Toward an accurate assessment of tourism economic impact: A systematic literature review

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ABSTRACT

Tourism is acknowledged as a contributor to destination economies in many countries. However, COVID-19 has devastated the tourism industry in numerous national economies. Although the economic impact of tourism on destinations has been examined in a large body of tourism literature, most studies have utilized the tourism-led economic growth hypothesis and traditional methods and data rather than cutting-edge economic methods. This study conducts a systematic literature review on tourism economic impact between 1975 and 2020, analyzing the general bibliometrics and examining the key themes and methods of assessing tourism economic impact. It contributes to an accurate assessment of tourism economic impact, works to identify gaps in the literature, highlights emerging trends in the field, and proposes directions for future research.

1. Introduction

The tourism industry has experienced sustained growth since World War II, with exceptions such as the 2008–2009 Global Financial Crisis. In 2019, the global number of international visitor arrivals reached 1.481 million, generating US$1.461 billion in tourism receipts (World Tourism Organization [UNWTO], 2020). Over the last few decades, destinations with extensive tourism resources have benefitted from the continuous expansion of the tourism industry. The growth of tourism demand can lead to cash inflows to local and national economies and generate increased tax revenue and employment opportunities in tourist destinations. The expansion of inbound tourism can stimulate foreign currency inflows and exports of tourism products, which in turn may boost the growth of a country's gross domestic production (GDP; Belloumi, 2010). The importance of tourism economic impact to destination economies has been amplified by the COVID-19 pandemic, which led to a year-on-year drop of 74% in international visitor arrivals and a loss of US$1.300 billion in tourism receipts in 2020 (UNWTO, 2021), contributing to a 4% decline in global GDP in 2020 (World Bank, 2021). The international tourism market has gradually begun to recover following global vaccination campaigns (Liu, Vici, Ramos, Giannoni, & Blake, 2021; Qiu, Liu, Stienmetz, & Yu, 2021). As the tourism industry and global economy rebound from the pandemic, an investigation of the economic impact of tourism development is particularly timely and relevant from both a theoretical and practical perspective.

Three concepts—economic growth, economic development, and economic impact—are frequently utilized to measure the economic output of tourism development (Comerio and Strozzi, 2019). Economic growth refers to long-run growth in national outputs caused by increases in capital and productivity (Lucas, 1988; Song and Wu, 2022). Economic development is a wider concept that encompasses the economic, social, and environmental aspects of a population's life satisfaction and well-being (Van den Berg, 2016, p. 28). Both economic growth and development measure the output of tourism development from the macro perspective, whereas economic impact is used to describe the influence of tourism development on regional and national economies, industries, and individuals in terms of both quantity (i.e., economic growth) and quality (i.e., economic development). Thus, the concept of tourism economic impact is adopted in this study to describe the overall economic consequences of tourism development.

Tourism economic impact on destinations has long been a topic of research in the tourism literature. The pioneering work on this subject was published in the 1970s by Sadler and Archer (1975), who explicitly described the direct economic impact of tourism on the local economy from income and employment perspectives in developing countries. Subsequent studies were based on national accounting and adopted the input-output (IO) model (Krishnaswamy, 1979) or social account matrix (SAM) model (Wagner, 1997) to investigate the direct, indirect, and

induced tourism economic impact. The computable general equilibrium (CGE) model was introduced into the tourism literature by Zhou, Yanagida, Chakravorty, and Leung (1997), who developed a systematic model with a variety of agents, including consumers and firms in various sectors, in an artificial economy. The model was calibrated with the IO table or SAM and used to simulate the tourism economic impact on the overall economy and its spillover effects across different sectors. As the tourism sector is not included in traditional national accounts, Nordström (1996) disaggregated the tourism components from different sectors and re-aggregated them as the tourism sector, which became a satellite account of national accounts called the tourism satellite account (TSA). The TSA has been used to measure the direct impact of tourism in mainland China (Frechtling, 2010) and to replace the IO table and SAM for model calibration in CGE studies (Cooper and Wilson, 2002). Another group of researchers investigated the long-run economic impact of tourism. Balaguer and Cantavella-Jordà (2002) proposed the tourism-led economic growth (TLEG) hypothesis. Using Spain as their case study, they identified a long-run relationship between tourism development and economic growth. Intensive research examining this hypothesis with different methods and data from various destinations and time periods has subsequently been produced (Pablo-Romero and Molina, 2013).

As the global tourism market recovers from the COVID-19 pandemic (Liu, Vici, et al., 2021), it is relevant to extend the understanding of the tourism–economic impact nexus by examining how tourism affects economic recovery. This will assist key stakeholders and decision makers in tourist destinations in planning and allocating resources to stimulate and accelerate recovery from the pandemic. It is therefore necessary to review the literature on tourism economic impact and how it has been assessed to highlight emerging trends and directions for future research in the post-COVID-19 era.

To address these research gaps, this study conducts a systematic literature review on tourism economic impact and the methods that have been applied to gain accurate assessments of this impact (i.e., the relationship between tourism and economic development or economic impact). Brida and Pulina (2010) developed the first review of tourism economic impact. Utilizing the TLEG hypothesis, they revealed that studies have demonstrated positive tourism economic impacts, indicating that tourism drives economic development. Pablo-Romero and Molina (2013) categorized tourism economic impact studies by data type—time-series, panel, or cross-sectional—and concluded that a positive tourism economic impact is not universally robust and depends on the destination selected and the type of empirical model adopted. Nunkoo, Seetanah, Jaffur, Moraghen, and Sannassee (2020) reinforced Pablo-Romero and Molina's (2013) conclusions through their study, in which they applied a meta-regression analysis to 113 studies of tourism economic impact. Comerio and Strozzi (2019) analyzed the networks of published tourism impact studies using bibliometric analysis, examining the evolution of research trends and interests from pure economic growth and sustainable development perspectives. Tourism economic impact has also been reviewed as a sub-theme in studies such as Song, Dwyer, Li, and Cao (2012), who focused on general tourism economics. All of these studies, however, have either utilized qualitative or quantitative methods when summarizing the literature from a methodological perspective, meaning that an overall picture of the nexus between tourism and its economic impact using different methods has been overlooked in the literature.

The remainder of this paper is organized as follows. Section 2 introduces the research design and outlines the systematic selection of sample studies. Section 3 presents key findings of the study, including descriptive statistics, methods and topics in selected papers, and an examination of the linkages among these papers with network analysis. Section 4 concludes the study and highlights possible directions for future research on tourism economic impact.

2. Research design

Using the Web of Science and Scopus databases, a systematic literature review and bibliometric analysis of academic articles on economic tourism impact published from 1975 to 2020 were conducted. Compared to a single systematic review or bibliometric analysis, the usage of both thematic analysis and bibliometric analysis combines qualitative and quantitative methods and can assist in identifying patterns, emerging trends, and future directions for research (Hu, Li, Liu, & Chen, 2022; Kim, Liu, & Williams, 2021).

2.1. Article selection

Data were retrieved from the Web of Science and Scopus databases, which were the most representative and comprehensive social science databases (Vieira and Gomes, 2009) as of September 2021. The relevant literature was identified through the following criteria. Only full-length research articles written in English were included, which excluded works such as book chapters and conference papers. The keywords "Tourism," "Economic impact," "Economic development," "Economic growth," and "GDP" were used to identify appropriate studies and build the sample. A Naïve Boolean search with the terms "Tourism AND Economic impact OR Economic development OR Economic growth OR GDP" was run in each of the databases. The enquiry terms were selected based on previous literature reviews on tourism and economic impact (Comerio and Strozzi, 2019), ensuring a comprehensive and representative sample. The searches were not limited to tourism and hospitality journals and included all relevant published academic articles. After searches for titles, keywords, and abstracts, 10,823 and 14,510 articles were collected from the Web of Science and Scopus databases, respectively. Although all of the journals in the databases were peer-reviewed, the quality of journals was diverse. To ensure the quality of the selected articles, only journal included in The Chartered Association of Business Schools (ABS) and Social Science Citation Index (SSCI) were selected, resulting in a sample containing 1993 articles from the Web of Science database and 4806 articles from the Scopus database. After removing duplicated articles, 5623 articles remained. The titles and abstracts of the articles were then manually reviewed, and 516 articles were retained as the primary eligible sample. The research team read the full texts of these 516 articles and filtered out a further 96 articles whose content was not relevant to the topic. The results were cross-checked to avoid personal selection bias, leaving 420 eligible articles in the final sample. An outline of the literature search and selection process is presented in Fig. 1.

2.2. Data analysis

The R package *bibiometrix* was used to conduct the bibliometric analysis (Aria and Cuccurullo, 2017). Descriptive statistics for the authors, publication journals, and citations of the articles in the sample were generated and core sources and authors were identified using Bradford's law. Bradford's law presents how authors or publication sources in a research field are scattered and categorizes them into high, moderate, and low productivity zones (Mayr, 2013).

Co-citation network analysis was used to analyze the knowledge structure of the tourism impact literature and identify key research themes, which are critical to identifying patterns in the data and research opportunities for future studies (Kim, Liu, & Williams, 2021). If two articles were cited by one article, it was defined as a co-citation in the co-citation analysis. In the co-citation network, a node represents a cited paper and the edge between nodes represents the intensity of the co-citation between the two references. The network analysis was also conducted on the co-occurrences of authors' keywords. Keywords were categorized into different themes through cluster analysis and the identified themes were then investigated to generate future research directions regarding economic tourism impact, contributing to the
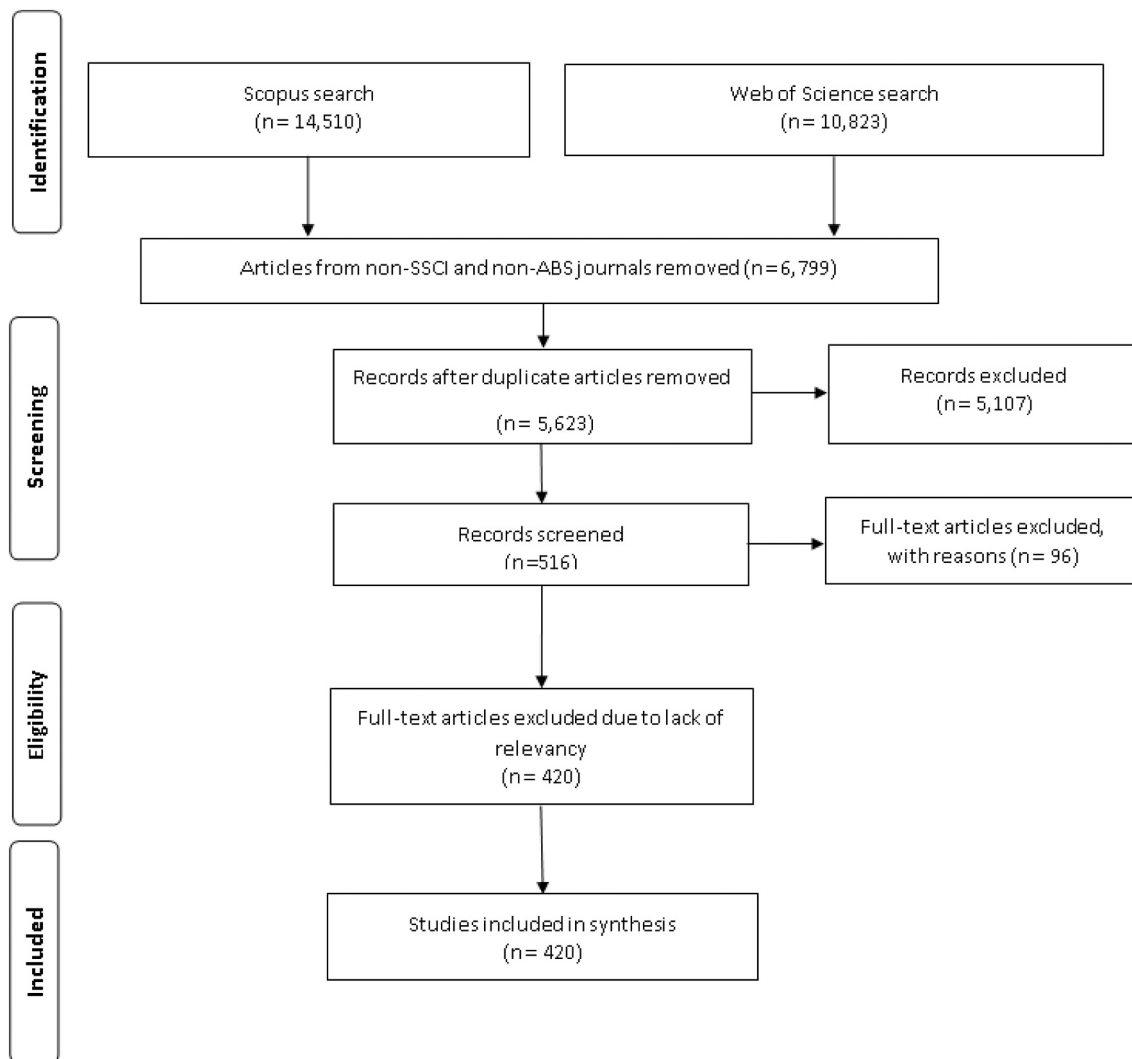
Fig. 1. Literature search and selection process.

literature on tourism development and economic impact.

3. Findings

3.1. Descriptive statistics

Table 1 presents a summary of selected tourism economic impact studies. The pioneering study in this field was published by Sadler and Archer in *Annals of Tourism Research* in 1975, with a further 420 full-length articles published on this subject between 1975 and 2020. On average, fewer than 12 articles were published each year in 20 SSCI or ABS journals, indicating that the research topic has remained a niche area in the tourism and hospitality field. In total, 12,180 references were cited in the 420 articles, suggesting that each article has on average 30 references. In addition, each paper was cited an average of 44 times total and 3.8 times per year. These studies had a total of 783 authors, and 77 authors contributed to 86 single-authored papers. The remaining 333 papers were multi-authored studies. On average, there were 1.87 authors per paper and 2.4 authors per multi-authored paper.

Fig. 2 illustrates the trend in the number of publications and average article citations per year. As the timespan ends in 2020, the number of times papers published in 2020 have been cited is not presented in Fig. 2. The number of annual publications on tourism economic impact has seen continuous growth, with an average annual growth rate of 8.06%. The number of average article citations per year has also maintained a

Table 1
Descriptive statistics for the literature on tourism impact.

Description	Results
Timespan	1975:2020
Sources (Journals)	20
Documents (Articles)	420
Authors' Keywords	998
Average citations per document	44.01
Average citations per year per document	3.8
References	12,118
AUTHORS	
Authors	783
Authors of single-authored documents	77
Authors of multi-authored documents	706
AUTHORS COLLABORATION	
Single-authored documents	86
Documents per author	0.54
Authors per document	1.87
Co-authors per document	2.40

growth trend, reaching a peak at 194 citations in 2004 and then decreasing from 2005 onward. It can be argued that the rising number of publications and citations between 1975 and 1987 were closely aligned,
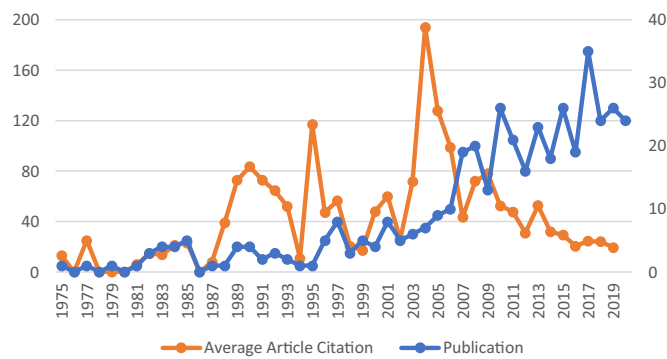
Fig. 2. Average number of publications and average number of article citations per year.

indicating that earlier works on tourism economic impact were not highly cited. One possible reason for this trend could be that these were pioneering studies and the subject was still being explored through methodologies that had not yet been rigorously tested.

In contrast, the variation in average article citations between 1998 and 2006 was much greater than the number of publications. A few milestone studies were published during this time period, which were highly cited by later studies. For example, the top five most-cited articles in the selected timespan all focused on examining the TLEG hypothesis (see Table 2). After the hypothesis was proposed in 2002 by Balaguer and Cantavella-Jordà, Dritsakis (2004), Oh (2005), and Kim and Chen (2006) tested the hypothesis by using Greece, Chinese Taipei, and Korea as case studies, respectively. The three studies were ranked third, first, and fourth, respectively, in terms of average number of citations per year. In addition, Fletcher (1989), the most cited article on the utilization of the IO model, summarized the applications of the IO model in previous tourism studies and standardized the application the model for investigating tourism economic impact. Dwyer, Forsyth, and Spurr (2005) compared the estimation results of the IO and CGE models, confirming the superiority of the CGE model.

From 2007 onward, the number of publications continued to grow, while the number of citations began to decline. Three of the top 10 most-cited articles in the field were published after 2007 (see Table 2). Lee and Chang (2008) expanded the examination of the TLEG hypothesis using panel instead of time series data; Katircioglu (2009) compared different cointegration methods when investigating the TLEG hypothesis; and Lee and Brahmasrene (2013) examined the relationship between economic growth and CO_2 emissions regarding tourism impact. These studies either complemented established and matured methodologies or included the application of new data or content. In addition to incremental knowledge generated by replica studies, another possible reason for the drop in citations is that there is generally a delay between when articles are published and when they are cited. Recent publications may therefore be less cited than older publications.

Table 3 presents the top 10 journals in which articles focusing on tourism economic impact were cited in terms of number of citations. *Tourism Management, Tourism Economics, Annals of Tourism Research*, and *Journal of Travel Research* are the four journals with over 1000 citations. *Tourism Management* has published 60 articles on tourism economic impact since 1982, with a total of 5493 citations. Although the first tourism economic impact study was published in *Tourism Economics* in 1996, 14 years later than in *Tourism Management*, the 148 studies published in this journal have amassed 4417 citations. The H-index of both journals is 35, indicating that there are 35 articles that have been published by each journal that have been cited more than 35 times. *Tourism Management* is more impactful in terms of number of citations, whereas *Tourism Economics* has a stronger impact in terms of the number of publications. However, according to the SCImago Journal Ranking (SJR), the average H-indices of *Tourism Management* and *Tourism*

Table 2
Top 10 most-cited articles.

Author(s)	Year	Title	Source	Total citations
Oh, C.	2005	The Contribution of Tourism Development to Economic Growth in the Korean Economy	Tourism Management	511
Lee, C.C. & Chang, C.P.	2008	Tourism Development and Economic Growth: A Closer Look at Panels	Tourism Management	476
Dritsakis, N.	2009	Tourism as a Long-run Economic Growth Factor: An Empirical Investigation for Greece Using Causality Analysis	Tourism Economics	440
Kim, H.J., Chen, M.H. & Jang, S.S.	2009	Tourism Expansion and Economic Development the Case of Taiwan	Tourism Management	425
Katircioglu, S.T.	2017	Revisiting the Tourism-led-growth Hypothesis for Turkey Using the Bounds Test and Johansen Approach for Cointegration	Tourism Management	347
Durbarry, R.	2009	Tourism and Economic Growth the Case of Mauritius	Tourism Economics	323
Dwyer, L., Forsyth, P. & Spurr, R.	2010	Evaluating Tourism Economic Effects New and Old Approaches	Tourism Management	318
Lee, J.W. & Brahmasrene, T.	2017	Investigating the Influence of Tourism on Economic Growth and Carbon Emissions: Evidence from Panel Analysis of the European Union	Tourism Management	272
Lee, C.K. & Taylor, T.	2010	Critical Reflections on the Economic Impact Assessment of a Megaevent: the Case of 2002 FIFA World Cup	Tourism Management	270
Fletcher, J.E.	1989	Input-output Analysis and Tourism Impact Studies	Annals of Tourism Research	231

Economics are 199 and 58, respectively, suggesting that tourism economic impact studies are less impactful than average. Table 2 confirms this finding, as 7 of the top 10 most-cited articles were published in *Tourism Management,* compared to 2 in *Tourism Economics*.

Bradford's law considers both publication and citation numbers (Mayr, 2013), and *Tourism Economics* was therefore categorized into Zone 1, indicating that the journal has created the strongest impact in the research field. *Annals of Tourism Research* and *Journal of Travel Research* have published 53 and 48 articles, respectively, which have been cited 3135 and 2632 times with H-indices of 31 and 27, respectively. Both journals were categorized with *Tourism Management* into Zone 2, and the remaining six journals were categorized into Zone 3, indicating that they are less impactful than the top four journals. It should also be noted that *Journal of Sustainable Tourism* has published 11 tourism economic impact articles that have generated 510 citations since 2006. This indicates the increasing popularity of sustainability as a topic in tourism economic impact studies. There are only two hospitality journals on the list, *Cornell Hospitality Quarterly* (two publications) and *International Journal of Hospitality Management* (3 publications), revealing that tourism economic impact research in the hospitality context remains a niche research area.

Fig. 3 illustrates the top 15 most frequently used keywords in the selected articles. Following an initial examination of the selected

Table 3

Top 10 journals ranked by total citations.

Source	Total citations	H-index	Number of publications	Year of establishment	Bradford's law
Tourism Management	5493	35	60	1982	Zone 2
Tourism Economics	4417	35	148	1996	Zone 1
Annals of Tourism Research	3135	31	53	1975	Zone 2
Journal of Travel Research	2632	27	48	1977	Zone 2
Current Issues in Tourism	840	16	27	2000	Zone 3
International Journal of Tourism Research	805	16	23	2008	Zone 3
Journal of Sustainable Tourism	510	9	11	2006	Zone 3
Tourism Analysis	204	10	23	2001	Zone 3
Cornell Hospitality Quarterly	70	2	2	2011	Zone 3
International Journal of Hospitality Management	61	2	3	1982	Zone 3

Fig. 3. Most frequently used keywords.

studies, "economic impact" and "economic growth" were adopted as keywords, as they were mentioned 116 and 105 times, respectively. The term "tourism" was the third most frequently cited term, with 57 mentions. "Tourism development" and "economic development" were also frequently used keywords, although less common than "economic impact" and "economic growth". "GDP" appears in the figure, as GDP, including real GDP, is a widely used proxy to measure tourism economic impact, particularly when testing the TLEG hypothesis (Nunkoo et al., 2020). Dwyer is the most productive producer of research on tourism economic impact, contributing to 19 articles, followed by Forsyth and Spurr with 15 articles each. Most of their collaborative studies, such as Dwyer et al. (2005) and Dwyer, Forsyth, Spurr, and Hoque (2010), focused on Australia as their empirical case study, which made "Australia" one of the 15 most-cited keywords.

Terms associated with research methods also appear in Fig. 3. The most used methodological term included in the keywords was "Granger causality," a statistical test used to examine whether one time series can be utilized to forecast another (Granger, 1969). Granger causality is usually combined with cointegration tests to examine the TLEG hypothesis with different data types, such as panel data. If the Granger causality is significant, it does not necessarily mean that there is a causal relationship between the explanatory and dependent variables. In other words, although most empirical studies find a significant Granger causality between tourism development and economic growth (Fonseca & Sánchez Rivero, 2020), this only suggests that economic growth can be predicted by tourism development. Song and Wu (2022) suggested that more research is needed to determine whether there is a causal relationship between tourism and economic growth and, if so, to identify the transmission mechanism (Liu, Song, & Blake, 2018; Liu and Wu, 2019).

Multipliers are used in the IO model to simulate the economic impact of tourism. The CGE model and TSA were also identified as common methods used to assess the economic impact of tourism. However, econometric and IO models were the most frequently used research methods in tourism impact studies, accounting for 35% and 30% in all adoptions, respectively (see Fig. 4). Econometric models were
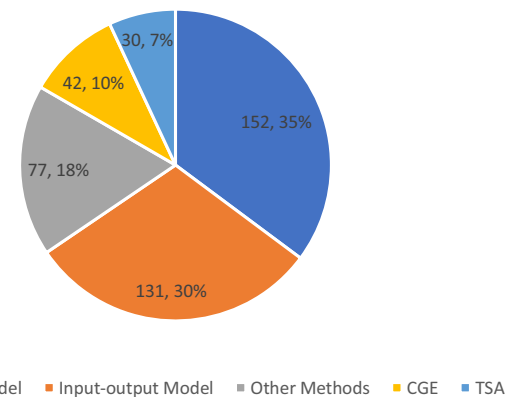

Fig. 4. Summary of adopted methods.

specifically used in examinations of the TLEG hypothesis.

3.2. Network and thematic analysis

Network analysis was used to identify the knowledge structure of tourism economic impact studies. Examination of the co-occurrence of keywords identified "economic growth" and "economic impact" as two key themes in the selected literature (see Fig. 5). Node size in Fig. 5 represents the frequency of the word, and edge width indicates the closeness of the link between the words. The co-citation network of key authors in this field echoes the identified clusters of keywords. The nodes in Figs. 5 and 6 can be split into two themes. The first theme (nodes in red) represents the impact of tourism on economic growth (Fig. 5), with Jacint Balaguer (Fig. 6) as the representative author. Balaguer proposed the TLEG hypothesis in Balaguer and Cantavella-Jordà (2002). The second theme (nodes in blue) is represented by Larry Dwyer and Brian Archer, who published several studies on tourism
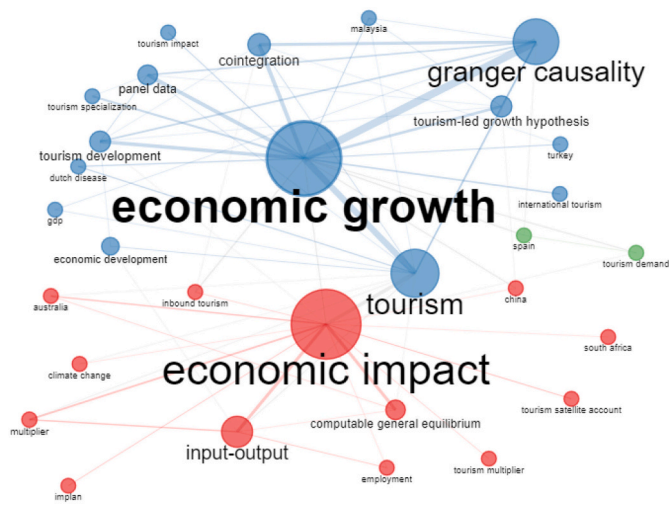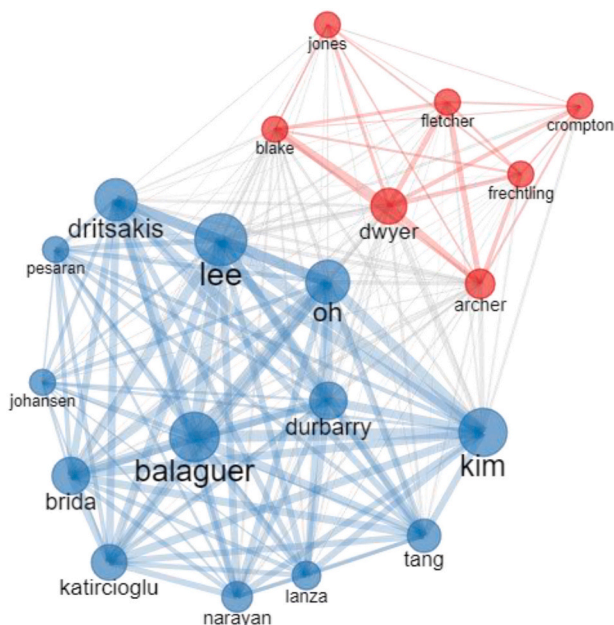
Fig. 5. Co-occurrence network.

Fig. 6. Co-citation network.

economic impact using IO or CGE models.

3.3. Theme 1: tourism development and economic growth

The first theme – the impact of tourism on economic growth – is grounded in the TLEG hypothesis. A significant relationship between tourism and economic growth is more often obtained when the sample size is large, such as in Lee and Chang (2008), who used panel data. However, when the sample is relatively small, studies have obtained opposing findings, even when using data from the same destination (e. g., Gunduz and Hatemi-J, 2005; Katircioglu, 2009). Times series and panel data were the most frequently used types of data in studies investigating tourism development and economic growth, with 80 and 72 out of the 420 selected studies utilizing each type of data, respectively.

Numerous studies have been devoted to examining the TLEG hypothesis proposed by Balaguer and Cantavella-Jordà (2002), which suggests a long-run relationship between tourism (measured by earnings or arrivals) and economic growth. Durbarry (2004) built on Durbarry

(2002), who included a descriptive analysis of the relationship between tourism and economic growth in Mauritius, to examine the TLEG hypothesis in the Mauritian context. Although Durbarry (2002, 2004) obtained similar results to Balaguer and Cantavella-Jordà (2002), his model setting lacked theoretical support, as he set tourism receipts as a factor input in the production function, despite tourism receipts generally being viewed as an output (Song and Wu, 2022). Dritsakis (2004) conducted a follow-up study and developed a vector autoregression (VAR) model using Greece as a case study. He found a long-run relationship between tourism receipts and economic growth, with the former constituting the Granger cause of the latter. Belloumi (2010) echoed the findings of the above studies in a study on Tunisia. In contrast, Oh (2005) did not identify a long-run relationship between the two variables in the Korean context and only found a Granger causality between economic growth and an increase in tourism receipts.

To enhance the robustness of the Granger causality test, Gunduz and Hatemi-J (2005) first estimated a TLEG-based equation and bootstrapped the residuals 100,000 times. Residuals were added to fitted dependent variable values to generate a simulated time series. The Granger causality tests were conducted on the 100,000 bootstrapped time series, and the results supported a Granger causality between visitor arrivals and economic growth in Turkey. However, when the bootstrap method was not used, Katircioglu's (2009) findings did not support the TLEG hypothesis when using data on Turkey over different time periods after he changed the Johansen (1988) co-integration method to the bounds test (Pesaran, Shin, & Smith, 2001). Although the bootstrapping method can improve a model's explanatory power, the robustness of the Granger causality test for tourism and economic growth is not fixed, as the Dutch-disease effect of tourism development has been observed to occur in the real world (Copeland, 1991; Sinclair, 1998).

Another group of scholars attempted to enhance the robustness of the Granger causality test by increasing sample sizes. Lee and Chang (2008) used the data from 1990 to 2002 from 23 OECD and 32 non-OECD countries to examine the relationship between tourism development and economic growth. After controlling for the heterogeneity among countries, they found a positive Granger causality between tourism receipts per capita or international visitor arrivals per capita and real GDP per capita. This relationship was stronger for the non-OECD countries than for the OECD countries. Seetanah (2011) used a generalized method of moments (GMM) strategy to estimate the tourism economic impact on 19 island destination economies; the findings of this study echoed those of Lee and Chang (2008). After comparison, Seetanah (2011) further found that the tourism impact on island economies was more significant than on developing and developed non-island economies. Island destinations tend to have simple economic structures that rely more on the tourism industry, and thus the tourism economic impact tends to be stronger. Lee and Brahmasrene (2013) used panel data in their impact assessment of European Union countries, with a notable extension to analyze sustainability in addition to economic impact. They identified a positive long-run effect of tourism and energy consumption on economic growth and a negative effect of tourism on energy consumption. The tourism industry has therefore been argued to be an environmentally friendly industry in the economic development in Europe, compared to the energy industry. Roudi, Arasli, and Akadiri (2019) conducted a panel Granger causality test on island destinations, and their findings also support a long-run relationship between tourism, energy consumption, and economic growth.

Some researchers have attempted to utilize cross-sectional data to investigate tourism economic impact. For example, Brau, Lanza, and Pigliaru (2007) used time-averaged data from 143 countries between 1980 and 2003 to examine the relationship between tourism development and economic growth. They compared results among subgroups, including OECD countries, tourism specialized and non-specialized countries, and small countries. They confirmed that only small economies that specialize in tourism enjoy a faster economic growth rate than

other countries, which supports the findings of Lee and Chang (2008) and Roudi et al. (2019). However, because cross-sectional data do not include a time series dimension, the model may suffer from an endogeneity problem caused by auto regressors and lag effects. Although instrumental variables can be used to circumvent endogeneity issues, they cannot ensure that endogeneity issues are eliminated. If an instrumental variable is not appropriate, it may create spurious regressions (Ericsson, Irons, & Tryon, 2001). Thus, cross-sectional data are not as common as time-series and panel data in tourism economic impact studies. Intuitively, it is more practical to examine the TLEG hypothesis by using data with a time series dimension.

In addition, it is important to disclose why and when the TLEG hypothesis cannot hold. The main reason for the failure of the TLEG hypothesis in some examples is the weak theoretical foundation of the hypothesis. From an economic perspective, it should not be called "tourism-led economic growth." Although there are different growth theories, including exogenous growth theory, endogenous growth theory, and new growth theory, all these theories assume that economic growth is only determined by factor inputs such as capital and productivity. Tourism (regardless of whether it is measured by arrivals or revenue/receipts) is a demand variable, not a factor input nor productivity, and should not be included in the production function. Economic growth may be related to tourism development, but tourism development should not be defined as a driver of economic growth until it is proven that tourism can lead to an increase in total factor productivity (Song and Wu, 2022).

The sign of the correlation between tourism and economic growth depends on the structure of the economy. Tourism is normally linked to several sectors, such as transportation, hospitality, and retail. In an island economy, all of these sectors are highly involved in the tourism industry, meaning that tourism generates a more significant economic impact on island destination economies than non-island economies (Durbarry, 2004; Seetanah, 2011). However, if tourism only constitutes a small proportion of the national economy in terms of its contribution to GDP, too much focus on tourism growth may limit the development of other industries, such as finance and technology, hindering overall economic growth. This is the so-called de-industrialization effect, or Dutch Disease, first explained in the tourism context by Copeland (1991) using a general equilibrium model. When the general equilibrium model is used to examine the impact of tourism, it is assumed that there are at least two industries in the economy. When at least two sectors are involved, interactions between industries regarding resources and outputs can be measured. Those spillover effects are essential to empirically explain the de-industrialization process with a production function in a partial equilibrium setting. For island economies, it can be assumed that tourism is the only (or dominant) industry in the economy.

3.4. Theme 2: tourism development and economic impact

The second theme focuses on the assessment of the effect of tourism development on economic impact, which is carried out through the IO, CGE, and TSA models. The IO model is the most-used method and is used to assess the impact of tourism on national and regional economies (e.g., Fletcher, 1989; West, 1993) and specific sectors (e.g., Crompton, Lee, & Shuster, 2001; Tafel and Szolnoki, 2020). This contrasts with the first theme, which only covers the former aspect when discussing economic growth. All three models are based on general equilibrium theory, allowing the spillover effect between tourism and other industries to be captured. Multipliers are also used in all three methods to estimate direct, indirect, and induced tourism economic impacts (e.g., Khan, Seng, & Cheong, 1990) and linkage analysis (e.g., Arslanturk, Balcilar, & Ozdemir, 2011) along the supply chains.

Based on the methodology introduced by Miller and Blair (2009), Archer (1995, 1996) pioneered the adoption of the IO table to assess tourism economic impact. Fletcher (1989) and Briassoulis (1991) also made early attempts to comprehensively introduce the IO model

methodology into the tourism literature. The IO model was developed based on the IO tables used in national accounting and industries linked to tourism, such as accommodation, restaurants, and aviation, which were aggregated to represent the tourism industry. Multipliers, linkages, and leakages can be calculated using this method (Li, Liu, & Song, 2019). The IO model is the most common method used to assess tourism economic impact in this study's sample, with 131 out of 420 studies adopting this method. Eighty-four out of these 131 studies focused on the overall macroeconomic impact of tourism, and 47 of the 131 focused on the impact of mega events. Over the past 10 years, the adoption of the IO model has also been extended to examine whether tourism development can decrease regional inequality (Haddad, Porsse, & Rabahy, 2013) and to assess environmental impact (Pintassilgo, Rosselló, Santana-Gallego, & Valle, 2016).

Another body of research has estimated visitors' total expenditure on a variety of items purchased during a specific event as the direct economic impact and used multipliers in IO tables to estimate the indirect and induced effects of the event. In a pioneering study, Gartner and Holecek (1983) collected data from a boat and fishing show in the United States and estimated the direct and total economic impact of this event. Chhabra, Sills, and Cubbage (2003) applied a survey-based IO model to assess and compare the economic impact of winter events in Scotland and North Carolina, Nichols, Giacopassi, and Stitt (2002) utilized customer survey data to estimate the economic impact of the casino sector using the IO model, and Schwer, Gazel, and Daneshvary (2000) used the same method to assess the economic impact of the aviation sector.

Johnson and Moore (1993) also identified the limitations of the IO model, including the linearity of the production functions and the lack of mechanisms available to include price in the analysis. Zhou et al. (1997) introduced the CGE model into the tourism literature, and, after comparing the results generated by the CGE model and IO table using data from Hawaii, they revealed that the CGE model better captures inter-sectoral flows and can therefore estimate the tourism economic impact more accurately than the IO table. The CGE model calibrated by the IO table and simulations can also be used to capture changes in economic outputs, welfare, and prices generated by an exogenous change, such as in international tourism demand or policy interventions, with production functions and consumer preferences held constant (Blake, 2000). Dwyer, Forsyth, Madden, and Spurr (2000) reviewed applications of the CGE model in assessing tourism economic impact in national and regional contexts and summarized the key assumptions and conditions for the use of the model in the context of international tourism. Dwyer et al. (2005) comprehensively compared the IO and CGE models and confirmed the superiority of the latter. After the publication of their study, CGE became the dominant analytic tool used to assess the economic impact of the tourism industry. For example, Blake, Arbache, Sinclair, and Teles (2008) found that tourism development contributes to both economic growth and poverty relief. Pratt (2015) examined the impact of tourism development on the economic growth of small and island destinations, and Li et al. (2019) evaluated the impact of tourism on economic reform in China. From a methodological perspective, Blake (2009) extended the CGE model from a static to a dynamic model and included the capital accumulation process in the production function, which brought the model closer to reality.

Some scholars have used CGE models to investigate the impact of tourism characteristic industries on the economy after an exogenous shock. For instance, Blake, Sinclair, and Sugiyarto (2003) revealed that the foot and mouth disease outbreak in the United Kingdom in 2002 decreased tourist expenditures, which impacted economic growth. Dwyer, Forsyth, and Spurr (2006) explored the possibility of applying CGE models to evaluate the economic impact of events. Li, Blake, and Cooper (2011) examined the economic impact of the Beijing 2008 Olympics using a CGE model. Pratt (2013) and Wickramasinghe and Naranpanawa (2021) conducted review studies of CGE models. They revealed that one third of CGE applications in tourism economics

focused on the assessment of economic impact, covering topics such as overall impact and Dutch disease effects. Less light has been shed, however, on the employment market, a critical component of economic impact.

One limitation of the IO and CGE models is their aggregation of a few classic tourism-affiliated industries, such as accommodation and restaurants, to represent the tourism industry. However, tourism outputs in non-tourism-affiliated industries were overlooked (e.g., consumption by tourists in local retail industries). The direct impact of the tourism industry has therefore been underestimated. In response, Frechtling (1999, 2010) introduced the TSA framework into the tourism literature, which split the outputs of each industry into tourism and non-tourism outputs based on expenditure data, then aggregated all tourism outputs, including all tourism-affiliated industries, as the output of the overall tourism industry. Compared to the representative sectors used in previous CGE models, the TSA is much more accurate in measuring and assessing the direct impact of the tourism industry (Song et al., 2012). The TSA framework has been applied in different contexts, such as Sweden (Nordström, 1996) and Tanzania (Sharma & Olsen, 2005). Jones and Munday (2007) further extended the TSA framework to investigate the environmental impact of tourism activities, and Wu, Liu, Song, Liu, and Fu (2019) developed a web-based system to automate the calculation of the TSA using China's Guangdong Province as the case study. One disadvantage of the TSA framework is that it is also based on the IO table and suffers similar limitations. In addition, the TSA framework can only measure the direct impact of tourism, and indirect and induced impacts need to be extracted with multipliers from IO models.

Overall, the IO model is the first-generation model used to assess the economic impact of tourism or tourism-affiliated industries. The CGE model is the second-generation model, and can conduct simulations in addition to multiplier analysis. The TSA represents a more comprehensive framework and one that can accurately measure the direct economic impact of tourism-affiliated industries, making this framework more appropriate for integration with the CGE model for model calibration. Therefore, the CGE model remains the dominant analytic tool for tourism impact analysis in the literature. It is utilized to capture the spillover effects of industries in the model, but the assumptions contained in the model, such as fixed input factor ratios, limit the prediction power of the model for post-crisis behaviors (Lucas, 1988). Future research should explore flexible model settings with rational expectations that align with modern economic growth theories to promote the development of IO and CGE models.

4. Conclusion: emerging trends and future research

In this study, 420 articles on the assessment of tourism economic impact were reviewed. Facilitated by network analysis, two themes were identified in the current literature: 1) tourism development and economic growth and 2) tourism development and economic impact. The first theme is based on the TLEG hypothesis, which has been examined in numerous studies using time series, panel, and cross-sectional data for different time periods and destinations. Although most empirical studies have supported the TLEG hypothesis, most of them lack solid theoretical foundations (Song and Wu, 2022). The second theme is centered on the CGE model with the IO table as the base for calibration and simulation analysis when analyzing the relationship between tourism development and economic impact. In the CGE modeling process, the TSA framework is normally used for data calibration. The model is grounded in general equilibrium theory, although some assumptions are too strong to represent a real economy.

Three future research directions are identified based on the above findings. First, the application of the dynamic stochastic general equilibrium (DSGE) model is an emerging trend in the tourism economic impact literature. Liu et al. (2018) introduced the DSGE model into the tourism literature and identified the mechanism linking tourism demand

expansion to economic growth. The DSGE model is a macroeconomic equation system with a microeconomic foundation to maximize residents' utility and firms' profits. It can also incorporate multiple industries, governments, and heterogeneous agents. Compared to the models discussed in the context of the aforementioned two themes, the DSGE model can identify a causal relationship between tourism development and economic growth and present the mechanism for this relationship. Liu and Wu (2019) further endogenized productivity based on the model of Liu et al. (2018), and they found that tourism assisted Spain's economic recovery from the 2008–2009 Global Financial Crisis. Zhang and Yang (2019) applied the DSGE model to examine the Dutch disease effect on Thailand's economy, and Yang, Zhang, and Chen (2020) investigated the impact of COVID-19 on the tourism industry and its corresponding influence on a hypothetical economy. Alaminos, León-Gómez, and Sánchez-Serrano (2020) developed a DSGE-VAR model, a VAR model based on the theoretical framework of a DSGE model, to examine the impact of tourism on sustainable economic growth. Given its solid theoretical foundation and its demonstration of the mechanism linking tourism development to economic growth, the DSGE model has become a prominent model in the tourism economic impact literature. However, due to the complicated theoretical model setting and estimation algorithm, fewer sectors are represented in DSGE models than in CGE models. DSGE models are therefore valuable in their ability to identify the impact mechanism linking tourism development and economic growth, not in their ability to identify spillover effects between sectors.

Second, causality inference should be paid more attention in the literature. One of the advantages of the DSGE model is its ability to identify a causal relationship between tourism development and economic growth, different from the long-run predictive relationship outlined in the TLEG hypothesis. In addition to the DSGE model, quasi-experimental designs are also effective in identifying causal relationships. Quasi-experimental design methods, such as difference-in-difference models (Yeon, Song, & Lee, 2020), regression discontinuity design (Liu, Kim, & O'Connell, 2021), propensity score matching (Yang, Tan, & Li, 2019), and propensity score weighting (Chen, Dai, Liu, Liu, & Jia, 2021; Kim and Liu, 2022), have already been adopted in the tourism literature. Faber and Gaubert (2019) used regression discontinuity design to investigate whether tourism can stimulate economic growth in Mexican coastal regions. More research utilizing causality inference methods is therefore recommended.

Third, the spillover effects of tourism across space and time also represent an important research direction due to the policy implications identified. The nature of tourism activity is based on visitor flows. As visitors move from one destination to another, economic impact should also spill over to neighboring destinations. According to the tenets of regional economics, there should also be spatial spillover effects on output and productivity among neighboring destinations or firm clusters (Kim, Williams, Park, & Chen, 2021). The spillover effects of tourism demand have been examined among attractions (Kim, Liu, Stienmetz, & Chen, 2022) and destinations (Jiao, Chen, & Li, 2021) in the tourism literature, but few tourism economic impact studies have addressed potential spatial spillover effects. Further research is recommended on the spatio-temporal impact of tourism to capture the short- and long-run relationship between tourism and economic growth and impact. These studies will also be valuable in informing both industry and policy decision makers in developing place-based growth strategies and determining how to leverage tourism impact among time periods and locations, with the aim of achieving economic convergence via tourism activities and development.

The most important limitation of this systematic review is the sample selection, which was limited to English academic papers published in ABS or SSCI journals. In future research, studies published in other journals and in books and conferences should be included to generate a more comprehensive literature review and to offer increased insight into the tourism economic impact literature.

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