

# IMPACTS OF LOW-COST CARRIERS ON INTERNATIONAL TOURISM DEMAND – THE CASE IN ASEAN COUNTRIES

## ẢNH HƯỞNG CỦA HÀNG KHÔNG GIÁ RẺ ĐẾN NHU CẦU DU LỊCH QUỐC TẾ - NGHIÊN CỨU TẠI CÁC NƯỚC ASEAN

Huynh Thi Dieu Linh\*, Le Thi Thanh Truc, Nguyen Phuong Nhi, Doan Thi Tuong Vy, Ngo Cong Minh

*The University of Danang - University of Economics, Vietnam*

\*Corresponding author: linhhtd@due.edu.vn

(Received: March 01, 2025; Revised: April 03, 2025; Accepted: April 11, 2025)

DOI: 10.31130/ud-jst.2025.185

**Abstract** - In recent years, the rise of low-cost carriers (LCC) in ASEAN following the deregulation and liberalization of the aviation sector has significantly impacted the regional tourism industry. This study investigates the relationship between LCC expansion and international tourism demand, while also identifying key factors that influence tourism demand in ASEAN countries. Utilizing panel data from seven ASEAN member nations in the period 2010 to 2022, the analysis is conducted through a regression model. The research results show a positive correlation between the expansion of low-cost airlines and international tourism demand. In addition, gross domestic product (GDP), exchange rates, the number of rooms, and COVID-19 significantly impact ASEAN's international tourism demand. Based on these findings, the authors propose several recommendations for the future development of regional tourism.

**Key words** - Low-cost carriers; demand; international tourism; ASEAN.

### 1. Introduction

In the current context of globalization, transportation plays a crucial role in the development of the tourism industry. The development and connectivity between various transport modes such as air, rail, road, and waterways contribute to promoting international tourism. Among these, air transportation -including both traditional and LCC - is increasingly gaining dominance due to rapid travel times, reasonable costs, and a global coverage network. When selecting travel methods, tourists typically prioritize travel time and cost. Therefore, factors such as speed and price play significant roles in their decision-making process. Numerous studies have also indicated that LCC are effectively competing with other transportation modes due to these advantages. The proliferation of LCC has significantly transformed the aviation market in the ASEAN region. The liberalization and deregulation of the aviation market, through the ASEAN Single Aviation Market (ASAM) initiative, has stimulated the development of LCC in the region. However, three ASEAN countries (Brunei, Cambodia, Laos) do not have indigenous LCC due to their small markets; therefore, this study focuses on the remaining 7 countries from 2010 to 2022.

Low-cost aviation plays a vital role in increasing tourism demand within the ASEAN region. According to research by Pulina and Cortés-Jiménez [1], 71% of

**Tóm tắt** - Trong những năm gần đây, sự gia tăng của các hãng hàng không giá rẻ (LCC) ở ASEAN sau khi bãi bỏ quy định và tự do hóa trong lĩnh vực hàng không, đã tác động đáng kể đến ngành du lịch khu vực. Nghiên cứu này nhằm phân tích mối quan hệ giữa sự mở rộng của các hãng hàng không giá rẻ và nhu cầu du lịch quốc tế, đồng thời xác định các yếu tố chính ảnh hưởng đến cầu du lịch tại các quốc gia ASEAN. Bằng cách sử dụng dữ liệu bảng từ bảy quốc gia thành viên ASEAN trong giai đoạn 2010–2022, nghiên cứu tiến hành phân tích thông qua mô hình hồi quy. Kết quả nghiên cứu cho thấy, mối tương quan tích cực giữa sự mở rộng của các hãng hàng không giá rẻ đến cầu du lịch quốc tế. Ngoài ra, GDP, tỷ giá hối đoái, số lượng phòng và COVID-19 có tác động đáng kể đến Cầu du lịch quốc tế của ASEAN. Dựa trên những phát hiện này, nhóm tác giả đề xuất một số khuyến nghị để phát triển du lịch khu vực trong tương lai.

**Từ khóa** - Hàng không giá rẻ; nhu cầu; du lịch quốc tế; ASEAN.

passengers confirmed they would not purchase tickets without LCC, highlighting the importance of this type of aviation. In ASEAN, LCC account for 55% of narrow-body fleets, 19% of wide-body fleets, and 22% of regional fleets, demonstrating their strong presence in the regional aviation industry. Additionally, the development of tourism demand is influenced by multiple factors, such as tourism policies, infrastructure, and economic development, making impact assessment complex. Furthermore, adjusting policies to accommodate LCC development is essential to optimize the benefits this model brings to the ASEAN tourism economy.

Although previous studies have focused on the impact of LCC on tourism, most of these studies were conducted in developed countries with economic contexts and aviation infrastructure that differ significantly from ASEAN. Therefore, there remains a lack of comprehensive analyses regarding the overall influence of LCC on the tourism market in this region. In particular, the interaction between LCC and factors such as tourism policies, transportation infrastructure, and economic development has not been evaluated systematically. Additionally, research on tourism demand at the regional level, such as ASEAN, in relation to LCC remains limited, creating a significant research gap that needs to be addressed to gain a more comprehensive understanding of the impact of LCC on tourism development in the region.

This study aims to analyze the impact of LCC on tourism demand within the ASEAN region. Specifically, the research will examine the relationship between the number of passengers using LCC services and changes in international tourism demand, while assessing the factors influencing ASEAN tourism demand. Based on the findings, the study will propose recommendations to promote tourism growth, optimize benefits from LCC development, and support policymakers in developing appropriate strategies to effectively leverage the low-cost aviation model in ASEAN.

## 2. Research Overview

### 2.1. Concepts of LCC and Tourism Demand

LCC also known as budget airlines or discount airlines (OAG), operate on a low-cost business model. These airlines cut or minimize traditional services to offer lower ticket prices compared to traditional airlines. Meanwhile, tourism demand is a multidimensional concept. According to Lai et al. [2], tourism demand encompasses products and services at a destination such as tour packages, dining, guides, and foreign exchange. Habibi [3] defines tourism demand as the total number of people who travel or wish to travel. The main characteristics of tourism demand include dependence on tourism supply, differences between markets, and high flexibility in response to external factors.

### 2.2. Measurement Factors and Determinants of Tourism Demand

In recent studies, tourism demand has been measured using various quantitative indicators to reflect both the scale and behavior of tourists. Among these, the most common is the number of international tourists [1], [2], as this factor clearly represents actual demand and plays an important role in macroeconomic analyses. Additionally, the length of stay is also used to indicate the level of participation and consumption at destinations. Within the framework of this research, we choose the number of international tourists as a proxy for tourism demand.

Concurrently, the rapid expansion of LCC has prompted numerous studies seeking to measure the impact of this transportation type on international tourism. Some commonly used indicators include: the number of passengers using the service [2], market share in the aviation industry, available seat kilometers (ASK), transport capacity, or the presence of low-cost flights at destinations [1]. In this study, we use the number of passengers traveling on LCC to represent the development level of LCC.

### 2.3. The Relationship Between LCC and Tourism Demand

Research has shown that the emergence and development of LCC has a close relationship with the increase in tourism demand. Specifically, LCC play an important role in promoting tourism growth ([8], [9]). The expansion of LCC often goes hand in hand with the establishment of large-scale airline alliances, thereby creating more favorable conditions for tourism

development [10]. Not only affecting tourist consumption behavior, the development of LCC also strongly impacts the competitive strategies of traditional airlines (FSCs). Aguiló et al. [11] point out that the increase in LCC has forced FSCs to adjust their strategies to maintain market share, while Donzelli [12] emphasizes that LCC not only create new demand but also help redirect some demand from FSCs to LCC. Another significant benefit of LCC is their ability to distribute tourism demand more evenly throughout the year, helping to reduce pressure during peak seasons.

Besides the many benefits LCC bring, this business model also faces significant challenges. According to research by Hassan and Salem [13], cost-cutting to maintain low ticket prices can negatively affect service quality, thereby reducing passenger satisfaction. Similarly, Castillo-Manzano and Lopez-Valpuesta [14] note that although LCC operate with high efficiency, optimizing operational costs can lead to prolonged flight delays, negatively affecting the customer experience.

Although the impact of LCC has been extensively studied in developed regions, the number of studies on the influence of LCC on tourism in ASEAN remains limited. Current research mainly focuses on individual countries or specific aspects of the tourism industry, leading to a lack of a comprehensive view of the role of LCC in the region. Therefore, more research is needed to assess the impact of LCC at the regional level, especially in areas of economic and tourism integration. Additionally, combining both economic and non-economic factors in this research will help clarify the overall influence of LCC on tourism demand in ASEAN.

## 3. Research Methodology

### 3.1. Research Model and Hypotheses

Previous studies and literature reviews have documented that LCC in certain countries lead to increased international tourism demand. Based on these theories, we have developed the following hypothesis:

*H: The increase in LCC passengers is positively related to the increase in international tourist arrivals (ITA).*

This research applies the supply and demand equilibrium model in macroeconomics to analyze the relationship between prices and demand and supply curves. The model is used to achieve the main objective: estimating the impact of airfare on tourism demand. Specifically, the model is constructed as follows:

Demand function:  $Q_d = a - bP$

Where:

$Q_d$ : is the demand quantity (number of tourists or amount of tourism services requested).

$P$  is the service price.

$a$  and  $b$  are determining constants.

In this research, the price variable ( $P$ ) is represented by the number of passengers in the demand model since the number of passengers directly reflects the level of tourism demand. According to Lai et al. [2], the number of

passengers of low-cost airlines is a measure of the success of LCC. Data on LCC passengers is an important indicator reflecting the capacity and growth of airlines. Moreover, some factors affecting tourism demand, such as infrastructure, stable political environment, and tourism trends, cannot be directly measured by price. Therefore, to examine the relationship between LCC and tourism demand, this research prioritizes analyzing the impact of the number of LCC passengers on tourism demand rather than the price factor.

A logarithmic regression model is applied to identify factors affecting tourism demand. According to Lim (1997) [6], choosing a log-linear specification helps interpret coefficients as estimated elasticities easily:

$$\ln(Y_i)=\alpha+\beta\ln(X_i)+\epsilon_i$$

Where:

- $\alpha$  = intercept;
- $\beta_1... \beta_p$  = regression coefficients;
- $\epsilon_i$ : error term, capturing the difference between the actual observed value of ( $Y_i$ ) and the predicted value.

The formation of the tourism demand model in this study is adapted from the theoretical basis of representative factors and factors affecting tourism demand. The empirical model is specified as follows:

$$\ln ITA = \beta_0 + \beta_1(\ln LCC) + \beta_2(\ln GDP) + \beta_3(\ln EX) + \beta_4(\ln ROOM) + \beta_5(Covid)$$

3.2. Estimation Methods

In this research, the statistical data processing method is performed through Ordinary Least Squares (OLS) regression estimation, ensuring the BLUE (Best Linear Unbiased Estimator) properties of the estimates. To test the model assumptions, the study applies the Breusch-Godfrey test to detect serial correlation and the Breusch-Pagan test to assess homoscedasticity. In order to address the issues of heteroscedasticity and serial correlation in the data, the Feasible Generalized Least Squares (FGLS) method is applied, helping to improve the accuracy and reliability of the estimates. Additionally, the study considers the Fixed Effects (FE) model and the Random Effects (RE) model, selecting the appropriate model based on the results of the Hausman test.

3.3. Data

This research collects and describes data related to tourism demand in 7 ASEAN countries during the period 2010-2022. The dependent variable is measured by ITA in 7 ASEAN countries. The independent variables affecting tourism demand are divided into two groups: economic and non-economic factors influencing tourism demand. In the economic factors group, the number of passengers of LCC to ASEAN is used as a proxy for transportation costs. Additionally, GDP and exchange rates are important variables reflecting tourists' purchasing power. The LCC passenger variable is measured through passenger data from major LCC in the region, including VietJet Air (Vietnam), Air Asia Capital Berhad, AirAsia X (Malaysia), Citilink, Indonesia AirAsia, Lion Air (Indonesia), Thai AirAsia, Thai Nok

Air (Thailand), Jetstar Asia Airways, Scoot (Singapore), Cebu Pacific, Philippines AirAsia (Philippines), and Golden Myanmar Airline (Myanmar).

Besides economic factors, the research also examines non-economic factors affecting tourism demand. Specifically, the number of hotel rooms is used as a proxy for the tourism industry's supply capacity. Additionally, the impact of the COVID-19 pandemic is included in the model as a dummy variable to control for sudden changes caused by the pandemic. Although COVID-19 had a strong impact on the global economy from 2020, warnings about this dangerous epidemic appeared in late 2019 and had already affected international tourism, so the impact of COVID-19 is calculated from 2019 to provide a comprehensive and complete view of the epidemic situation. The compilation and analysis of these variables aim to comprehensively assess the factors affecting tourism demand in the ASEAN region.

Table 1. Variables Description

Variables	Logarism proxy	Source
International tourist arrivals (ITA)	lnITA	World Bank
The LCC passengers (LCC)	lnLCC	Annual reports of airlines, INACA (Indonesia National Air Carrier Association), Qantas data book, CAPA (Central For Aviation), Statistical Yearbook, CEIC data, CFA Society Vietnam
GDP in ASEAN (GDP)	lnGDP	IMF (International Monetary Fund)
Exchange rate (EX)	lnEX	IMF (International Monetary Fund)
COVID-19 pandemic (Covid)	Covid	Dummy variable (2019, 2020, 2021 = 1, and 0 otherwise)
The Number of Rooms (ROOM)	lnROOM	UNWTO (World Tourism Organization)

Source: Compiled from research data processing results

4. Results and Discussion

Table 2. Descriptive Statistics of Variables

Variable	Obs	Mean	Std. Dev	Min	Max
ITA	91	1.16e+07	9948903	130900	3.99e+07
LCC	91	1.73e+07	1.53e+07	0	5.78e+07
ROOM	90	313690.9	264876.6	11807	870783
GDP	91	3.94e+11	2.79e+11	4.95e+10	1.32e+12
EX	91	5.055.378	8.141.366	1.249.676	23271

Source: Compiled from research data processing results

4.1. Regression results

The statistical tests confirm that the proposed model is appropriate for analyzing the impact of LCC on tourism demand. The F-test and Breusch-Pagan LM test reject the Pooled Ordinary Least Squares (POLS) model, while the Hausman test indicates that the FE model is more effective. The FE model has an R<sup>2</sup> of 68.4%, demonstrating that the variables in the model have good explanatory power for the variation in ITA. The multicollinearity test shows no serious issues (maximum

VIF = 3.62). Error component tests also confirm the absence of heteroskedasticity or serial autocorrelation. Since the POLS model often encounters issues with heteroskedasticity, the FGLS and FE methods were chosen to improve estimation accuracy. The coefficient for LCC passenger numbers ranges from 0.59 to 0.95, representing a significant positive predictor for ITA. Specifically, a 1% increase in low-cost carrier development leads to an increase in ITA ranging from 0.59% to 0.95% depending on the estimation model. The impact of LCC passenger numbers on ITA is statistically significant with a p-value at the 1% level, indicating 99% confidence in the estimates across both research models. The coefficients of other model variables such as number of rooms, exchange rate, GDP, and the COVID-19 dummy variable are all significant at the 1% level in at least one of the two research models, and their impacts follow the expected directions in both models: the number of rooms has a positive effect, while exchange rate, GDP, and COVID-19 have negative effects on tourism demand.

**Table 3. Regression Results**

Dependent variable	lnITA				
Independent variable	POLS	FGLS	RE	FE	VIF
lnLCC	0.59*** [-6.95]	0.59*** [6.66]	0.82*** [9.08]	0.95*** [9.74]	3.24
lnGDP	-0.58*** [-2.71]	0.58*** [-2.81]	-1.04*** [-3.16]	-0.95*** [9.74]	3.62
LnEX	-0.09*** [-4.01]	-0.09*** [-4.15]	-0.05 [-1.10]	0.14 [1.37]	1.17
lnROOM	0.28** [2.58]	0.28*** [2.67]	0.16 [0.93]	-0.01 [-0.04]	2.05
Covid	-1.21*** [-5.45]	-1.21*** [-5.64]	-0.97*** [-4.82]	-0.86*** [-4.06]	1.14
Constant	18.99*** [4.40]	18.99*** [4.56]	27.69*** [3.92]	33.08** [2.10]	
R square	0.653			0.684	

Source: Compiled from research data processing results

\* Coefficient is statistically significant at 10% level.

\*\* Coefficient is statistically significant at 5% level.

\*\*\* Coefficient is statistically significant at 1% level.

## 4.2. Discussion

LCC have a powerful influence on tourism demand by providing low-cost flights that increase destination accessibility. Numerous studies have confirmed the positive relationship between LCC development and ITA [15], [16]. Additionally, Pulina & Cortes-Jimenez [1] demonstrated an increase in tourist numbers when LCC operated routes to Alghero, Italy. One of the core factors helping LCC stimulate tourism demand is low ticket prices, which expands the customer base and attracts more people to participate in tourism activities. According to Graham and Dennis [17], LCC tend to attract younger tourists with higher incomes and greater autonomy, who often prioritize spending on travel

experiences rather than transportation. Furthermore, LCC help reduce tourism seasonality through flexible pricing strategies and the ability to maintain flight frequencies to less popular destinations, as confirmed by [12], [18], [1] and [8]. Particularly in the context of the COVID-19 pandemic, LCC operations are considered one of the most important factors influencing tourism demand, contributing to market stability during the post-pandemic recovery period.

Besides the development of LCC, tourism demand is also affected by various economic and non-economic factors. Among economic factors, GDP can negatively impact tourism demand, especially in high-income countries where expensive living and travel costs may reduce tourist numbers [19]. Exchange rates are also important, as increasing rates raise travel costs, leading to a decline in tourism demand. Countries with strong domestic currencies become less attractive in terms of pricing. Irandoust's research [20] shows that currency devaluation can attract more tourists as travel costs become more appealing to international visitors.

Among non-economic factors, accommodation capacity is crucial in maintaining tourist flows. According to Fateh Habibi [3], increasing the number of accommodation rooms enhances the ability to serve tourists and meet growing demand. Research by Uner et al. [21] indicates that when the number of accommodation facilities increases, ITA also increase. An abundant supply of hotel rooms helps regulate reasonable prices and promotes competitiveness. The COVID-19 pandemic has severely impacted the tourism industry, leading to a decline in international visitors, reflecting the fragility of the tourism sector in the face of global health shocks.

## 5. Conclusion and Policy Implications

### 5.1. Conclusion

We can infer that the development of LCC has a notable influence on tourism growth in the ASEAN region, shaping the international tourism landscape and opening new opportunities for both tourists and industry stakeholders. Logarithmic regression models and panel data regression analysis were used to further understand how variables change over time and represent non-linear interactions between variables. The study used results from the FGLS model and FE model as a basis for discussing research findings and addressing issues and phenomena that arise when using OLS regression and RE. On the demand side, empirical findings indicate that international tourism demand is significantly positively affected by low-cost airline development and the number of rooms, while it is strongly negatively affected by GDP, exchange rates, and COVID-19. Although the COVID variable was applied uniformly across ASEAN countries to reflect the general impact of the pandemic in the regional context, the degree of impact and recovery rates may vary between countries. This is an area that future research could further develop to more fully reflect the practical context.

## 5.2. Policy Implications

Research results show that the development of LCC plays an important role in promoting international tourism. Implementing an ASAM policy helps create a healthy competitive environment with traditional airlines, allowing low-cost airlines to expand operations. Policymakers can simplify flight licensing procedures and invest in secondary airports to support more efficient operations, especially in underdeveloped tourism areas. Additionally, governments need to upgrade accommodation infrastructure and tourism services to meet increasing visitor numbers. Regarding macroeconomics, appropriate exchange rate management helps maintain competitive prices, while governments can turn economic downturns into opportunities by applying flexible monetary policies, avoiding keeping the domestic currency too strong to prevent reducing tourism attractiveness. Furthermore, measures such as supporting budget tourism development, reducing taxes for tourism businesses, and regulating accommodation and transportation costs also contribute to attracting international tourists. Finally, to ensure sustainability, the tourism industry needs risk response strategies, such as developing crisis management plans and enhancing resilience to unstable factors like the COVID-19 pandemic.

## REFERENCES

- [1] M. Pulina and I. Cortés-Jiménez, "Have low-cost carriers influenced tourism demand and supply? The case of Alghero, Italy", *Tourism Analysis*, vol. 15, no. 6, pp. 617-635, 2010.
- [2] P. Lai, H. Jang, C. Xu, and S. Xin, "The impact of low-cost carriers on inbound tourism of Thailand", *International Journal of Supply Chain Management*, vol. 8, no. 3, pp. 846-853, 2019.
- [3] F. Habibi, "The determinants of inbound tourism to Malaysia: a panel data analysis", *Current Issues in Tourism*, vol. 20, no. 9, pp. 909-930, 2017.
- [4] H. Song, G. Li, S. F. Witt, and B. Fei, "Tourism demand modelling and forecasting: how should demand be measured?", *Tourism economics*, vol. 16, no. 1, pp. 63-81, 2010.
- [5] G. I. Crouch, "The study of international tourism demand: A survey of practice", *Journal of Travel research*, vol. 32, no. 4, pp. 41-55, 1994.
- [6] C. Lim, "Review of international tourism demand models", *Annals of tourism research*, vol. 24, no. 4, pp. 835-849, 1997.
- [7] G. Li, H. Song, and S. F. Witt, "Recent developments in econometric modeling and forecasting", *Journal of travel Research*, vol. 44, no. 1, pp. 82-99, 2005.
- [8] J. Y. Chung and T. Whang, "The impact of low cost carriers on Korean Island tourism", *Journal of Transport Geography*, vol. 19, no. 6, pp. 1335-1340, 2011.
- [9] A. Santos and M. Cincera, "Tourism demand, low cost carriers and European institutions: The case of Brussels", *Journal of transport geography*, vol. 73, pp. 163-171, 2018.
- [10] C. M. Costas-Centivany, "Spain's airport infrastructure: adaptations to liberalization and privatization", *Journal of Transport Geography*, vol. 7, no. 3, pp. 215-223, 1999.
- [11] E. Aguiló, B. Rey, J. Rosselló, and C. M. Torres, "The impact of the post-liberalisation growth of LCCs on the tourism trends in Spain", *Rivista di Politica Economica*, vol. 97, no. 1/2, p. 39, 2007.
- [12] M. Donzelli, "The effect of low-cost air transportation on the local economy: Evidence from Southern Italy", *Journal of Air Transport Management*, vol. 16, no. 3, pp. 121-126, 2010.
- [13] T. H. Hassan and A. E. Salem, "Impact of service quality of low-cost carriers on airline image and consumers' satisfaction and loyalty during the COVID-19 outbreak", *International journal of environmental research and public health*, vol. 19, no. 1, p. 83, 2021.
- [14] J. I. Castillo-Manzano and L. Lopez-Valpuesta, "Can LCCs' economic efficiency create negative externalities for air transport? An analysis of passenger waiting time", *Applied Economics Letters*, vol. 21, no. 13, pp. 878-881, 2014.
- [15] C. C. Law, Y. Zhang, and A. Zhang, "Regulatory changes in international air transport and their impact on tourism development in Asia Pacific", *Airline economics in Asia*, vol. 7, pp. 123-144, 2018.
- [16] M. Alsumairi and K. W. H. Tsui, "A case study: The impact of low-cost carriers on inbound tourism of Saudi Arabia", *Journal of Air Transport Management*, vol. 62, pp. 129-145, 2017.
- [17] A. Graham and N. Dennis, "The impact of low cost airline operations to Malta", *Journal of Air Transport Management*, vol. 16, no. 3, pp. 127-136, 2010.
- [18] B. Rey, R. L. Myro, and A. Galera, "Effect of low-cost airlines on tourism in Spain. A dynamic panel data model", *Journal of Air Transport Management*, vol. 17, no. 3, pp. 163-167, 2011.
- [19] J. Xie and S. Tveterås, "Economic decline and the birth of a tourist nation", *Scandinavian Journal of Hospitality and Tourism*, vol. 20, no. 1, pp. 49-67, 2020.
- [20] M. Irandoust, "On the relation between exchange rates and tourism demand: A nonlinear and asymmetric analysis", *The Journal of Economic Asymmetries*, vol. 20, p. e00123, 2019.
- [21] M. M. Uner, N. Kose, and S. Gokten, "An econometric model of tourism demand and room rates: A study in Belek, Antalya", *Anatolia*, vol. 19, no. 1, pp. 41-50, 2008.