

Investigating the Factors Affecting Tourism in D-8 Member Countries Using the Generalized Method of Moments (GMM)

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ABSTRACT

In today's world, the tourism industry, as one of the largest and cleanest industries globally, occupies a distinctive position and constitutes one of the most important sources of foreign exchange earnings. Tourism has played an important role in encouraging investment in infrastructure, generating government revenue, and creating direct and indirect employment worldwide. The impact of the tourism industry on the prosperity of domestic industries and the expansion of international cooperation has changed countries' attitudes toward tourism and has given it an important place in government policymaking. Accordingly, examining the factors influencing tourism has become highly important in economic studies. In this regard, the present study employed the generalized method of moments to investigate the effects of five determinants—financial development, good governance, gross domestic product, the exchange rate, and the inflation rate—on tourism revenue as an indicator of tourism in D-8 member countries over the period 1996–2024. According to the results obtained from the model estimation, all the study variables had positive and statistically significant effects on the tourism indicator.

Keywords: Tourism, D-8 countries, generalized method of moments

Introduction

Tourism has become one of the most influential sectors of the contemporary global economy, generating foreign exchange earnings, stimulating investment, creating employment, and establishing extensive linkages with transportation, accommodation, food services, retail trade, cultural industries, and other service activities. Unlike many resource-intensive industries, tourism can create economic value through the utilization of cultural, historical, natural, and social assets while simultaneously contributing to regional development and international interaction. Its economic importance is particularly evident in developing countries, where tourism revenues may compensate for foreign exchange constraints, broaden the productive base, and reduce dependence on a limited number of export commodities. Tourism also contributes to government revenue through taxes, entry fees, and business activities and may generate both direct employment in tourism enterprises and indirect employment across related supply chains. Consequently, tourism development is increasingly regarded not merely as a recreational or cultural phenomenon but as an integral component of national economic and development strategies (1, 2).



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The contribution of tourism is not confined to its immediate economic effects. Tourism may promote intercultural understanding, improve the international image of destinations, strengthen diplomatic and political relationships, and encourage the preservation of cultural and natural resources. The movement of tourists across borders creates channels through which communities, businesses, and governments interact, potentially enhancing political cooperation and reducing social distance between countries. At the same time, tourism may affect domestic political priorities by increasing the importance of security, public accountability, infrastructure quality, environmental protection, and international openness. These broader political effects imply that tourism development depends on a complex institutional and socioeconomic environment rather than on natural attractions alone (3). Accordingly, identifying the determinants of tourism performance requires an analytical framework that simultaneously considers macroeconomic conditions, financial capacity, institutional quality, and the persistence of tourism demand over time.

The development of tourism can also support structural transformation by encouraging investment in infrastructure, enhancing the quality of public services, and creating new markets for local products. Roads, airports, communication networks, sanitation systems, banking services, and urban facilities established or improved for tourism may benefit residents and other economic sectors as well. In rural and peripheral regions, tourism can create opportunities for entrepreneurship and the commercialization of local knowledge, handicrafts, agricultural products, and cultural practices. Sustainable rural tourism strategies are especially important because they can diversify household incomes and reduce regional disparities while protecting environmental and cultural assets. Strategic orientation, green intellectual capital, local entrepreneurial capacity, and community participation have been identified as important foundations for sustainable rural tourism development (4). Similarly, the organization of destinations around thematic routes can integrate geographically dispersed attractions, create coherent tourism products, and enhance the competitiveness of rural areas (5).

Despite these potential benefits, tourism growth must be managed carefully because uncontrolled development may generate environmental degradation, congestion, excessive resource use, cultural commercialization, and unequal distribution of income. Sustainable tourism management therefore requires a balance among economic viability, environmental protection, and social welfare. Long-term tourism competitiveness depends on the preservation of the natural and cultural resources upon which destinations rely, as well as on the institutional capacity to regulate tourism activities and coordinate public and private actors. Sustainability should consequently be incorporated into destination planning, investment decisions, infrastructure development, and visitor management (6). The experience of cultural and natural tourism in selected member countries of the Organisation of Islamic Cooperation further demonstrates that countries possessing significant tourism resources do not necessarily achieve their full tourism potential unless these resources are supported by effective planning, suitable infrastructure, destination management, and appropriate institutional arrangements (7).

Technological change and innovation constitute another important dimension of contemporary tourism development. Tourism markets increasingly depend on digital platforms, online booking systems, electronic payments, social media, and data-driven marketing. Digital marketing allows destinations to communicate directly with potential visitors, reduce information asymmetry, create destination awareness, and promote sustainable tourism products to wider markets. Evidence from tourism villages indicates that the integration of digital marketing with local participation and sustainability strategies can improve destination visibility and strengthen the market position of smaller tourism communities (8). Social media interactions also affect consumer perceptions, brand relationships, and behavioral intentions, making digital engagement an important mechanism through which tourism

destinations can shape their image and establish long-term relationships with visitors (9). At the national level, innovation-related capacities can contribute to tourism development by improving services, information systems, transportation, destination marketing, and the overall quality of the visitor experience (10).

Tourism demand is nevertheless highly sensitive to macroeconomic conditions. Income, prices, inflation, exchange rates, economic growth, and financial crises can alter both tourists' ability to travel and the relative attractiveness of destinations. Economic and financial crises may reduce household disposable income, increase uncertainty, restrict access to credit, and weaken consumer confidence, thereby decreasing international tourist flows (11). Conversely, rising income and output can increase the demand for travel and simultaneously enable host countries to invest in tourism infrastructure and services. The relationship between tourism demand and output per capita suggests that economic growth may support tourism through greater purchasing power, improved productive capacity, and enhanced international integration, while tourism itself can stimulate output through expenditures, investment, and employment (12). Tourism and economic growth may therefore interact dynamically rather than through a simple one-directional relationship.

Gross domestic product is particularly relevant to tourism development because it reflects the overall scale and productive capacity of an economy. Higher GDP can facilitate public investment in airports, transportation networks, health services, public safety, telecommunications, and urban amenities, all of which improve destination accessibility and service quality. A stronger economy may also support a larger and more competitive private tourism sector, increase domestic tourism demand, and enhance the capacity of governments to preserve attractions and market destinations internationally. The spatial nature of tourism growth additionally means that economic development in one region may produce spillover effects in neighboring regions through shared infrastructure, tourist routes, labor markets, and complementary attractions (13). Consequently, differences in national output and regional development can create substantial disparities in tourism revenues across countries.

The exchange rate is another central determinant of international tourism because it influences the relative prices faced by foreign visitors. A depreciation of the destination country's currency can make accommodation, transportation, food, entertainment, and other tourism services less expensive for international tourists, potentially increasing arrivals, length of stay, and tourism expenditure. Conversely, appreciation may reduce price competitiveness and redirect visitors toward alternative destinations. However, the influence of exchange rates is not always linear, as tourists may respond differently to currency appreciation and depreciation, and persistent volatility may create uncertainty regarding travel costs. Empirical evidence indicates that exchange rate volatility can produce asymmetric effects on tourism demand (14). Studies of developing countries similarly confirm that exchange rate movements affect foreign tourist demand by changing destination affordability and international price competitiveness (15). The impact of the real exchange rate may also depend on environmental quality and institutional performance, indicating that price competitiveness alone cannot ensure sustained tourism revenues (16).

Inflation is closely related to exchange rate effects because it changes the domestic prices of tourism goods and services. High inflation may reduce the price advantage created by currency depreciation, increase business costs, weaken service quality, and create uncertainty for investors and tourists. It can also affect transportation costs, hotel prices, food expenditures, and other components of the tourism package. Nevertheless, moderate inflation may coincide with expanding demand and economic activity, and its final effect on tourism may vary depending on exchange rate adjustments, market structure, and the responsiveness of tourism suppliers. Research on Iran has

shown that political risk, the exchange rate, and inflation may exert asymmetric effects on tourism industry development, suggesting that positive and negative macroeconomic shocks should not necessarily be expected to have identical consequences (17). Therefore, inflation should be analyzed jointly with other macroeconomic and institutional variables.

Financial development represents another important channel through which tourism may expand. A developed financial system mobilizes savings, facilitates payments, allocates capital, diversifies risk, and provides credit to productive activities. Tourism enterprises, including hotels, travel agencies, transport providers, restaurants, recreational facilities, and small local businesses, often require substantial initial investment and continuing access to finance. Financial constraints may prevent these enterprises from upgrading services, adopting technology, expanding capacity, or meeting international standards. By improving access to credit and financial services, financial development can stimulate tourism-related investment and strengthen the supply side of the industry. It can also facilitate electronic transactions, currency exchange, insurance, and payment services for tourists, thereby improving convenience and reducing transaction costs.

The association among financial development, tourism, and economic growth has therefore attracted increasing scholarly attention. Evidence from India suggests a meaningful relationship among tourism, financial development, and economic growth, indicating that financial-sector improvements may reinforce the economic contribution of tourism (18). Research on Malaysia has likewise emphasized the relative importance of financial development and trade openness in the relationship between tourism demand and output per capita (12). In Iran, the interaction between financial development and tourism has been examined as a determinant of economic growth, suggesting that tourism may generate stronger growth effects when supported by a sufficiently developed financial system (19). Tourism may also encourage foreign direct investment by creating profitable opportunities in accommodation, infrastructure, transportation, and entertainment, while foreign investment can provide the capital, technology, and managerial expertise needed for tourism expansion (20).

Institutional quality and good governance are equally fundamental to tourism performance. International tourists make destination decisions under conditions of uncertainty and are sensitive to political stability, public safety, regulatory predictability, corruption, administrative efficiency, and the protection of legal rights. Good governance can reduce transaction costs, strengthen investor confidence, improve public-service delivery, and create a more stable environment for tourism enterprises. Governance indicators such as voice and accountability, political stability, government effectiveness, regulatory quality, the rule of law, and control of corruption collectively reflect the institutional conditions within which tourism activities occur. Countries with stronger governance systems are more likely to coordinate tourism policies effectively, enforce quality and safety standards, protect tourism resources, and establish credible relationships with international investors and visitors.

Empirical evidence supports the importance of institutional quality for tourism. The quality of institutions has been shown to influence tourism performance in European Union countries, indicating that efficient and reliable institutions can enhance destination competitiveness (21). In developing countries, host-country governance institutions have significant implications for tourism income because governance affects investment conditions, service provision, security, and the international reputation of destinations (22). Dynamic panel evidence further indicates that governance and institutional quality influence inbound tourism demand across countries (23). These findings suggest that destinations cannot rely exclusively on natural or cultural endowments; rather, tourism

revenues depend on the institutional environment through which resources are managed and tourism services are delivered.

The importance of governance becomes even more pronounced in specialized tourism markets. Health tourism, for example, requires coordination among medical institutions, tourism agencies, transportation providers, accommodation facilities, and government regulators. Tourists seeking medical and health-related services evaluate service quality, professional expertise, safety, accessibility, destination image, and supporting infrastructure. Research on health tourism development has demonstrated the need to identify and prioritize multiple economic, managerial, infrastructural, and environmental factors rather than focusing on a single attraction or resource (24). This multidimensionality is relevant to tourism more broadly, as destination development generally depends on the interaction of resources, institutions, infrastructure, finance, and macroeconomic stability.

The D-8 member countries—Bangladesh, Egypt, Indonesia, Iran, Malaysia, Nigeria, Pakistan, and Türkiye—possess considerable cultural, historical, religious, and natural tourism potential. Their diverse attractions include heritage sites, coastlines, religious destinations, medical resources, rural landscapes, and major urban centers. Nevertheless, these countries differ substantially in economic scale, financial development, exchange rate conditions, inflation, institutional quality, infrastructure, and tourism performance. Such heterogeneity provides an appropriate context for examining how macroeconomic and institutional factors influence tourism revenues. Earlier studies of foreign tourism demand have emphasized that tourism is affected by a combination of economic, price, infrastructural, and qualitative destination factors (25). However, the relative importance of these determinants may differ across countries and over time, particularly when past tourism performance generates persistence through destination reputation, repeat visitation, accumulated infrastructure, and established international travel networks.

Dynamic relationships are therefore central to the empirical analysis of tourism. Current tourism revenue may depend partly on its previous level because destination awareness, infrastructure, travel habits, and tourist satisfaction evolve gradually. A dynamic panel model can capture this persistence by including a lagged dependent variable. Research on Portuguese tourism demand demonstrates the usefulness of dynamic panel analysis for identifying the temporal adjustment of tourism flows and the effects of explanatory variables across countries or markets (26). However, the inclusion of a lagged dependent variable introduces endogeneity because it may be correlated with unobserved country-specific effects and the error term. Conventional fixed-effects or ordinary least squares estimators may consequently yield biased and inconsistent results.

The generalized method of moments provides an appropriate framework for estimating such dynamic panel models. By using suitable lagged values as instruments, GMM can address the endogeneity of the lagged dependent variable and potentially endogenous explanatory variables while controlling for unobserved heterogeneity. Dynamic panel applications in the banking and financial literature have illustrated the usefulness of GMM when the number of cross-sectional units exceeds the time dimension and when explanatory variables may be jointly determined with the dependent variable (27). The method has also been applied to evaluate the effects of banking and nonbank financial institutions on economic growth, with instrument validity commonly assessed through overidentification tests and model adequacy evaluated through serial-correlation diagnostics (28). These methodological characteristics make GMM suitable for examining tourism revenues in D-8 countries, where dynamic persistence, country heterogeneity, and possible simultaneity among tourism, financial development, governance, and economic growth must be considered.

Although previous studies have separately examined tourism's economic effects, exchange rates, inflation, governance, financial development, innovation, sustainability, and tourism demand, the combined influence of these factors has received comparatively limited attention in the context of the D-8 group. Existing evidence suggests that tourism development is shaped by multiple interacting mechanisms: financial systems determine access to capital and transaction services; governance affects stability, regulation, and trust; GDP reflects economic and infrastructural capacity; exchange rates influence international price competitiveness; and inflation alters domestic tourism costs and macroeconomic certainty. Moreover, the persistence of tourism revenues implies that present performance is partly rooted in previous-period outcomes. An integrated dynamic-panel analysis is therefore needed to provide a more comprehensive understanding of tourism determinants in these developing economies.

Accordingly, the aim of this study is to investigate the effects of financial development, good governance, gross domestic product, the exchange rate, and inflation on tourism revenue in D-8 member countries over the period 1996–2024 using the generalized method of moments.

Methods and Materials

This study investigates the variables affecting tourism development by applying panel-data econometric methods within a dynamic model and using the generalized method of moments (GMM) technique. Accordingly, the research method and the model adopted in the study are examined below, followed by an introduction to the model variables.

In this study, panel data were used to estimate the model. The use of panel data rather than cross-sectional data makes it possible to examine the dynamics of changes over time. The panel-data approach also offers other advantages, including accounting for individual heterogeneity, providing more information, and eliminating biases associated with cross-sectional regressions, thereby producing more accurate and efficient estimates with lower multicollinearity.

To estimate the model, the dynamic panel-data technique based on the generalized method of moments (GMM), introduced by Arellano and Bond (1991), was employed. Because this estimation method incorporates dynamic analysis, it has a clear advantage over conventional panel-data methods. Baltagi (2008) stated that the dynamic panel-data technique is appropriate when the number of cross-sectional units (N) exceeds the number of time periods (T). Arellano and Bond and Baltagi (1995) demonstrated that when a lagged dependent variable is included on the right-hand side of a panel-data model, the ordinary least squares estimator is no longer consistent; therefore, instrumental-variable and generalized method of moments estimators must be used. Nevertheless, one limitation of instrumental-variable and GMM estimators is that their desirable properties generally hold when the number of cross-sectional units is large, whereas they may be highly imprecise and biased in panel datasets with a small number of cross-sectional units.

The application of the GMM method offers advantages such as accounting for individual heterogeneity, incorporating more information, and eliminating biases associated with cross-sectional regressions, thereby producing more accurate and efficient estimates with lower multicollinearity. Hsiao (2003) demonstrated that, compared with other methods, GMM has several advantages, including addressing the endogeneity of institutional variables, reducing or eliminating multicollinearity in the model, removing time-invariant variables, and increasing the time dimension of the variables. This is because the method makes it possible to account for the effects of all unobserved time-invariant factors in the estimation.

Because a high degree of serial correlation among the variables may result in inefficient estimates, ordinary least squares estimates may be misleading. Therefore, the GMM method is used to address this problem. In a dynamic GMM panel model, the lagged dependent variable is correlated with the disturbance term. Accordingly, following Arellano and Bond, the lagged dependent variable and the lags of the other variables are used recursively as instruments for the lagged dependent variable within the generalized method of moments framework (Shah Hosseini et al., 2018). In terms of its objective, this study is applied research. The statistical population consists of D-8 member countries, and the study covers the period 1996–2024. The D-8 group comprises eight countries—Bangladesh, Egypt, Indonesia, Iran, Malaysia, Nigeria, Pakistan, and Türkiye—and was established following the 1997 Development Cooperation Conference held in Türkiye. Its objectives include improving the position of developing countries in the global economy, diversifying and creating new opportunities in trade relations, enhancing cooperation and participation in decision-making at the international level, and improving standards of living. EViews 13 was used to estimate the generalized method of moments model.

As previously stated, the model used in this study is a panel-data model. Based on the theoretical literature, the functional form of the empirical model is specified as follows:

$$TOU = f(GOV, EX, FD, INF, GDP) \quad (1)$$

The final form of the model used in the study is specified as follows:

$$\log(TOU_{it}) = \beta_0 + \beta_1 \log(TOU_{i,t-1}) + \beta_2 \log(GOV_{it}) + \beta_3 \log(EX_{it}) + \beta_4 \log(FD_{it}) + \beta_5 \log(INF_{it}) + \beta_6 \log(GDP_{it}) + U_{it} \quad (2)$$

$$U_{it} = v_i + e_{it}$$

In the above equations, the subscript t denotes time, the subscript i denotes the selected countries, and $\log$ indicates that the equation is expressed in logarithmic form, which facilitates the interpretation of the coefficients. In a logarithmic specification, the percentage change in the dependent variable is expressed in relation to the percentage change in an explanatory variable.

Furthermore, TOU represents tourism development, measured by tourism revenue; EX represents the exchange rate; and FD represents financial development, measured using the multidimensional Financial Development Index developed by Sahay et al. (2015) and published by the International Monetary Fund.

GOV represents the good governance index, which is a composite of six major subindices: (1) voice and accountability, (2) political stability, (3) government effectiveness, (4) regulatory quality, (5) the rule of law, and (6) control of corruption. INF represents the inflation rate, and GDP represents gross domestic product.

Findings and Results

Before estimating the model, it is necessary to test for the presence or absence of unit roots in the variables—that is, to assess their stationarity—to prevent spurious regression in the estimations. For this purpose, the Levin–Lin–Chu (LLC) test was employed. The results of the unit-root test are presented in Table 1.

Table 1. Results of the Levin–Lin–Chu Unit-Root Test

Variable	Levin–Lin–Chu Statistic	Level Probability	Stationarity Status
TOU	–3.82	.000	Stationary
TOU(–1)	–2.57	.005	Stationary
FD	–2.52	.005	Stationary
INF	–1.83	.033	Stationary
GDP	–2.02	.021	Stationary
EX	–2.03	.021	Stationary

The null hypothesis of these tests is the presence of a unit root, meaning that all series are nonstationary. Based on the test results, the unit-root hypothesis is rejected for all the study variables. Therefore, all the variables are stationary at level, and there is no concern regarding spurious regression. The results of the GMM model estimation are presented in Table 2.

Table 2. Results of the GMM Model Estimation

Variable	Coefficient	<i>t</i> Statistic	Probability
TOU(-1)	0.88	39.22	.000
FD	0.23	3.01	.002
INF	0.002	3.41	.000
GDP	0.09	5.15	.000
EX	0.01	3.18	.001
GOV	0.11	3.76	.001
Diagnostic Test		Statistic	Probability
J-statistic		10.52	.104
AR(1)		-3.89	.000
AR(2)		-1.65	.098

Greene (2012) stated that the moment conditions are valid when there is no serial correlation in the disturbance terms. Arellano and Bond developed a procedure for testing first- and second-order autocorrelation. For this purpose, the first-order autocorrelation coefficient, AR(1), should be statistically significant, whereas the second-order autocorrelation coefficient, AR(2), should not be statistically significant. This is because, in a dynamic panel model in which the disturbance component is independently and identically distributed, the first differences of the error terms exhibit first-order correlation. The lagged dependent variable is included as an explanatory variable to capture the dynamics of the model in the econometric specification (Samadi et al., 2013). According to the results presented in Table 2, the AR(1) statistic is significant at the 1% level, with a probability value of .000, whereas the AR(2) statistic has a probability value of .098, indicating the absence of second-order autocorrelation. Therefore, the model does not suffer from specification bias.

Before interpreting the results, the validity of the instrumental variables used in the model must be examined because these instruments are intended to address the correlation between the lagged dependent variable and the error term. The Sargan test was used for this purpose. The Sargan test is a standard test for determining the exogeneity of instrumental variables, and a higher probability value for the Sargan test indicates greater instrument validity (Farahanifard et al., 2015). The result of this test is reported in Table 2. Given the Sargan test probability value of .104, the null hypothesis that the residuals are uncorrelated with the instrumental variables cannot be rejected. Accordingly, the instrumental variables used in estimating the model possess the required validity.

According to the results, all the study variables have positive and statistically significant effects on tourism. The findings indicate that a 1% increase in financial development leads to a 0.23% increase in tourism development. Regarding financial development, it can be argued that the more financially developed a country is, the higher its level of economic growth will be. More efficient financial systems reduce barriers to external financing and, by facilitating the access of production and industrial enterprises to external capital, provide the conditions necessary for greater investment and economic growth. Financial development can result in greater economic growth and investment when it creates appropriate conditions for the optimal allocation of resources and improves capital efficiency.

Long-term noninflationary economic growth and increases in production and employment require the mobilization and optimal allocation of financial resources within the national economy. This can be achieved through organized, integrated, and efficient financial markets characterized by diverse financial instruments, a competitive environment, and information transparency. The efficiency of financial markets requires the facilitation of transactions, increased liquidity, and appropriate risk-management conditions. It can therefore be argued that financial markets play an important role in economic growth. An efficient financial system transfers capital from savers to borrowers and directs resources toward productive investment projects with high profit margins. The higher the productivity of investment, the higher the rate of economic growth. Financial development also plays a substantial role in the growth and development of the tourism industry by facilitating financial transactions in tourists' countries of origin and simplifying access to financial instruments for financing tourism-related activities. Just as greater financial development promotes economic growth and development, increased economic growth improves infrastructure and contributes to the development of the tourism industry.

According to the findings, a 1% increase in the inflation rate leads to a 0.002% increase in tourism development. As can be observed, this effect is extremely small; therefore, the elasticity of tourism development with respect to inflation is negligible.

According to the results, a 1% increase in the exchange rate leads to a 0.01% increase in tourism development. The theoretical literature indicates that tourism is likely to be affected by exchange-rate fluctuations (Chaudhry et al., 2022). Exchange rates can influence the selection of international tourism destinations because tourists tend to choose countries with more favorable exchange rates (Sharma & Pal, 2020). An increase in the exchange rate, or a depreciation of the Iranian rial, increases international tourism revenues. The prices of tourism goods and services become lower for foreign travelers, thereby increasing their willingness to consume tourism products. In other words, when the currency of a destination depreciates, international tourists have greater purchasing power and can therefore extend the duration of their trips and increase their expenditures at local destinations. Moreover, the depreciation of the local currency reduces the overall cost of travel for tourists holding stronger currencies.

The results indicate that a 1% increase in tourism development in the previous period leads to a 0.88% increase in current tourism development. The lagged tourism variable reflects the continuity and persistence of tourists' willingness to travel and demonstrates the attractiveness of travel from tourists' perspectives.

According to the research findings, a 1% increase in the good governance index leads to a 0.11% increase in tourism. Given the considerable effect of the institutional variable of good governance on tourism revenue, serious efforts to improve governance indicators can substantially contribute to reducing existing development gaps, particularly in the tourism sector. In other words, improvements in freedom and transparency, political stability, regulatory effectiveness, the rule of law, the fight against corruption, and judicial independence directly and indirectly enhance the performance of institutions and organizations involved in attracting international tourists.

Legal freedoms and the unrestricted dissemination of information, as manifestations of voice and accountability, strengthen public awareness and socioeconomic transparency. Under such conditions, individuals enjoy appropriate social rights, which improves tourists' perceptions of their ability to obtain redress when their rights are violated. Consequently, improvements in voice and accountability within a country can motivate international tourists to visit that country. Similarly, the less public and governmental authority is abused or used to advance personal and private interests, the greater the motivation of international tourists to visit the country.

Gross domestic product also has a positive effect on tourism development. Accordingly, a 1% increase in gross domestic product leads to a 3.37% increase in tourism development. This finding may be explained by the fact that gross domestic product contributes to improvements in facilities and infrastructural capacity, thereby creating the conditions required to accommodate a greater number of tourists and ultimately promoting tourism development.

Discussion and Conclusion

The present study investigated the effects of financial development, good governance, gross domestic product, the exchange rate, and inflation on tourism revenue in D-8 member countries over the period 1996–2024 using a dynamic panel-data model estimated through the generalized method of moments. The estimation results indicated that the lagged value of tourism revenue and all five explanatory variables had positive and statistically significant effects on tourism development. The diagnostic results also supported the adequacy of the estimated model. The significance of the AR(1) statistic and the insignificance of the AR(2) statistic indicated the absence of problematic second-order serial correlation, while the J-statistic supported the validity of the instrumental variables. Overall, the findings demonstrate that tourism development in D-8 countries is influenced by both the persistence of previous tourism performance and the broader financial, institutional, and macroeconomic environment.

The estimated coefficient of lagged tourism revenue was positive and statistically significant, indicating that a 1% increase in tourism revenue in the previous period was associated with an approximately 0.88% increase in current tourism revenue. This relatively large coefficient reflects strong persistence in tourism performance across the D-8 countries. Tourism development is generally cumulative because investments in transportation, accommodation, destination branding, human resources, digital infrastructure, and international marketing produce effects that extend beyond a single year. In addition, tourists' previous experiences, destination reputation, repeat visitation, recommendations, and established travel networks can influence future tourism demand. Therefore, countries that have already developed a stable tourism market are more likely to maintain or expand that market in subsequent periods.

This result is consistent with dynamic analyses of tourism demand emphasizing that current tourism flows depend partly on their previous levels. Dynamic panel analysis of Portuguese tourism demand demonstrated the importance of considering lagged tourism variables when evaluating changes in international tourism demand (26). Similarly, research examining governance and inbound tourism through dynamic panel methods has indicated that tourism demand adjusts gradually and that previous tourism performance contributes to current outcomes (23). The finding also accords with the spatial and cumulative characteristics of regional tourism growth, according to which previous infrastructure, established destination clusters, and tourism spillovers can reinforce subsequent development (13). For D-8 countries, this persistence suggests that temporary disruptions or improvements may have long-term consequences. Policies that improve tourists' experiences and destination reputation may produce benefits extending over multiple periods, whereas political instability, poor service quality, or inadequate infrastructure may have similarly persistent negative effects.

Financial development had a positive and significant effect on tourism revenue. The estimated coefficient showed that a 1% increase in financial development was associated with a 0.23% increase in tourism development. This finding indicates that a more developed financial system can facilitate the expansion of tourism by improving access to credit, mobilizing savings, reducing financing constraints, supporting investment, and enabling more efficient payment and transaction services. Tourism-related businesses frequently require substantial financing for the

construction and renovation of hotels, transportation facilities, restaurants, recreational centers, travel agencies, digital platforms, and other tourism services. Access to suitable financial instruments allows these enterprises to expand their capacity, improve service quality, adopt modern technologies, and comply with international standards.

The positive effect of financial development also reflects its contribution to tourists' convenience and confidence. Efficient banking systems, electronic payment networks, insurance services, foreign exchange facilities, and digital financial tools reduce transaction costs and make destinations more accessible to international visitors. Financial development can additionally support small and medium-sized tourism enterprises, which often face greater credit constraints than larger firms. These enterprises are particularly important in rural, cultural, ecological, and community-based tourism, where local businesses provide accommodation, food, handicrafts, transportation, and guiding services.

The finding is consistent with evidence showing a complementary relationship among tourism, financial development, and economic growth. Research conducted in India identified a meaningful relationship between financial development and tourism, suggesting that financial-sector expansion can strengthen tourism activity and its contribution to economic growth (18). Evidence from Malaysia also showed that financial development plays an important role in the relationship between tourism demand and output per capita (12). In Iran, the interaction between financial development and tourism has been found to contribute positively to economic growth, indicating that the economic effects of tourism are stronger when tourism activities are supported by a developed financial system (19). Furthermore, the relationship between tourism and foreign direct investment suggests that an efficient financial environment can attract capital to tourism infrastructure and related services (20). Thus, the present result confirms that financial development is not merely a general determinant of economic growth but also a specific institutional foundation for tourism expansion.

The good governance index also had a positive and statistically significant effect on tourism revenue. According to the estimated coefficient, a 1% improvement in good governance was associated with a 0.11% increase in tourism development. This result highlights the importance of institutional quality in attracting international tourists and supporting tourism investment. Good governance encompasses voice and accountability, political stability, government effectiveness, regulatory quality, the rule of law, and control of corruption. Improvements in these dimensions can enhance destination security, reduce administrative uncertainty, strengthen property rights, increase the transparency of regulations, and improve the quality of public services.

Tourism is especially sensitive to institutional conditions because tourists must make decisions about destinations with incomplete information and are exposed to risks related to security, legal protection, transportation, health services, and consumer rights. Political instability, corruption, arbitrary regulation, and weak law enforcement can damage a destination's international image and discourage both tourists and investors. Conversely, transparent institutions and effective public administration can improve destination credibility, facilitate visa and border procedures, coordinate tourism policies, and ensure that tourism standards are properly implemented. Good governance also enables more effective management of cultural and natural resources, which is necessary for the long-term sustainability of the tourism sector.

This finding is strongly supported by previous studies. Institutional quality has been found to influence tourism performance in European Union countries, demonstrating that stronger institutions improve the conditions necessary for tourism growth (21). Research on selected developing countries similarly showed that host-country governance institutions positively affect tourism income by strengthening political stability, regulatory quality, and

government effectiveness (22). Dynamic panel evidence has also confirmed that governance and institutional conditions are significant determinants of inbound tourism demand (23). Moreover, environmental quality, real exchange rates, and institutional performance have been shown to jointly influence tourism receipts in the East Asia and Pacific region, suggesting that governance strengthens the capacity of countries to translate economic advantages into tourism revenue (16). The political effects of tourism also imply a reciprocal relationship in which tourism may encourage governments to improve stability, international cooperation, transparency, and administrative performance (3).

The exchange rate had a positive and statistically significant effect on tourism revenue. The coefficient indicated that a 1% increase in the exchange rate was associated with a 0.01% increase in tourism development. In the context of the countries under investigation, an increase in the exchange rate generally represents depreciation of the domestic currency. Such depreciation reduces the foreign-currency prices of accommodation, transportation, food, entertainment, and other tourism services, thereby improving the international price competitiveness of the destination. Foreign visitors holding stronger currencies may be able to spend more, remain at the destination longer, or purchase a wider range of tourism services.

The relatively small magnitude of the coefficient suggests, however, that exchange rate competitiveness is only one component of tourism demand. Currency depreciation may make a destination less expensive, but it cannot compensate fully for inadequate infrastructure, weak institutions, security concerns, poor service quality, or insufficient international promotion. Moreover, exchange rate volatility can increase uncertainty and raise costs for tourism businesses that rely on imported equipment, fuel, technology, or other inputs. Therefore, the positive effect of exchange rate increases must be interpreted in conjunction with macroeconomic stability and destination quality.

The result agrees with studies showing that exchange rates influence international tourism demand by changing relative travel costs. Exchange rate volatility has been found to exert asymmetric effects on tourism demand, meaning that currency appreciation and depreciation may not produce equivalent responses among tourists (14). Evidence from developing countries also indicates that favorable exchange rate movements can increase foreign tourist demand by improving destination affordability (15). Research on the East Asia and Pacific region similarly found that the real exchange rate affects tourism receipts, although its influence depends partly on institutional and environmental conditions (16). In Iran, exchange rate changes have been shown to affect tourism development asymmetrically, particularly when considered alongside political risk and inflation (17). These studies support the present finding while also emphasizing that exchange rate policy alone cannot serve as a sustainable tourism-development strategy.

Inflation had a positive and statistically significant but economically very small effect on tourism revenue. A 1% increase in inflation was associated with only a 0.002% increase in tourism development. The small size of this coefficient suggests that tourism revenue in D-8 countries is largely inelastic with respect to inflation. One possible explanation is that inflation may coincide with currency depreciation, which can reduce the foreign-currency cost of tourism services for international visitors even when domestic prices increase. As a result, the negative effect of rising local prices may be partly offset by greater purchasing power among foreign tourists.

Another possible explanation is that moderate inflation may occur during periods of expanding domestic demand and economic activity, during which investment, employment, and tourism services also increase. Nevertheless, the extremely small estimated coefficient indicates that inflation should not be interpreted as a meaningful driver of tourism growth. Persistent or high inflation can undermine tourism development by increasing operating costs,

reducing investment predictability, weakening service quality, and creating uncertainty in pricing. Therefore, the positive coefficient may reflect the interaction of inflation with exchange rate movements rather than a direct beneficial effect of inflation itself.

Previous research supports the view that inflation has a complex and potentially asymmetric relationship with tourism. Evidence from Iran has shown that inflation, exchange rates, and political risk may exert different effects under positive and negative shocks, making the final effect dependent on the broader macroeconomic context (17). Studies of economic and financial crises have also shown that macroeconomic instability can reduce international tourist flows by weakening confidence, income, and access to finance (11). Accordingly, although the present analysis identified a statistically positive coefficient, maintaining price stability remains important for sustainable tourism development.

Gross domestic product had a positive and statistically significant effect on tourism revenue. Based on the estimated model, a 1% increase in GDP was associated with an approximately 0.09% increase in tourism development. This finding indicates that improvements in national productive capacity support tourism expansion by increasing the resources available for infrastructure, public services, destination development, and tourism investment. Countries with higher GDP are generally better able to finance airports, roads, public transportation, communication systems, health services, environmental protection, cultural preservation, and security, all of which improve their attractiveness and accessibility as tourism destinations.

Economic growth also strengthens domestic demand and expands the market for tourism-related enterprises. Higher household incomes may increase domestic travel, while stronger business activity can stimulate business tourism, conferences, exhibitions, and investment-related travel. The tourism sector may then contribute to further economic growth by generating employment, foreign exchange, tax revenue, and demand for locally produced goods and services. This relationship suggests the possibility of a mutually reinforcing cycle between tourism and economic growth.

The positive GDP effect is consistent with evidence demonstrating a relationship between tourism demand and output per capita. Research on Malaysia showed that tourism demand, economic output, trade openness, and financial development are closely interconnected (12). Studies reviewing the economic effects of tourism have likewise emphasized its contribution to income, employment, investment, regional development, and foreign exchange earnings (2). The general importance of tourism as an economic activity has also been highlighted through its capacity to stimulate multiple industries and generate direct and indirect development effects (1). Furthermore, spatial analyses indicate that economic and tourism growth may produce spillovers across neighboring regions through shared infrastructure and complementary attractions (13). The present finding therefore supports the argument that stronger economic capacity enables countries to create a more competitive and productive tourism sector.

Taken together, the results indicate that tourism development in D-8 countries cannot be explained by a single factor. Tourism revenue depends on a combination of accumulated tourism capacity, financial-sector performance, institutional quality, economic output, price competitiveness, and macroeconomic conditions. Although natural, cultural, and historical attractions provide an essential resource base, their transformation into sustainable tourism income requires effective management, financing, infrastructure, innovation, and governance. Research on cultural and natural tourism in Islamic countries has similarly shown that possessing tourism resources is insufficient without appropriate institutional and managerial support (7). Sustainable tourism management also requires balancing

economic growth with environmental and social considerations (6). In addition, innovation, digital marketing, and destination communication can strengthen the effects of financial and institutional development by expanding international visibility and improving tourists' access to information (8-10).

The findings of this study should be interpreted in light of several limitations. First, the analysis was conducted at the national level, and aggregate indicators may conceal substantial regional differences in tourism infrastructure, destination quality, political conditions, and visitor profiles within each D-8 country. Second, tourism revenue was used as the principal measure of tourism development, although other indicators, such as international arrivals, length of stay, tourism employment, hotel occupancy, and tourism investment, may capture different dimensions of the sector. Third, the analysis was limited to the variables available consistently across the selected countries and period; therefore, potentially important factors such as security, environmental quality, visa restrictions, transportation connectivity, digital readiness, health conditions, cultural attractions, and destination marketing were not included. Fourth, differences in statistical systems and data quality across countries may affect the comparability of the observations. Finally, although the GMM method reduces endogeneity and controls for unobserved country-specific effects, it cannot eliminate every possible source of measurement error, omitted-variable bias, or cross-country heterogeneity.

Future studies should examine the determinants of tourism development using disaggregated regional, provincial, or destination-level data to identify variations that cannot be observed in national aggregates. Researchers could also compare the determinants of different forms of tourism, including cultural, religious, rural, health, ecological, coastal, and business tourism. The use of alternative dependent variables, such as tourist arrivals, expenditure per visitor, length of stay, tourism employment, and tourism-sector investment, would provide a more multidimensional assessment of tourism performance. Future models should incorporate variables related to political risk, security, environmental quality, transportation infrastructure, visa openness, digitalization, innovation, and destination branding. Nonlinear and asymmetric models could be used to determine whether inflation, exchange rate changes, financial development, and governance exert different effects above or below particular thresholds. Comparative studies between D-8 countries and other developing-country groups could further clarify whether the relationships identified in this study are specific to the D-8 context.

Policymakers in D-8 countries should treat tourism as a coordinated economic system rather than as an isolated service sector. Financial authorities should improve access to credit for tourism enterprises, develop specialized tourism-financing instruments, facilitate secure international payments, and support small and medium-sized businesses operating in tourism supply chains. Governments should strengthen political stability, regulatory transparency, accountability, control of corruption, legal protection, and administrative efficiency to improve destination credibility and investor confidence. Macroeconomic authorities should avoid relying on currency depreciation as a primary means of attracting tourists and instead pursue exchange rate and price stability alongside improvements in service quality and infrastructure. Public investment should prioritize transportation, digital connectivity, safety, environmental management, cultural preservation, and destination marketing. Finally, cooperation among D-8 members should be expanded through joint tourism routes, simplified travel procedures, coordinated promotion, shared investment initiatives, and regional tourism-development programs.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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References

1. Amanovich PF, editor The importance of tourism. International Conference on Studies in Humanity, Education and Sciences; 2022; Helsinki, Finland.
2. Forouzan M. A review of the economic effects of the tourism industry. *Quarterly Journal of Geography and Human Relations*. 2023;6(3):304-16.
3. Setayeshmanesh M. Examining the political effects of tourism. *Geography and Human Relations*. 2023;5(4):48-60.
4. Pazaki M. Designing a paradigmatic model for sustainable rural tourism entrepreneurship development with an emphasis on strategic orientation and green intellectual capital (Case study: Villages of Shahroud County). *Village and Development*. 2024;27(2).
5. Pentz M. The Role of Theme Routes in the Development of Rural Tourism. *International Journal of Professional Business Review*. 2024;9(5):e04282. doi: 10.26668/businessreview/2024.v9i5.4282.
6. Altman G, Aleksanyan GP. Sustainability in tourism: Problems and some basic directions of sustainable tourism management. *Geography*. 2016(2):59-67.
7. Bakhtiari S, Torabi A, Sajjadiyeh Khajoui F. Cultural and natural tourism in selected member countries of the Organization of Islamic Cooperation (OIC). *Biannual Journal of Tourism Social Studies*. 2014;2(4):91-110.
8. Oka MD, Subadra N. Digital marketing for sustainable tourism village in Bali: A mixed methods study. *Journal of Infrastructure, Policy and Development*. 2024;8(7):3726. doi: 10.24294/jipd.v8i7.3726.
9. Hudson S, Huang L, Roth MS, Madden TJ. The influence of social media interactions on consumer-brand relationships: A three-country study of brand perceptions and marketing behaviors. *International Journal of Research in Marketing*. 2016;33(1):27-41.
10. Akhbari Azad M, Shahabadi A, Haghkhah D. The effect of national innovation dimensions on tourism industry development in selected countries. *Technology Development Management Quarterly*. 2019;7(3):9-34.
11. Khalid U, Okafor LE, Shafiullah M. The effects of economic and financial crises on international tourist flows: A cross-country analysis. *Journal of Travel Research*. 2020;59(2):315-34.

12. Shahbaz M, Kuma RR, Ivanov S, Loganathan N. The nexus between tourism demand and output per capita, with the relative importance of trade openness and financial development: A study of Malaysia. *Tourism Economics*. 2016(33):1-19.
13. Yang Y, Fik T. Spatial effects in regional tourism growth. *Annals of Research*. 2014(46):144-62.
14. Sharma C, Pal D. Exchange rate volatility and tourism demand in India: Unraveling the asymmetric relationship. *Journal of Travel Research*. 2020;59(7):1282-97.
15. Thang PN. Impact of exchange rate on foreign tourist demand: Evidence from developing countries. *GeoJournal of Tourism and Geosites*. 2022;45:1579-85.
16. Chaudhry IS, Nazar R, Ali S, Meo MS, Faheem M. Impact of environmental quality, real exchange rate and institutional performance on tourism receipts in East-Asia and Pacific region. *Current Issues in Tourism*. 2022;25(4):611-31.
17. Sadeghi S, Farhang A, Mohammadpour A, Haji Boland M. Analyzing the asymmetric effects of political risk, exchange rate, and inflation rate on tourism industry development in Iran. *Scientific Journal of Economic Research*. 2023;24(2):115-42.
18. Rampal O. The relationship between tourism, financial development and economic growth in India. *Future Business Journal*. 2017;3(1):9-22.
19. Fatemi-Nasab SH, Hajiha Z, Emamverdi G, Baghani A. The interactive effect of financial development and tourism on economic growth in Iran. 2022;12(47):77-96.
20. Koochakzadeh S, Mehrabi Basharabadi H, editors. Examining the relationship between tourism and foreign direct investment: Case study of selected member countries of the Organization of Islamic Cooperation. *First International Scientific-Strategic Conference on Tourism Development in the Islamic Republic of Iran: Challenges and Prospects*; 2014.
21. Beha F. The influence of the quality of institutions on tourism in the EU countries. *Journal of Tourism and Services*. 2023;26(14):1804-5650.
22. Shahabadi A, Talyabi F. The effect of host-country governance institutions on tourism income in selected developing countries. *Journal of Tourism Planning and Development*. 2016;5(16):8-30.
23. Tang CF. The impacts of governance and institutions on inbound tourism demand: Evidence from a dynamic panel data study. *Asia Pacific Journal of Tourism Research*. 2018;23(10):1000-7.
24. Mohammadi E, Ghaffarian M. Identifying and Prioritizing Factors Affecting Health Tourism Development: Case Study of Dehloran Hot Springs. *Tourism and Development*. 2024;13(1):293-305. doi: 10.22034/jtd.2024.415871.2822.
25. Morovat H, Salem AA, Khadem Nematollahi M. Identifying factors affecting foreign tourism demand. *Economic Research Quarterly*. 2017;18(69):275-306.
26. Leitao NC. Portuguese tourism demand: A dynamic panel data analysis. *International Journal of Economics and Financial Issues*. 2015;5(3):673-7.
27. Khataei M, Mohammadi T, Mirzaei A. Determinants of loan portfolio quality in Iran's banking system: A dynamic panel approach. *Quarterly Journal of Applied Economic Studies of Iran*. 2015;5(17):81-108.
28. Farahani Fard M, Feshari M, Khanzadeh Y. The effect of Islamic banking and non-banking financial institutions on Iran's economic growth: A generalized method of moments approach. *Quarterly Journal of Economic Modeling*. 2015;9(3):21-41.