Original article

Cuba in the tourism industry: demand studies

Cuba en la industria turística: estudios de la demanda

Cuba na indústria do turismo: estudos de demanda

Reinier Fernández López[1] 0000-0003-1974-9209 @ rflopez@upr.edu.cu

Deysi Alfonso Porraspita[2] 0000-0001-8914-9482 @ lidice@upr.edu.cu

José Alberto Vilalta Alonso[3] 0000-0001-7505-8918 @ jvilalta@ind.cujae.edu.cu

Odalys Labrador Machín[2] 0000-0002-9376-5728 @ odalys@upr.edu.cu

[1] University of Pinar del Río "Hermanos Saíz Montes de Oca". Faculty of Economic Sciences. Department of Industrial Engineering. Pinar del Río, Cuba.

[2] University of Pinar del Río "Hermanos Saíz Montes de Oca". Group of Preparation and Improvement of Cadres. Pinar del Río, Cuba.

[3] Technological University of Havana "José Antonio Echeverría". La Habana, Cuba.

ABSTRACT

The tourism industry is considered a key factor for economic development and has gained importance in national, regional and global economies. As a result, it represents one of the vital sources of income in many developing countries, mainly in the Caribbean area. Added to this is the trend of an increasingly uncertain and dynamic world. Therefore, it is necessary to plan by means of tourism demand forecasting. Cuba, as a developing country, has one of the main economic activities: the tourism industry. However, there are no exhaustive studies in the specialized literature on demand forecasting methods in the country. Therefore, the main objective is to review the general trends

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and the evolution of tourism demand forecasting methods in a historical perspective and to trace the development of demand forecasting methods in Cuba to serve as a starting point for future research, as well as to carry out a large-scale search using as keywords: "forecasting", "demand" and "tourism". As main results, four classifications of the methods for tourism demand forecasting that have been implemented in Cuba and the existence of few demand forecasting studies in the tourism sector are determined; this makes it difficult to make decisions in forecasting the behavior of outbound markets.

Keywords: demand; tourism; Cuba; scenarios; review; Covid-19.

RESUMEN

La industria turística es considerada como factor clave para el desarrollo económico y ha ganado importancia en las economías nacionales, regionales y globales. Por ello, representa una de las fuentes vitales de ingresos en numerosos países en desarrollo, principalmente en la zona del Caribe. A esto se le suma la tendencia de un mundo cada vez más incierto y dinámico. Por lo cual, se hace necesario la planificación mediante el pronóstico de la demanda turística. Cuba, como país en vía al desarrollo, tiene una de las principales actividades económicas: la industria turística. Sin embargo, no se determinan en la literatura especializada estudios exhaustivos sobre los métodos de pronósticos de la demanda en el país. Por lo cual, se plantea como objetivo principal revisar las tendencias generales y la evolución de los métodos de pronóstico de la demanda turística en una perspectiva histórica y rastrear el desarrollo de métodos de pronóstico de la demanda en Cuba para que sirva como punto de partida a futuras investigaciones, además, realizar una búsqueda a gran escala utilizando como palabras clave: "pronóstico", "demanda" y "turismo". Como resultados principales, se determinan cuatro clasificaciones de los métodos para el pronóstico de la demanda turística que se han implementado en Cuba y la existencia de pocos estudios de pronóstico de la demanda en el sector del turismo; esto dificulta la toma de decisiones en la previsión del comportamiento de los mercados emisores.

Palabras clave: demanda; turismo; Cuba; escenarios; revisión; Covid-19.

RESUMO

A indústria do turismo é considerada um fator-chave para o desenvolvimento econômico e ganhou importância nas economias nacionais, regionais e globais. Como tal, ela representa uma das fontes vitais de renda em muitos países em desenvolvimento, principalmente na região do Caribe. A isto se soma a tendência de um mundo cada vez mais incerto e dinâmico. Isto torna necessário o planejamento através da previsão da demanda turística. Cuba, como país em desenvolvimento, tem uma das principais atividades econômicas: a indústria do turismo. Entretanto, não há estudos exaustivos na literatura especializada sobre métodos de previsão da demanda no país. Portanto, o principal objetivo é rever as tendências gerais e a evolução dos métodos de previsão da demanda turística numa perspectiva histórica e traçar o desenvolvimento dos métodos de previsão da demanda em Cuba para servir de ponto de partida para futuras pesquisas, assim como realizar uma busca em larga escala usando as palavras-chave: "previsão", "demanda" e "turismo". Como principais resultados, são determinadas quatro classificações dos métodos de previsão da demanda turística que foram implementadas em Cuba e a existência de poucos estudos de previsão da demanda no setor turístico; isto torna difícil tomar decisões na previsão do comportamento dos mercados emissores.

Palavras-chave: demanda; turismo; Cuba; cenários; revisão; Covid-19.

INTRODUCTION

Tourism is currently one of the fastest growing economic activities and represents one of the main sources of income in many developing countries. This growth goes hand in hand with increased diversification and competition among destinations. Within any market or economic environment, demand is an important variable for a tourism destination that must be understood, measured and analyzed (Fernández López et al., 2020; Sarmiento Silvierio, 2016; Torres Álvarez et al., 2021).

Tourism is probably the only economic activity that involves many other sectors, levels and interests of society, and environmental protection is an essential part of its own development, since without adequate environmental quality, current tourism and its future development may be compromised.

Thus determined by the dual role that tourism implies; on the one hand, it contributes positively to socioeconomic and cultural development, while, on the other hand, it leads to environmental

degradation and the loss of local identity in close relation to the quality of the receiving destination (Fernández López et al., 2019).

In a sector as fast growing and dynamic as tourism, enterprises are obliged to renew their offerings in order to remain in the market, increasing their efficacy, efficiency, profitability and competitiveness based on customer satisfaction and quality of services (López Boudet et al., 2020). In this regard, tourism is considered one of the most diverse and relevant sectors in the international arena and is of great importance in the development of society due to its ecological, economic, political and social impact.

It is valid to say that the analysis of the distinctive features of tourism demand will lead to the design of actions aimed at improving the capacity of the destination to satisfy the leisure needs and desires of the tourist (Fernández López et al., 2020; Tusell Rey et al., 2021).

This is why tourism, for several countries, is a priority sector for the benefits it brings to the economy. Therefore, it is one of the world's driving forces for social and economic development. The proper management of tourist destinations is of great interest, as it depends, to a large extent, on the forecast of the demand for arrivals to the destination. (Torres Álvarez et al., 2021).

Added to this is the trend of an increasingly uncertain world, where global dynamics accelerate the way processes are managed in any sector and cause an increase in the value of the use of planning through demand forecasts (Fernández López et al., 2021).

Hence, the importance of studying the tourism demand of a destination, which focuses on knowing the characteristics of travelers, related to the segment to which they belong, tourism expenditure and the level of satisfaction with the destination's attractions, among others.

In Cuba, tourism as an industry has its origins in the early twentieth century and its development is closely linked to the economic, social and political changes that occurred in the Island, becoming a strategic priority sector for the country's development. Framed in this context, the antecedents of the first research on tourism demand forecasts in Cuba are found, which are not numerous (Fernández López et al., 2020, 2021; La Serna Gómez, 2012; Rigol Madrazo et al., 2009).

This implies little empirical evidence, meta-analysis and review articles that have contributed to the theoretical and methodological development of tourism demand forecasting in Cuba. However, a

comprehensive review of the methodological development and evolution of forecasting methods in this regard has not yet been carried out.

Therefore, the main objective is to review the general trends and the evolution of tourism demand forecasting methods in a historical perspective and to trace the development of demand forecasting methods in Cuba to serve as a starting point for future research.

MATERIALS AND METHODS

To identify the general trends and evolution of tourism demand forecasting methods, a large-scale search was conducted in several databases, including Google Scholar and Web of Science, using as search criteria the keywords: "forecasting", "demand" and "tourism" and their combination, both in English and Spanish, initially collecting 32 relevant scientific papers from 1990 to 2021.

To deal with this data set in a non-superficial manner, the author team identified a manageable group of the most important studies. The method for selecting key studies involves four steps:

1. Exclude non-tourism studies and non-forecasting studies
2. Evaluate articles in terms of their breadth and impact
3. Selecting the representative ones taking into account the previous step
4. Data analysis, visualization and interpretation

In this aspect, a final sample of 19 scientific articles was completed to analyze the key findings, comparisons and performances of the methods over time that were processed using the R software or programming language.

RESULTS AND DISCUSSION

Given the importance of accurate forecasts for the dynamic and complex tourism market, a significant number of studies on tourism demand modeling and forecasting have been published in recent decades. These studies have mainly focused on model building, but not on model performance evaluation, which is a disadvantage.

As a first result of this research, the bar graph shown in figure 1 shows the temporal distribution of scientific production from 1990 to 2021, highlighting the growing production in the last decade.
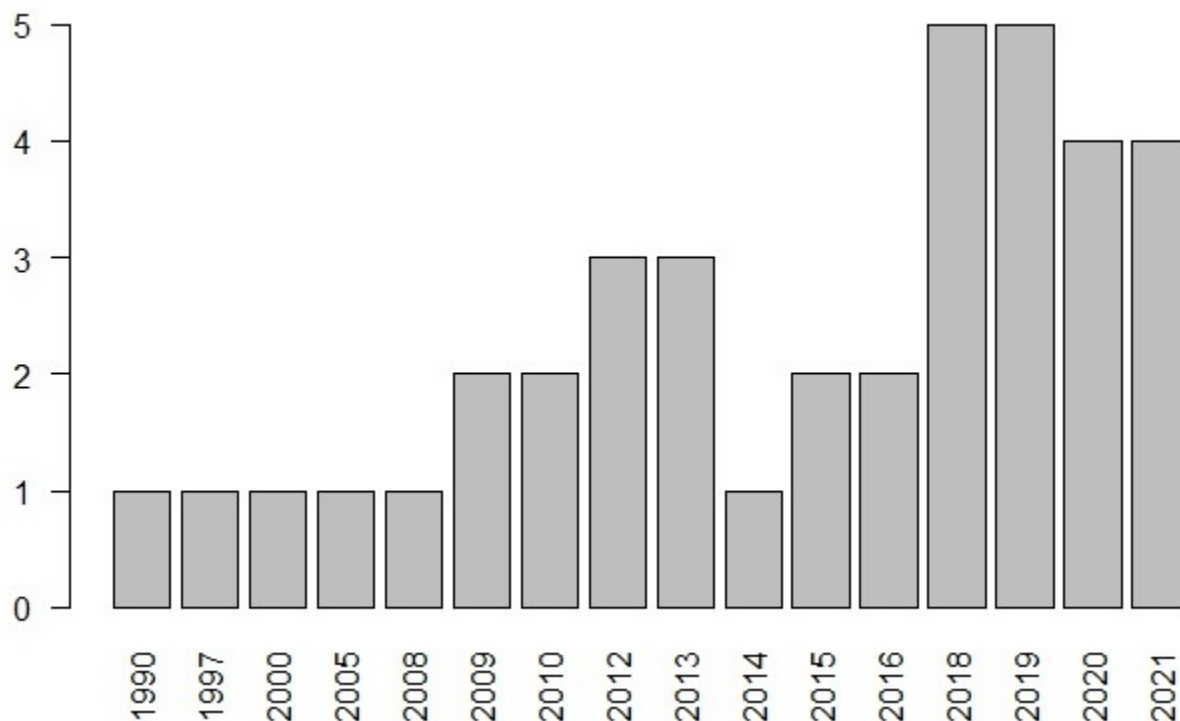
Fig. 1 - Scientific production

Source: own elaboration

In relation to the above, the antecedents of the first research on tourism demand forecasts in Cuba allows to establish a panorama on the direction and evolution of the research, which to date is scarce.

Such is the case of the study carried out by Haider and Ewing (1990) who describe an experimental method to analyze the preferences of winter vacationers in Caribbean destinations, including Cuba, for several destination attributes: lodging, distance from relevant tourist facilities to lodging, and price. The model can be used to implement demand for destination planning and marketing, but remains highly subjective to tourism dynamics.

Robyn et al. (2002) analyze the long-term impact on the U.S. economy of removing restrictions on U.S. travel to Cuba. This would imply an increase in demand, a net benefit for airline companies and a considerable increase in economic activity for both countries. At the same time, it attributes multiple developmental benefits, especially in terms of economic impact and social welfare situations (Quintana et al., 2005).

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In the same vein, Romeu (2008) confirms that an opening of Cuba to U.S. tourism would represent a radical change in the Caribbean tourism industry. The study models the impact of such a potential opening, estimating an event that has not occurred in the current observable environment that captures the current bilateral restriction on tourism between the two countries. Likewise, neighboring destinations would lose the implicit protection afforded by the current restriction and Cuba would gain market share; these forecasts are subjective ideas.

In contrast to the previous authors, Rigol Madrazo et al. (2009) present a conceptual model for the management of tourism demand. According to the authors, there is currently a contradiction between the need to manage the demand of a tourist destination and the inability of existing methods to facilitate this endeavor, making necessary a set of theoretical and practical foundations to address the issue of managing the demand of a tourist destination, in correspondence with the capacities available at the destination.

For their part, Hernández Aro and Machado Chaviano (2010), from a marketing approach, propose to develop a strategy to address the demand that satisfies the Chinese market based only on a conceptual theoretical analysis, taking into account the characteristics of the issuing market, but they do not address forecasting tools and only focus on a single market.

At the same time, Josefá Barbosa and Parada Gutiérrez (2010) develop a simplistic theoretical procedure for the analysis of tourism demand by applying classical decomposition methods to determine, among other elements, trend and seasonality, taking into account only one method: linear regression.

The study by Rodríguez Betancourt and Estévez Mártir (2012) proposes to carry out the budgeting through fuzzy linear regression, in order to obtain a budget interval that serves as a basis for the expertise of the future estimate. However, the authors limit themselves to the financial statements and do not consider that income and expenses are generated from tourism demand.

From another point of view, La Serna Gómez (2012) determines tourism demand with artificial neural networks involving marketing variables, but does not include an analysis of temporal factors that have affected tourism activity such as the effect of economic crises. While Delgado Castro and Martín Fernández (2014) include climatological variables in their study and analyze the effect of climate change on the tourism industry and its demand.

Aspects such as the analysis of Cuban emigration to developed countries, mainly to the United States and other countries of origin of tourism to Cuba, have allowed Perelló Cabrera and Llanes Sorolla (2015) to consider this emigration as the cause of the main tourism issuers and to integrate a segment of travelers capable of incurring the highest travel expenses in their country of origin and which is part of the tourism demand.

Subsequently, Sarmiento Silvierio (2016) performs a measurement of tourism demand to Cuba, based on the analysis of the behavior of only one issuing market: the Canadian market. They make the demand projection for the period 2016-2018, using an exponential smoothing, but in their projection, they do not provide the level of adjustment offered by the model, giving way to better variants.

On the other hand, Fernández López et al. (2019) establish an evolution of the conception of tourism, characterize the different types of demand forecasting and present the different time series models most commonly used for tourism demand forecasting.

Taking into account the SARS-COV-2 virus and the serious effects it has had on the tourism sector, Hernández Flores et al. (2020) characterize the potential demand for Cuba in the new normality and identify foreseeable changes in tourism demand to Cuba, mainly related to the decision to travel, timing, motivations, ways of obtaining information, ways of organizing the trip, average duration of the trip, as well as priorities and prevention measures against the risk of contagion.

At the same time, Fernández López et al. (2020) developed a forecast model for tourism demand using time series techniques that allow predicting tourism behavior, based on the Box-Jenkins methodology for the Cubanacán Hotel Chain in Pinar del Río.

The study by López Boudet et al. (2020) provides a procedure for launching a new tourism product that includes demand analysis as one of the main elements, but only proposes the use of basic models such as linear, exponential and logarithmic regression.

On the other hand, Martínez et al. (2021) analyze the effect of tourism activity on climate change and make predictions on climatological variables in different scenarios. However, they do not include in their analysis the forecast of tourism demand as an important element.

From a multivariate approach, Fernández López et al. (2021) consider two indicators: cost per weight and average income per tourist, which refer to efficiency and efficacy. These authors characterize tourism demand in the Cubanacán Hotel Chain in Pinar del Río, where they project the efficiency and efficacy of the business group over time.

Similar to La Serna Gómez (2012), Delgado Castro and Martín Fernández (2014), Torres Álvarez et al. (2021) implement Artificial Neural Networks to forecast the occupancy rate of the Brisas Guardalavaca hotel and not to the use of tourist arrivals to the hotel, an element directly related to the occupancy rate.

It should be added that the analyzed researches propose models that consider as an advantage, features of tourism demand forecasting in the short and medium term, however, they do not apply selection procedures to the best model, and do not propose the integration of quantitative and qualitative tools to improve the effectiveness of the forecast. Nor do they emphasize prospective approaches to scenario building that can be combined with forecasting models, since the current uncertainty renders these models somewhat unusable. Added to this is the economic crisis generated by Covid-19, plus the intensification of the economic measures imposed by the U.S. government towards Cuba.

Categorization and findings

The specified information on these 19 key studies is summarized in table 1 in order to obtain a more integrated approach, since the aim is to acquire broader information, which allows a critical view of the situation of these researches in the Cuban context. From this, author and year, prognostic method, subcategory of prognostic methods and the context or objective of each research are determined.

Table 1 - Summary of studies conducted in Cuba

Author and year	Forecast method	Subcategories	Context
Haider and Ewing (1990)	Econometric	Bayesian	Experimental method to estimate demand based on tourist preferences.
Robyn et al. (2002)	Delphi	Experts	Impact on the economy in both Cuba and the United States if the travel restrictions imposed by the economic blockade were eliminated.
Quintana et al. (2005)	Delphi	Experts	Trends in the Cuban economy and the effect of tourism on the country's economic development
Romeu (2008)	Delphi	Experts	The opening of U.S. tourism to Cuba and the economic effect and positioning of Cuba in the region.
Rigol Madrazo et al. (2009)	Econometric approach	Theoretical model	Proposal of a conceptual model that offers a methodological basis to support the decision making process.
Hernández Aro and Machado Chaviano (2010)	Econometric approach	Strategy	Market analysis, mainly the Chinese market and its importance for the developing tourist destination of Villa Clara, Cuba
Josefá Barbosa and Parada Gutiérrez (2010)	Time series with econometric approach	Procedure. Simple linear regression for seasonality	Structures a multi-step procedure that analyzes seasonality, econometric modeling and customer satisfaction
Rodríguez Betancourt and Estévez Mártir (2012).	Econometrics	Fuzzy mathematics	It proposes to perform budgeting using fuzzy linear regression to cope with arrival demand. The proposal is implemented in a hotel resort.

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La Serna Gómez (2012)	Artificial Intelligence. Econometric approach	Artificial Neural Networks	Forecasts tourism demand at the country level including marketing variables through the proposal of a procedure.
Delgado Castro and Martín Fernández (2014)	Artificial Intelligence. Econometric approach	Artificial Neural Networks	Forecasts tourism demand in Cuba, but takes weather variables into account
Perelló Cabrera and Llanes Sorolla (2015)	Delphi	Expert	Analysis of the tourism market, Cuban emigration to developed countries and the positive effects of becoming a social phenomenon of major impact on tourism development in Cuba.
Sarmiento Silvierio (2016)	Time series	Exponential smoothing	Analysis of the issuer market for Cuba and forecast of tourism demand from the Canadian market
Fernández López et al. (2019)	Time series	Moving average, smoothing exponential, linear regression, Box-Jenkins	Analysis of time series models for tourism demand forecasting and the advantages for decision making.
Hernández Flores et al. (2020)	Delphi	Expert	In the context of Covid-19, an analysis of the preferences of travelers who can normally access a tourist destination Cuba is carried out.
Fernández López et al. (2020)	Time series	Advanced method of the Box-Jenkins methodology. ARIMA and SARIMA	Proposal of time series models based on the Box-Jenkins methodology for tourism demand forecasting in the Cubanacán Hotel Chain.
López Boudet et al. (2020).	Time series	Softening exponential,	Proposes a procedure for the launching of a tourism product that includes

		linear and logarithmic regression	demand forecasting as a fundamental element.
Martínez et al. (2021)	Delphi	Expert	The impact of the negative effects of tourism activity and the inclusion of climatological variables
Fernández López et al. (2021)	Time series	Advanced method of the Box-Jenkins methodology. ARIMA and SARIMA. Smoothing exponential, linear regression	Tourism demand is forecasted. The analysis of efficiency and efficacy indicators is also taken into consideration, multivariate time series analysis is performed, and the best model is selected considering the best dispersion measures.
Torres Álvarez et al. (2021)	Artificial intelligence	Artificial neural networks	Forecasting the occupancy rate of a hotel facility using artificial neural networks

Source: Own elaboration

From the above table, four classifications of the methods for tourism demand forecasting that have been implemented in Cuba are determined as findings. In this sense, it is had time series methods (31.57%), econometric models (26.31%), Delphi methods (26.31%) and models that implement artificial intelligence tools (15.78%) such as neural networks. In addition to this result, the pie chart in figure 2 is shown.
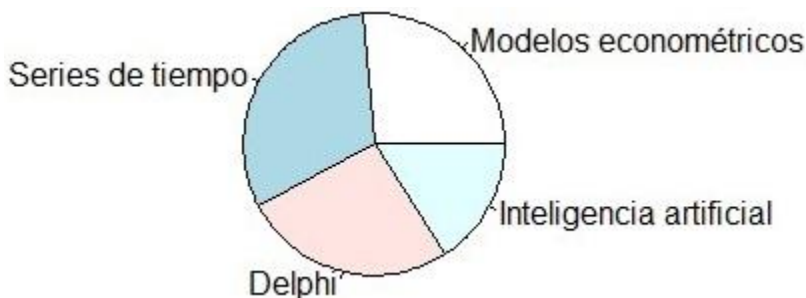
Fig. 2 - Pie chart
Source: own elaboration

Considering the previous results, Cuba has few scientific results regarding demand forecasting models for planning in this strategic sector such as tourism. On the other hand, the Cuban tourism industry and possible future scenarios play an essential role, studying the future and proposing strategies that make viable the action on the accelerated changes in the socioeconomic and cultural context through which the world is going through today and, especially, Cuba, is essential.

In the same context, it is important to analyze tourism activity indicators and emphasize that the sector can become the driver of economic recovery in a post-pandemic scenario. In this sense, the importance lies in forecasting tourism demand for the different probable scenarios.

From the literature, a classification for tourism demand forecasting models is recognized, which include four major groups: time series, econometric models, methods based on artificial intelligence and methods based on judgments. However, the classification of mixed models for forecasting could be added to include the integration of the other categories and the analysis of network traffic, which is a trend in the world today.

Finally, the incipient demand forecasting studies in Cuba's tourism industry have been identified as a deficiency. This makes it difficult to make decisions that allow predicting the behavior of the issuing markets in this sector, which is so important for the economy, thus guaranteeing an adequate productive chain. However, existing research does not respond to the integration of quantitative and qualitative tools that improve the effectiveness of forecasting, nor does it integrate prospective approaches to scenario building in order to face the high level of uncertainty. In addition, prospective studies are scarce, mainly for tourism demand planning.

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