

Tourism Services Liberalization and Its Role in Boosting Tourism Revenues in Developing Countries: An Analytical Study of Algeria, Tunisia, and Egypt (2005-2020).

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Abstract:

The aim of this study is to examine the effects of tourism liberalization on tourism industry revenues in a sample of North African countries. By opening up the tourism industry to both foreign and domestic investments, liberalization can stimulate growth, development, and an increase in tourism demand, ultimately enhancing tourism revenues. To analyze the relationship between the study variables, a panel cointegration model was employed, incorporating both time series and cross-sectional data. The analysis was conducted using EViews 12 software.

The findings indicate the absence of a long-term relationship between tourism liberalization and revenue growth, with the connection being limited to the short term, where tourism openness has a notable impact on revenues. The results also show significant disparities in tourism potential across the North African countries, with varying degrees of openness. Egypt demonstrates a high level of openness compared to Tunisia, while Algeria's tourism sector is still in its early stages, limiting demand and revenue generation in the sector.

Keywords: Tourism Liberalization, Tourism Revenues,

Jel Classification Codes: F14, L83

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1. INTRODUCTION :

Tourism services trade is one of the sectors that has carved its path towards achieving economic efficiency in both local and global markets. The liberalization of tourism services plays a crucial role in the global economy, being one of the fastest-growing sectors. It also absorbs a large workforce and is highly interconnected with other economic sectors. The growth of the tourism sector often leads to the growth of other sectors through what is known as the tourism multiplier effect, which positively impacts both the gross domestic product (GDP) and global trade volumes.

The opening of the tourism sector fosters networks and relationships among different countries, influencing their economies and performance. It stimulates the flow of tourists, attracts foreign currency, and encourages both domestic and foreign investments. This, in turn, enhances the country's competitiveness in infrastructure, superstructure, and information and communication technologies, thereby improving overall economic performance.

The contribution of tourism to the economies of the countries under study varies, depending on factors such as natural or human attractions and the quality of services provided, which play a key role in attracting tourists. As a result, the number of tourism establishments, including hotels and resorts, has grown significantly.

In some countries, tourism revenue is the primary driver of the economy. For example, the Macau region in China is highly dependent on tourism. In the Arab world, Egypt heavily rely on tourism, followed by Tunisia to a lesser extent. Algeria, despite its significant potential, remains at an early stage in its tourism development. The adoption of tourism liberalization policies in the countries under study could enhance their investment capacities in the sector, contributing to economic growth and reinforcing their commercial and technological standing.

1.1.Research Problem:

Based on the above, the main research question is:

What is the impact of tourism liberalization on tourism revenues in the countries under study?

1.2. Research Hypotheses:

To test the validity of the hypotheses, the following can be formulated:

- There is a statistically significant impact of tourism liberalization on tourism revenues in the long term at a 5% significance level in the countries under study.
- There is a statistically significant impact of tourism liberalization on tourism revenues in the short term (Granger causality test) at a 5% significance level in the countries under study.

1.3. Importance of the Study:

The significance of this study arises from the crucial role the tourism sector plays in promoting development and growth overall, especially in the countries being examined study.

These countries possess natural, cultural, and geographical diversity, enabling them to adopt diverse tourism strategies through effective investment in infrastructure, ultimately enhancing the sector's contribution to their economic competitiveness.

1.4. Study Objectives:

This study aims:

- The importance of tourism liberalization in boosting the economies of the countries under study.
- The significance of tourism liberalization in enhancing the structural capacities of the countries under study to increase their revenues.
- The role of tourism liberalization in promoting development across all sectors of the economies of the countries under study.
- Enhancing the technological capacities of the countries under study through their openness to the global market via tourism liberalization.

2. Literature Review:

The relationship between tourism liberalization and revenues has garnered significant attention in the academic community, particularly regarding its impact on developing economies. Several studies have explored how tourism openness affects economic indicators like GDP growth, foreign direct investment (FDI), and employment. This section reviews key literature

on the subject, focusing on the causal relationship between tourism sector openness and its broader economic effects.

2.1 Liberalization of Tourism Services within the Framework of Trade in Services Liberalization:

The General Agreement on Trade in Services (GATS) covers 12 service sectors, including the tourism and travel sector, which is designated as Sector 09 in the agreement. Despite the agreement allocating annexes for the rules on trade liberalization in four main service sectors—namely financial services, air transport, telecommunications, and the movement of labor—it did not allocate a separate annex for the tourism sector, a demand made by several countries and the World Trade Organization (WTO).

According to statistics from the WTO, the tourism sector is the largest in terms of the number of countries that have made commitments among various service sectors. A total of 133 member countries of the WTO, representing 86% of the total member countries, have made commitments in the tourism and travel sector. Arab countries that are members of the organization have made both general commitments and specific commitments in the field of

tourism and travel, which vary from one country to another ((UNWTO), pp. 1-6).

2.2 Tourism Liberalization and Its Effects on Economic Growth:

Tourism acts as a crucial engine for economic growth, particularly in developing countries, where it stimulates investment, employment, and foreign exchange earnings (Sriyantha, Jayatillake, & Christine, 2013, pp. 446-463). Several studies have indicated that the liberalization of tourism services, through the reduction of barriers to entry and the promotion of foreign investment, has a direct impact on economic growth. For instance, (Pacheco, Fernandes, & Fernandes, 2019, pp. 197-205) demonstrates a positive correlation between tourism openness and economic growth in Brazil. Using a causality analysis, they show that tourism liberalization leads to increased purchasing power and trade openness, further enhancing GDP.

2.3 Tourism Openness and Revenues in Developing Countries:

In developing countries, particularly in the North African region, tourism plays a critical role in national economic development. Research

suggests that tourism revenues are closely tied to the degree of sector openness. For example, Egypt has seen a rapid increase in tourism revenues following its liberalization efforts in the early 2000s. These efforts included facilitating foreign investments and easing visa restrictions for tourists from Europe and North America, which have significantly increased the country's tourism appeal.

However, the impact of tourism openness is not uniform across all developing nations (Massimo, Molly, & Enrico, 2007). argued that the success of tourism liberalization efforts depends heavily on the existing infrastructure and policy frameworks in each country. In cases like Algeria, where the tourism sector is underdeveloped, liberalization efforts have not yet translated into significant increases in revenues. This is partly due to the lack of adequate tourism infrastructure and the country's limited international marketing efforts.

Liberalizing tourism services can have a significant positive impact on the economy by attracting more tourists and increasing revenues. However, this process should be implemented carefully to avoid any potential negative effects, such as losing control over the local market or deteriorating quality in the absence of sufficient oversight.

2.4 Causal Relationship Between Tourism Openness and Revenues:

The literature also suggests that the relationship between tourism openness and revenues may vary depending on the short- and long-term effects. Studies have employed cointegration and Granger causality models to examine these relationships (Pacheco, Fernandes, & Fernandes, 2019, pp. 197-205) for instance, found that while there is no long-term equilibrium between tourism openness and revenues in Brazil, a short-term causality exists. This implies that immediate policy changes, such as easing restrictions on foreign tourists, can boost revenues in the short term, but sustained growth requires deeper structural reforms.

Similarly, research on global tourism trends supports the view that the short-term impacts of liberalization can be significant (Chathuni , Chamath, & Ashinsana, 2022, pp. 1-21). They suggest that the introduction of

electronic visas and enhanced tourism infrastructure can lead to a rapid influx of tourists, especially in countries with untapped tourism potential like Algeria and Tunisia.

2.5 The Role of Policy in Enhancing Tourism Openness:

The success of tourism liberalization efforts depends largely on the policy environment. Studies indicate that countries that adopt comprehensive tourism policies, such as offering tax incentives to foreign investors and improving visa facilitation, tend to attract more tourists. ((UNWTO), pp. 1-6) emphasizes the need for governments to create a favorable regulatory environment for tourism services by reducing bureaucratic barriers and promoting public-private partnerships.

In particular, Egypt has been cited as a success story due to its targeted tourism development strategy, which includes the creation of specialized tourism zones and improved infrastructure. points to Egypt's strategic plan "Vision 2030," which has focused on increasing international

tourist arrivals through a combination of marketing efforts and infrastructure improvements.

The level of tourism openness can vary from one country to another based on government policies and local practices. A country characterized by strong tourism openness often becomes a preferred destination for tourists due to the facilities and services provided, which enhances its economy and bolsters the country's image global.

3. Methodology:

This study analysis the effect of tourism industry liberalization on tourism revenues in Algeria, Tunisia, and Egypt over the period of 2005 to 2020. The research employs a panel data approach, utilizing cointegration and causality tests to investigate the relationship between tourism openness and revenues. EViews 12 software is used for data analysis, and the key tests include panel unit root tests.

3.1 Data Description:

The dataset used for the analysis comprises annual data from 2005 to 2020 for Algeria, Tunisia, and Egypt. The data sources include the World Bank for tourism revenues (R) and tourism openness rate (T). The sample size of 48 observations (16 years for 3 countries) is sufficient for the

econometric tests performed.

• **Variables:**

Tourism Revenues (R): The annual tourism revenues of each country, obtained from the World Bank.

Tourism Openness Rate (T): The openness rate, reflecting the level of tourism sector liberalization in each country.

3.2 Econometric Tests:

3.2.1 Assessing the impact of the fixed-effects model on the study variables

Table1: Assessing the impact of the fixed-effects model on the study variables

Variante	Coefficient	Pro
T	0.71	0.0

Source: The researcher prepared it based on the outputs of evIEWS12 program

Economic analysis: There is a fixed effect of the trade openness rate on tourism in increasing tourism revenues by 71% with a probability of 0.00.

3.2.2 Assessing the impact of the random -effects model on the study variables

Table2: Assessing the impact of the fixed-effects model on the study variables

Variante	Coefficient	Pro
T	0.67	0.0

Source: The researcher prepared it based on the outputs of evIEWS12 program

Economic analysis: There is a random effect of tourism openness on increasing tourism revenues 67% with a probability of 0.00.

3.2.3 Model Choice:

The Hausman test is used to examine whether the fixed effects or random effects model is better suited to the panel data set. The test aids in selecting between the two models by determining whether the unique mistakes (fixed effects) are associated with the regressors.

Table3: Comparison between the two models

Correlation Random E ffects- Husman Test			
Test Sumamary	Chi-stat	Chi-sq.df	prob
Cross- section	6,04	1	0.013

Source: The researcher prepared it based on the outputs of evIEWS12 program

Economic analysis: The results of the tests following the chi-square distribution indicate that the calculated value is 6.04 with a probability of 0.01, which is less than 0.05; therefore, the appropriate model is the fixed model.

3.2.4 Model depiction:

After the estimation, we obtained the following equation

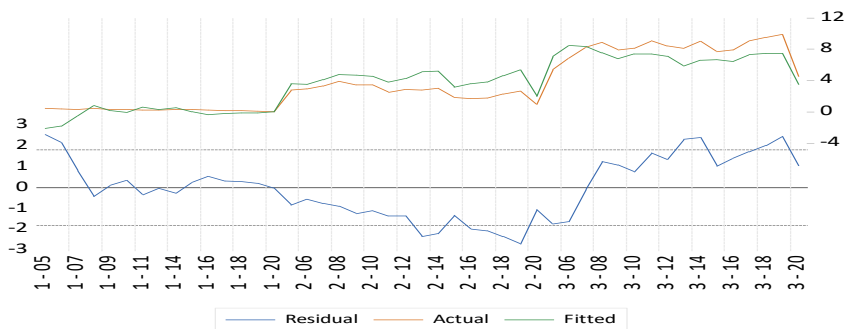
$$R = -0.419958732469 + 0.708525488903 \cdot T + [\text{PER}=\text{F}] + [\text{CX}=\text{F}]$$

From the model, it is evident that:

The significance of the intercept and the independent variable is $\text{prob} < 5\%$

Based on the previous model, the changes in tourism revenues are explained by tourism openness rates by 82%.

Fig1: A graphical illustration of the model



Source: The researcher prepared it based on the outputs of evIEWS12 program

3.3. Panel Unit Root Test:

3.3.1. Stability of time series at the level:

Table4: Stability of time series at the level

Study variables Type of test	Tourism revenues R		Tourism openness rate T	
LLC	-Intercept	0.86	- intercept	0.84
	- trend and intercept	0.44	- trend and intercept	0.98
	- none	0.037	- none	0.00

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IPS	- intercept trend and intercept - - none	0.61 0.98 -	- intercept - trend and intercept - none	0.17 0.178 -
ADF.FISHER	- intercept - trend and intercept - none	0.28 0.22 0.21	- intercept - trend and intercept - none	0.15 0.18 0.08
PP. FISHER	-intercept - trend and intercept - none	0.46 0.32 0.1	- intercept - trend and intercept - none	0.017 0.0029 0.009

Source :The researcher prepared it based on the outputs of evIEWS12 program

Economic analysis: It is noticeable that the majority of the critical values are greater than 5% for most of the model tests; therefore, we accept the null hypothesis H0, indicating that neither series is stable at the level.

3.3.2. Stationarity of the series at the first difference:

Table 5: Stationarity of the series at the first difference

Study variables Type of test	Tourism revenues R		Tourism openness rate T	
LLC	-intercept -trend and intercept - none	0.72 0.00 0.04	-intercept - trend and intercept - none	0.1 0.97 0.00
IPS	-intercept - trend and intercept - none	0.01 0.002 -	intercept - trend and intercept - none	0.02 0.008 -
ADF. FISHER	-intercept - trend and intercept	0.016 0.00	- intercept - trend and intercept	0.02 0.01

	- none	0.005	- none	0.001
PP. FISHER	-intercept	0.003	- intercept	0.005
	- trend and intercept	0.001	- trend and intercept	0.00
	- none	0.005	- none	0.00

Source: The researcher prepared it based on the outputs of evIEWS12 program

Economic analysis: It is observed that the majority of the critical values are less than 5% for most of the model tests; therefore, we reject the null hypothesis H_0 indicating

3.4 Pedroni Cointegration Test:

The Pedroni cointegration test is used to examine the long-term relationship between tourism openness (T) and tourism revenues (R). The test includes seven statistics, taking into account individual country

heterogeneity. The results are used to assess whether there is a stable long-term relationship between the variables across the three countries.

Table6: Pedroni Cointegration Test Results

Weighted Tests			Tests			
Test	Statistics	prob	Partial Tests		Statistics	prob
GROUP RHO	-0,8655	0,19	Within countries	v.stat	1,349361	0.08
GROUP PP	-3,76	0.000		RHO	-0,306	0.01
GROUP ADF	-1,5	0,0660		PP	-0,5856	0,27
				ADF	-1,709	0,04
			Between countries	V.STAT	1,83	0,0335
				RHO	-1,6	0,0541
				PP	-2,99	0,0041
				ADF	-1,78	0,03

Source: The researcher prepared it based on the outputs of evIEWS12 program

Economic analysis: As the bulk of key values are greater than 5%, this indicates that there is no long-term equilibrium relationship between tourism revenues and tourism openness rates in the countries under study. In other words, tourism revenues are not affected by tourism openness rates in the long term (2005-2020) in the countries under study. This can be attributed to the nature and type of tourism investments in these countries.

3.5 Granger Causality Test:

The Granger causality test is employed to examine the short-term causal relationship between tourism revenues (R) and tourism openness (T). This test assesses whether the past values of one variable can help predict the future values of the other.

Table7: Granger Causality Test Results

Pairwise Granger Causality Tests
Date: 08/06/24 Time: 23:54
Sample: 2005 2020
Lags: 4

Null Hypothesis:	Obs	F-Statistic	Prob.
R does not Granger Cause T	36	3.20374	0.0282
T does not Granger Cause R		0.61362	0.6565

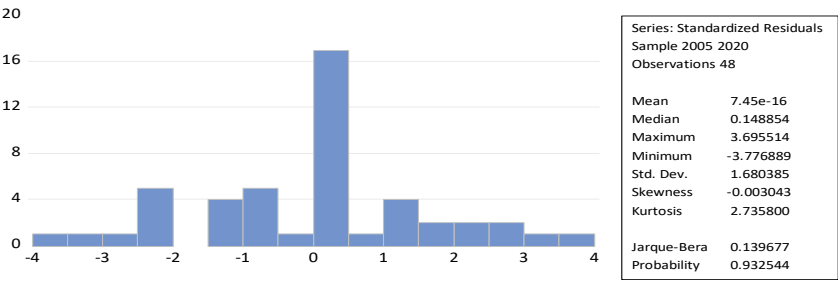
Source: The researcher prepared it based on the outputs of evIEWS12 program

Economic Analysis: Since the p-value for the Fisher statistic is less than 5% in the first relationship, we conclude that there is a causal relationship from tourism revenues to tourism openness, but no causal relationship in the opposite direction. This means that the tourism openness rate does not cause an increase in tourism revenues.

3.6 Residuals diagnostic tests:

3.6.1 Normality test:

Fig2: A graphical of the Normality test



Source: The researcher prepared it based on the outputs of evIEWS12 program

Economic Analysis: Based on the results of the normality test, it is clear that the p-value is greater than 5%, and the calculated values are higher than the critical values. This means that the residuals follow a

normal distribution.

3.6.2 LM test

Table8: LM Test Results

Residual Cross-Section Dependence Test			
Null hypothesis: No cross-section dependence (correlation) in residuals			
Equation: Untitled			
Periods included: 16			
Cross-sections included: 3			
Total panel observations: 48			
Note: non-zero cross-section means detected in data			
Cross-section means were removed during computation of correlations			
Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	13.03876	3	0.0046
Pesaran scaled LM	4.098305		0.0000
Pesaran CD	3.560769		0.0004

Source: The researcher prepared it based on the outputs of evIEWS12 program

4. Discussion:

The results of this study provide valuable insights into the relationship between tourism openness and tourism revenues in the North African countries of Algeria, Tunisia, and Egypt. The findings highlight key differences in how tourism sector liberalization has influenced economic performance in these nations, with Egypt leading the way in tourism openness and revenue generation. This section delves into the implications of these results, identifying both the challenges and opportunities for improving tourism sector performance through policy interventions.

4.1 The Role of Tourism Openness in Generating Short-Term Benefits:

Tourism openness plays a pivotal role in driving short-term economic gains, as seen in Egypt's case. The Granger causality test results reveal that tourism revenues positively influence tourism openness in the short run. This suggests that as countries experience increases in tourism revenues, they may adopt more liberal policies to attract even more tourists. Egypt's higher degree of openness, which is attributed to its long-standing policies favoring tourism liberalization, offers a clear example of how easing restrictions can make a country more attractive to foreign visitors.

The introduction of favorable policies, such as visa exemptions for certain countries, investment in tourism infrastructure, and the promotion of public-private partnerships, has positioned Egypt as a regional leader in tourism. These efforts have not only increased tourist arrivals but also contributed to the growth of tourism-related industries, creating jobs and driving GDP growth. Fernandes et al. (2019) pointed out that tourism

openness can have a direct multiplier effect on local economies by attracting foreign currency and stimulating investments in hospitality, transportation, and cultural services. Egypt's experience corroborates this assertion.

4.2 Structural Barriers in Algeria and Tunisia:

Conversely, Tunisia and Algeria have faced more significant challenges in fully realizing the potential of their tourism sectors. In Tunisia, although the tourism sector has shown improvements, political instability and the effects of the 2011 revolution have hindered sustained growth. Despite Tunisia's relatively open policies, its recovery in tourism revenues has been slow due to the fragile security situation and the lingering effects of international travel warnings. In Algeria, the tourism sector is still in its infancy compared to its neighbors. Although Algeria has enormous tourism potential, particularly in terms of eco-tourism and cultural tourism, the country has been slow to implement reforms that would open up the sector. Algeria's tourism infrastructure remains underdeveloped, and the heavy reliance on oil revenues has historically diverted attention from tourism as a viable economic alternative. As Pinali, Leshner, and Grosso (2007) note, successful tourism liberalization is contingent on a country's ability to invest in both physical infrastructure and policy reforms, something Algeria has struggled to achieve.

The absence of a long-term cointegration relationship between tourism openness and revenues across these three countries highlights the structural differences that exist. In both Algeria and Tunisia, the lack of adequate investment in tourism infrastructure, marketing, and human resources has limited the ability of these countries to fully capitalize on tourism sector liberalization. Additionally, political instability and security concerns have created an environment of uncertainty, which has dissuaded foreign investors and international tourists alike.

4.3 Implications of Short-Term Granger Causality:

The study's short-term Granger causality results suggest that tourism revenues act as a driver for further liberalization. This implies that as tourism revenues increase, governments are more likely to implement additional

reforms to maintain and accelerate growth. Egypt's tourism growth can be seen as a positive feedback loop, where initial revenues from tourism have encouraged the government to continue investing in the sector, leading to further liberalization and more revenues.

In contrast, the lack of a similar causal relationship from tourism openness to revenues suggests that simply liberalizing the tourism sector is not enough to guarantee long-term growth in tourism revenues. For countries like Tunisia and Algeria, this finding underscores the need for a more comprehensive approach to tourism sector reform, including investments in infrastructure, improvements in governance, and political stability. ****Wijsekara et al. (2022)**** argue that tourism liberalization must be accompanied by strategies that ensure the sustainability and competitiveness of the tourism sector over time.

4.4 Addressing Policy Gaps and Structural Challenges:

To enhance the tourism sector's contribution to economic growth, both Tunisia and Algeria must adopt strategies that address their unique structural challenges. For Tunisia, this means leveraging its existing openness by improving security measures and promoting stability to restore confidence among international travelers. For Algeria, the focus should be on accelerating the pace of reforms aimed at liberalizing the tourism sector, which could help attract foreign direct investment and diversify the economy away from oil dependency.

The absence of a long-term relationship between tourism openness and revenues may also indicate the need for sectoral diversification within tourism itself. Countries in the North African region must expand their tourism offerings beyond traditional cultural and beach tourism to include niche markets such as eco-tourism, adventure tourism, and wellness tourism. These sectors can attract new segments of international tourists, offering a competitive edge in the increasingly crowded global tourism market.

4.5 Policy Recommendations:

Given the findings of this study, several policy recommendations can be made to maximize the potential of the tourism sector in Algeria, Tunisia, and Egypt:

a. Implement E-Visas and Simplify Entry Requirements:

Algeria and Tunisia should introduce electronic visas (e-visas) to streamline the process for international visitors. Egypt has already made significant progress in this regard, and Algeria and Tunisia can follow suit to reduce the administrative burden on travelers and make their destinations more accessible.

b. Enhance Infrastructure Development:

Tourism infrastructure remains a major barrier, particularly in Algeria. The governments of Algeria and Tunisia should prioritize investments in transportation, hotels, and digital infrastructure to support the tourism industry. This could be achieved through public-private partnerships that would attract foreign investment while minimizing government expenditure.

c. Promote Foreign Investment:

Both Algeria and Tunisia should adopt more aggressive strategies to encourage foreign direct investment (FDI) in tourism-related sectors. Offering tax incentives, reducing bureaucratic red tape, and guaranteeing investor protections can make these countries more attractive to foreign investors.

d. Diversify Tourism Products:

While Egypt has successfully capitalized on Cultural and Historical tourism and beach and Leisure Tourism, there is significant potential for other forms of tourism in all three countries. Algeria, in particular, could develop its eco-tourism and desert tourism sectors to attract niche markets. Tunisia can explore adventure tourism and medical tourism as alternative growth sectors.

e. Improve Marketing and Branding:

Both Tunisia and Algeria need to invest more in marketing and branding their tourism products. Egypt has established itself as a leading destination through targeted marketing campaigns aimed at Europe and North America. Tunisia and Algeria should adopt similar strategies, utilizing digital platforms to reach a wider audience and reshape their global image.

f. Strengthen Security and Stability:

For Tunisia, in particular, ensuring political stability and strengthening security will be crucial to restoring international confidence. Addressing these issues will enable the country to regain its pre-2011 levels of tourist arrivals.

In conclusion, the findings from this study demonstrate that while tourism openness has the potential to generate short-term benefits, its long-term success depends on a country's structural factors, including infrastructure, political stability, and governance. Egypt's success in tourism sector liberalization offers a model for Algeria and Tunisia to follow, but the path to sustainable growth will require tailored strategies that address each country's unique challenges.

5. CONCLUSION :

The liberalization of tourism services plays a vital role in enhancing tourism revenues across the North African countries. Although this study does not find a long-term equilibrium relationship between tourism openness and revenues, the short-term effects indicate that liberalization can yield immediate economic benefits. Egypt's success in attracting international tourists demonstrates the positive impact of sustained tourism sector reforms, while the challenges faced by Algeria and Tunisia suggest that more comprehensive strategies are necessary to fully realize the potential of tourism liberalization.

The findings suggest that tourism revenues act as a catalyst for further liberalization in the short run, highlighting the dynamic relationship between revenues and policy reform. However, the absence of a long-term relationship points to structural issues that need to be addressed, including infrastructure development, political stability, and the diversification of tourism products. Countries in the North African region must adopt a holistic approach to tourism sector reform, integrating policy changes with investments in infrastructure, marketing, and human resources.

Looking ahead, future research should examine the role of external shocks such as political instability, pandemics, or global economic downturns—on the tourism sector in these countries. Additionally, exploring the impact of global tourism trends and digital innovations on tourism

revenues could provide further insights into how these nations can adapt to an increasingly competitive and interconnected world. By continuing to refine their tourism strategies, the North African countries can strengthen their position in the global tourism market and ensure sustainable long-term growth.

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7- Appendices List

**Table illustrating the data for calculating the tourism openness rate in the
countries under study**

Country and Year	Tourism Exports as a Percentage of Total Exports	Total Exports Billion Dollars	Tourism Exports Billion Dollars	Tourism Imports as a Percentage of Total Imports	Total Imports Billion Dollars	Tourism Imports Billion Dollars	Tourism Openness Rate	Value of GDP (Gross Domestic Product) Billion Dollars	Tourism Revenues Billion Dollars
Algria2005	1	51.99	0.5199	2.7	29.42	0.79	1	126.5	0.477
Algria2006	0.6	50.62	0.3	1.6	28.98	0.46	0.5	130.8	0.393
Algria2007	0.5	50.09	0.25	1.5	32.43	0.48	0.5	133.94	0.334
Algria2008	0.6	48.66	0.29	1.2	37.48	0.45	0.5	136.08	0.473
Algria2009	0.8	43.78	0.35	1.2	42.36	0.5	0.6	140.96	0.361
Algria2010	0.5	43.4	0.21	1.4	44.21	0.61	0.5	145.07	0.324
Algria2011	0.4	42.09	0.17	1	41.82	0.418	0.4	150	0.300

Algrria2012	0.4	40.5	0.16	1	47.64	0.47	0.4	154.2	0.295
Algrria2013	0.5	38.19	0.19	0.8	52.31	0.42	0.4	160.06	0.326
Algrria2014	0.5	38.27	0.1913	1	56.71	0.56	0.4	166	0.316
Algrria2015	0.9	38.46	0.34	1.2	60.62	0.72	0.6	171.29	0.347
Algrria2016	0.8	41.15	0.33	0.9	58.92	0.53	0.4	173.52	0.246
Algrria2017	0.5	38.64	0.193	1.1	54.74	0.6	0.4	175.43	0.171
Algrria2018	0.4	37.21	0.15	0.9	49.13	0.44	0.3	177.18	0.1965
Algrria2019	0.4	34.94	0.14	1.2	41.13	0.5	0.3	168.14	0.140
Algrria2020	0.2	31.16	0.06	0.6	42.4	0.25	0.2	174.61	0.050
Tunisia2005	19.2	12.91	2.47	3.1	13.36	0.41	9	32.27	2.80
Tunisia2006	18.9	13.46	2.54	3	14.37	0.43	8	34.38	3.00
Tunisia2007	16.9	15.06	2.54	2.6	16.6	0.43	7	38.91	3.37
Tunisia2008	15.6	15.48	2.41	2.1	15.24	0.32	6	44.86	3.91
Tunisia2009	17.8	14.33	2.55	2.3	22.21	0.51	7	43.45	3.52
Tunisia2010	15.7	18.22	2.86	2.5	21.98	0.54	7	46.21	3.48
Tunisia2011	11.2	17.18	1.92	2.6	23	0.6	5	48.12	2.53
Tunisia2012	13.2	17.89	2.36	2.6	22.6	0.59	6	47.31	2.93
Tunisia2013	13.00	18.66	2.42	2.9	24.33	0.7	6	48.62	2.86
Tunisia2014	14.1	19.36	2.72	2.9	22.36	0.65	7	50.27	3.04
Tunisia2015	10.7	17.58	1.88	3.5	22.79	0.8	5	45.78	1.87
Tunisia2016	10.1	17.67	1.78	3.8	23.73	0.9	6	44.36	1.71
Tunisia2017	10.1	18.53	1.87	3.9	24.32	0.94	6	42.16	1.78
Tunisia2018	11.9	19.38	2.3	3.9	22.28	0.86	7	42.69	2.32
Tunisia2019	14	18.56	ç	3.8	18.57	0.7	8	41.77	2.68
Tunisia2020	6.3	14.81	0.97	2.1	19.5	0.41	3	42.51	1.01
Egypt2005	23.5	29.55	6.94	5.6	25.56	1.43	9	89.6	7.21
Egypt2006	22.2	35.83	7.95	5.3	29.96	1.58	9	107.43	8.13
Egypt2007	23.3	50.09	11.67	5.4	37.1	2	10	130.44	10.33
Egypt2008	22.1	56.89	12.57	5	45.18	2.26	9	162.82	12.10
Egypt2009	26.4	48.63	12.83	5.5	58.19	3.2	8	189.15	11.76
Egypt2010	27.9	47.18	13.16	4.5	73.49	3.3	7	218.98	13.63
Egypt2011	19.8	47.77	9.45	4.2	58.44	2.46	5	235.99	9.33
Egypt2012	22.3	46.67	10.4	4.4	70.19	3.09	4	279.12	10.82
Egypt2013	15.2	48.78	7.54	4.2	70.67	3	3	288.43	6.75
Egypt2014	16.9	43.44	7.34	4.7	71.35	3.35	4	305.6	7.98
Egypt2015	18.4	43.42	8	5.2	69.7	3.62	3	329.37	6.9
Egypt2016	10.1	41.15	4.15	5.1	106.39	5.42	2	332.44	3.31
Egypt2017	20.1	68.64	13.79	5.7	117.68	6.7	8	235.73	8.94
Egypt2018	24.6	90.3	22.21	5.4	107.19	5.78	11	249.71	12.70
Egypt2019	26.6	88.3	23.48	5.7	88.1	5.02	9	303.08	14.26
Egypt2020	12.2	59.91	7.3	3.6	72.48	2.6	3	365.25	4.87

Source: World Bank Data

<https://data.albankaldawli.org>

Method of Calculating the Tourism Openness Rate:

$X_t + mt/gdp * 100$