for the change in real GDP and the change in the supply of labor, which means that there is no causal relationship between the supply of labor and the growth of output in the long run, i.e. the causal relationship between the supply of labor and real GDP is unidirectional in the long run only from the supply of labor to the real GDP, i.e. the supply of labor causes the real GDP in the long run only.

It is noted from the results of Table (4) that the value of the t-test for the error correction limit coefficient is statistically insignificant at a significance level of 1% in the equation of change in real GDP and statistically significant in the equation of change in real investment spending, which indicates the existence of a unidirectional causal relationship from real GDP to real investment spending in the long term. It is also noted that the calculated F-test value is statistically insignificant at a significance level of 1% in the equation of change in real GDP growth rate and statistically significant in the equation of change in real investment spending, which means the existence of a unidirectional causal relationship in the short term from real GDP to real investment spending, i.e. the unidirectional causal relationship from real GDP growth to real investment spending. The results of the above can be summarized in Table (5).

Real GDP growth causes tourism sector growth	Unidirectional	short term	direction of causality	Real GDP and Tourism Sector
Real GDP growth causes tourism sector growth	Unidirectional	long term		
Labor force growth does not cause real GDP, just as GDP growth does not .cause labor force	No causal relationship	short term	direction of causality	Real GDP and Labor Force
Labor force growth causes real GDP in .the long run	Unidirectional	long term		
Real GDP growth causes investment .spending to grow	Unidirectional	short term	direction of causality	Real GDP and Investment Spending
Real GDP growth due to real capital accumulation	Unidirectional	long term		

Table 5. Error correction model results.

Conclusions

The main objective of this study is to test the causal relationship between the tourism sector and economic growth in the Kingdom of Saudi Arabia. To achieve this objective, the study was divided into five parts in addition to the introduction. The second part explained previous studies. The third part clarified the role of the Saudi government in promoting the tourism sector. The fourth part explained the study model. The fifth part explained the study methodology. The sixth part clarified the conclusion and recommendations of the study.

The second part explains previous studies. It has become clear from the previous presentation of previous studies that although they addressed the relationship between the tourism sector and economic growth, they did not resolve this relationship. Therefore, the current study attempts to test the causal relationship between the tourism sector and economic growth in the Saudi economy, using relatively recent time series data covering the period (2003-2022).

Part Three, explained the efforts of the Saudi government in developing the tourism sector, and it became clear that there are many initiatives and projects that the Kingdom of Saudi Arabia has implemented and is implementing to advance the tourism sector, including, but not limited to, the Makkah Road Initiative 2018, Prince Mohammed bin Salman's project to develop historic mosques, the launch of the Visit Saudi Arabia program, the Technical Institute for Traditional Arts, and the Red Sea International Project, which led to an increase in the Kingdom of Saudi Arabia's tourism revenues to their maximum in 2022 compared to tourism revenues during the study years.

Part five, explaining the study model, included a description of the Cobb-Douglas production function to test the causal relationship between the tourism sector and economic growth in the Kingdom of Saudi Arabia, measured by real GDP. Part six included the methodology and results of the study. According to the methodology used in the study, the methods used consist of three tests: unit root tests, cointegration tests, and error correction models. Unit root tests were used to ensure the stability of time series. Despite the multiplicity of unit root tests, the current study used two tests: the Dickey-Fuller test and the Philip-Perron test, which is the most widely used in econometric studies in general. The extent of cointegration between the real GDP growth rate and its determinants was tested.

The results of the test model showed that there is a unidirectional causal relationship from real GDP growth to real tourism revenues in the short and long term, and a unidirectional causal relationship in the long term only from labour supply to real GDP, i.e. labour supply causes real GDP in the long term only, and a unidirectional causal relationship from real GDP growth to real investment spending. Finally, the study recommends the following:

Working towards sustainable tourism and sustainable growth.

Commitment to practices that prioritize economic growth while preserving natural and cultural treasures, and by supporting the diversification of tourism products, establishing effective policy frameworks, and actively engaging with local communities, we ensure that the positive impact of tourism resonates fairly across communities and that our planet's heritage continues for future generations.

The Saudi government must focus on economic policies to promote tourism as a potential source of economic growth.

Continuing the expansion of modern hotels, in line with the expansion of tourism demand, especially in governorates that have tourism potential, and maximizing the use of technology in the tourism sector.

Paying attention to all the components of the tourism offer available to the Saudi economy and developing and exploiting them in the best way, including natural, human and archaeological components.

Supporting the private sector to advance and encourage it to invest in tourism activity, due to the high flexibility of this sector in work and the speed of decision-making in implementing work.

The possibility of developing the study in the future using modern data or different measurement methods, such as VAR.

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