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Determinants of Citations in Tourism and Hospitality Studies

Abstract

Citation metrics are frequently used to assess research and rank journals and researchers. Nevertheless, this is still a process with asymmetric information. Tourism research has matured within a small community and through a multidisciplinary scientific paradigm. This paper aims to understand the determinants of tourism research citation patterns. To this end, 101,968 papers within fifteen years (2004-2018) are analysed. Our empirical results suggest that authors' prestige, the multidisciplinary nature of research, and the impact factor of journals and bibliometric articles will likely increase an article's citations. This paper represents a step forward in understanding the citation formation process in tourism research.

Keywords: citation metrics, tourism research, citation impact, impact factor, interdisciplinary research

1. Introduction

Citation metrics have become the central domain of the academic world over the past decade. Despite debates and reactions against its current applications, the number of citations and publications is usually used as an indicator of the evolution of science and contributions to the body of knowledge. Institutions have used this for faculty promotions, allocation of research funds, and recognition of researchers' reputations (Clauset et al., 2017; Ioannidis et al., 2022). Although some institutions are abandoning rankings or signing the DORA agreement, measuring the scientific impact has been a relatively new field that calls for more research despite the increasing interest in citation dynamics.

Earlier studies have used various criteria for the ranking of authors and institutions (e.g., Davis & Papanek, 1984; Dusansky & Vernon, 1998; Park et al., 2011; Ryan, 2005; Sinha & Macri, 2002; Vlase & Lähdesmäki, 2023). Of these, the number of citations has become central to the agenda of the academic world across the globe (e.g., Ioannidis, 2022; Ioannidis et al., 2022). It has also been an essential issue for academic promotions in various countries. This is because quality matters more than quantity, meaning that citations are a potential indicator of the "value" of articles or books. There has been a debate that more publications may hardly mean more valuable outcomes. As a result, since early this century, online platforms have become more evident in keeping records of citations across authors, journals, and institutions. Among these are the *Web of Knowledge*, *Scopus*, and *Google Scholar*. Although each may differ in terms of the criterion used, their shared mission is to calculate how many times other authors cite each article or book in or out of the field of research.

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Tourism research has been assessed in several ways: through bibliometric studies by topics (Niñerola et al., 2019), from a longitudinal perspective (Strandberg et al., 2018), and from a critical perspective (Correia & Kozak, 2022). Other studies have analysed the rankings of journals (Hall, 2011), authors (Gursoy & Sandstrom, 2016; Ryan, 2005), and institutions (e.g., Park et al., 2011). From a global perspective, Ioannidis (2022) began listing the most prolific authors and institutions by considering the number of total citations on Google Scholar by each author and institution, regardless of the categorisation of fields. Furthermore, the former studies have also analysed collaborations in tourism research through network analysis to conclude that although collaborations are growing (e.g., Benckendorff & Zehrer, 2013; Hu, 2010), they are still limited, and tourism researchers still represent a small community (Tribe, 2006). This is highlighted as one of the reasons for the limited impact of tourism journals in the scientific community.

Crouch and Perdue (2015) offer an insightful reflection on the foundations of tourism research, complementing various approaches proposed by Leiper (1981) and Jafari and Ritchie (1981) to tourism research within a multidisciplinary perspective. Economics, sociology, psychology, geography, and anthropology are the most productive scientific areas contributing to the evolution of tourism research (Correia & Kozak, 2022; Kozak & Kozak, 2016). The evolution of citations presented by Crouch and Perdue (2015) suggests an impressive growth of tourism research within and outside the boundaries of tourism journals.

Fennell (2013) presented a critical reflection on the blind pursuit of excellence based on ranked journals; the author argues that keeping within the narrow walls of rankings does not open the horizons of tourism research and causes researchers to lose their way. Given that no consensus seems to have yet been reached – some researchers are defending the rankings, and others are entirely against them – this study aims to comprehensively analyse the determinants of citations. It looks to understand how the body of knowledge in tourism may increase the visibility and relevance of tourism research.

Available research predicts or models' citations use machine learning algorithms (Chen & Guestrin, 2016; Sandulescu & Chiru, 2016), predictive models (Yu et al., 2014; Bai et al., 2019), generative models (Newman, 2009) and neural networks (Ruan et al., 2020) to understand the dynamics of citations and citation patterns over the years. In tourism, research on citations typically attempts to analyse and describe the evolutionary pattern of citations (Crouch & Perdue, 2015) with descriptive indicators such as the mean, median, and growth rate.

This study aims to understand the factors affecting the citations of published papers in tourism research. To the authors' best knowledge, this is the first attempt in tourism to use econometric models to analyse the determinants of citations of published work. The main contributions of this paper are threefold: i) to provide a conceptual framework to understand how citations are formed and persist over time, and ii) to provide more information about the citation dynamics that may help researchers by shedding light on how to increase visibility and open horizons for new collaborations.

2. Literature review

Despite its long-standing history dating back to the early 1900s, the recognition of tourism as an academic field began in the 1960s as it spread into various continents as a teaching subject (Kozak & Kozak, 2016). Over the last five decades, tourism has gained its reputation as an academic field and has increased its research domain, particularly over the previous two decades (Correia & Kozak, 2022; Tribe, 2006). As a result, tourism has become a research field in addition to its practical and business-oriented domain (Xiao & Smith, 2006; Wen et al., 2022).

Tourism research has reached its current position by borrowing knowledge from other disciplines, such as geography, sociology, economics, business, environment, and psychology (Crouch & Perdue, 2015; Wardle

& Buckley, 2014). It also exports knowledge to other fields due to the growing expertise over the last decades (Correia & Kozak, 2022). The COVID-19 pandemic has opened multiple doors for tourism research to extensively emphasize its interdisciplinary structural characteristics, primarily from the perspective of, e.g., health, psychology, and sociology (Wen et al., 2022). Thus, tourism research plays a crucial role in social sciences, linking it to other significant fields such as health, pure sciences, arts, and humanities.

However, from the perspective of outputs, tourism research has been analysed from different perspectives, with citations being one of the least explored. Au et al. (2012) show that tourism publications are mostly cited in tourism journals, which is a critical way to gain visibility. Similarly, Hall (2010) stresses that tourism recreation research citations are mostly in tourism journals and that the oldest publications have the most citations. This research suggests that the better-known authors in the field, among those published in the journals analysed, have the most citations.

Howey et al. (1999) also show that tourism citations come from other disciplines, which suggests that tourism still imports knowledge from different scientific areas. Furthermore, these authors suggest that citations are mostly within disciplines rather than across disciplines. Jamal et al. (2008) pointed out the cues of impact factors in tourism, such as the multidisciplinary nature of tourism research and the impact of tourism papers in other fields. These cues may lead to understanding that impact factors and citations must help to overcome weaknesses. As such, articles should be judged based on their usefulness rather than the journal's prestige or the number of citations the article has received (Jones, 2002).

To continue the analysis across disciplines, Law et al. (2009) categorised the 100 most cited articles in tourism journals in thematic issues that often rely on more than one discipline, reasserting that tourism is a multidisciplinary field of research. Later, Cheng et al. (2011) identified that tourism journals are increasing within different disciplines, which means that tourism research is reaching maturity and consolidation, as visibility comes with time. Most of these works are descriptive or prescriptive and have a minimal empirical part. Therefore, this study is based on literature focusing on the determinants of citations in other disciplines to build knowledge in tourism research.

3. Conceptual model

The current body of literature has shown that research citations are explained by early citations, journal impact factor, authors' reputation, journal reputation, and topics covered in the article (Petersen et al., 2014; Sarıgöl et al., 2014). In other disciplines, the age of the publication is also a determinant of citations, usually since an article may have appeared around seminal research (Newman, 2009). Other authors relate citations to a life cycle, suggesting a growing period and then a gradual decline over time (Wang et al., 2013), mostly related to empirical studies.

More recently, social influencers have been added to explain citations (e.g., Xiao et al., 2018; Ravikumar et al., 2015), and it has been suggested that influential citers may shape the scientific impact of research in the long term. Furthermore, Halasm et al. (2008) analysed three journals and 308 papers over ten years to conclude that the first author's reputation, the journal's quality, the article's length, and the number and recency of the references are significant predictors of citations. Hence, grounded on this literature, citations may arise from several article attributes, the journal's attributes, the author's features, or even the recency of the publication.

3.1. Attributes of the article

The attributes of the article mostly used to explain citations are the length of the title (e.g., Haslam et al., 2008; Sohrabi & Iraj, 2017), the number and recency of the references (e.g., Haslam et al., 2008; Yu et al., 2014) and the past citations of the article (e.g., Livne et al., 2013; Ravikumar et al., 2015). These variables have been shown to have mixed effects in different scientific areas.

Due to the singularities of tourism research, we anticipate that the citation lag, that is, the time the article needs to get the first citation, may lead to more citations when it is shorter, and this can be seen as a proxy of cumulative knowledge creation (Della et al. et al., 2020). For analysis, the papers in our database were categorised into bibliometric, conceptual, and empirical research articles. Bibliometric and conceptual articles are assumed to accrue more citations (Gurzki & Woisetschläger, 2017) than empirical articles, even though most tourism articles are empirical (Correia & Kozak, 2022). Furthermore, since tourism is a multidisciplinary field of research (Leiper, 1981), we anticipate that the number of scientific areas the article comprises may also lead to more citations.

Hence, the attributes of the article we considered in our models as determinants of total and yearly based citations are:

- **Citation lag in years**: The number of years between the date of publication and the first citation of the article. This variable is categorised into one and two years or more.
- **Type of article**: Articles are categorised as conceptual, empirical, and bibliometric articles based on the keywords and abstracts in the database.
- **Number of authors per article**: This variable is categorised as one, two, three, four, and five or more authors.
- **Number of countries affiliations per article**: This variable is categorised as one, two, and three or more countries.
- **Number of scientific areas**: This variable is categorised based on keywords, scientific areas of the journal, and the abstract. The categories depicted were one scientific area, two scientific areas, and three or more scientific areas.

With these variables and inspired by the literature, the following hypotheses are proposed:

H1: The citation lag between the year of publication and the year of the first citation influences the number of total and yearly based citations.

H2: The type of article influences the number of total citations and the yearly-based citations.

H3: The article's number of scientific areas influences the total and the yearly-based citations.

3.2. Author features

The author's features have been considered in the previous literature. The authors' reputation is relevant even when measured in different ways, such as the H-index, G-index, author rank, past influence of the author, productivity, and sociometric (e.g., Livne et al., 2013). The Scopus database organizes research by the name of the most prolific authors, considering the number of publications, including full articles, research notes, books, and book chapters (10% of the authors are labelled as undefined, being this the cut-off of the authors' labels). Hence, we create two categories to characterize the authors' features: the top 300 authors (i.e., authors with the most citations and publications) and the others. Consequently, based on these variables, the following hypothesis is considered:

H4: Authors' features influence the article's total early-based citations.

3.3. Recency

Each article needs time to obtain citations from other peers. The article's content, author, or time justifies that some articles rapidly yield more citations in their first years. In contrast, it may take years for some other

articles to capture the academic world's attention. The literature also argues that papers on international business may have been under the asleep position from five to eighteen years and subsequently began receiving more citations (Teixeira et al., 2020). Since the year of publication is the starting point to get citations (as the recency of the article influences citations), the following hypothesis is considered:

H5: The time from the publication date to the first citations influences the number of totals and yearly based citations.

3.4. Networks and collaboration in tourism research

The number of authors per article is used in the literature as a proxy for collaborations to explain citations (Haslam et al., 2008; Yu et al., 2014, among others). Evidence has also suggested that co-authored articles will likely receive more citations (Thelwall et al., 2023). The impact on citations proved significant even if this means some halo effect as more authors promote the article. As researchers in tourism are still a tiny community where collaborations are mostly entropic and regional based (Correia & Kozak, 2022; Tribe, 2006), we added the geographic affiliation of the authors to understand cross-cultural collaborations. Considering these proxies for networks and collaborations as determinants of total and yearly based citations, the following variables are considered:

The number of countries' affiliations per article: This variable is categorised as one, two, three, four, and five or more countries, depending on the authors' different country affiliations.

The number of authors per article: This variable is categorised as two, three, four, and five or more authors.

The null hypotheses considered are:

H6: The number of country affiliations influences the article's total number of citations and yearly based citations.

H7: The number of authors in the article influences the total number of citations and yearly based citations.

3.5. Journal prestige

The prestige of the journal has been widely used to explain article citations. The most objective indicators are impact factors (Yu et al., 2014) and journal ranks (Ravikumar et al., 2015). Indirectly, prestige was measured by the number of journal pages (Robson & Mousqués, 2016) or the journal's language (Bornmann et al., 2012). For this research, we used the five-year journal impact factor to borrow some stability to the predictive model used:

H8: The journal's prestige influences the number of total and yearly citations of the article.

4. Methodology

Several approaches for analysing citations have been considered in the literature: quantile regressions (Robson & Mousques, 2016), gradient-boosted regression trees (Chen & Zhang, 2015), non-linear models (Sohrabi & Iraj, 2017), non-linear stochastic models (Golosovksy & Solomon, 2017), and predictive models (Zhang et al., 2016). Linear regression models, although not the most adequate in this context because of the nature of the dependent variable, are used to get a first idea of the potential impact of the determinants. Since the dependent variable corresponds to counts of the number of occurrences (citations) and is typically composed of a small number of (discrete) outcome values (0,1,2,3, ...), count data models are more suitable. The distributions that usually fit this variable type are either the negative binomial or the Poisson distribution (see Cameron & Trivedi, 2013; Winkelman, 2008). Moreover, counting citations

naturally includes excessive zeros; therefore, a zero-inflated negative binomial or a zero-inflated Poisson model should be considered.

In contrast to the linear regression model, Poisson and binomial models are non-linear. Specifically, this paper considers three econometric models: i) linear panel regression models, ii) zero-inflated Poisson models, and iii) zero-inflated negative binomial models. The latter two are panel count data models, which are more appropriate given the nature of the response variable considered. The linear panel data model specification considered is:

$$Y_{it} = \alpha_i + \gamma_t + \beta X_{it} + \varepsilon_{it} \quad (1)$$

where Y_{it} represents the number of citations for each article i in year t, y_t is a year dummy, X_{it} represents a vector of covariates that comprise the lag of the year of the first citation and the year of the publication, the article type (i.e., conceptual, empirical and bibliometric article), the number of scientific areas studied by the article, the reputation of the authors, the number of authors per article, the number of country affiliations involved in the article, and the impact of the journal. ε_{it} is an idiosyncratic error term that is assumed to be uncorrelated with the covariates. Regarding the zero-inflated count data model considered, the general framework is,

$$P(Y = y_{it}|X_{it}, Z_{it}) = \begin{cases} \omega_{it} + (1-\omega_{it})f(0;\omega_{it}), & y_{it} = 0 \\ (1-\omega_{it})f(0;\omega_{it}), & y_{it} > 0 \end{cases} \quad (2)$$

where y_{it} is the number of citations for article i in year t, $\omega_{it} \in [0;1[$ is a zero-inflated parameter, which measures the fact that $y_{it}=0$ is observed with a frequency that is significantly higher than what can be modelled by the usual count data models, and $f(\,)$ is the probability function of the count model.

We also consider a zero-inflated negative binomial regression model (ZINB-2):

$$P(Y = y_{it}|X_{it}, Z_{it}) = \begin{cases} \omega_{it} + (1-\omega_{it})\left(\frac{a^{-1}}{a^{-1}+\mu_{it}}\right)^{a^{-1}}, & y_{it} = 0 \\ (1-\omega_{it})\frac{\Gamma(y_{it}+a^{-1})}{y_{it}!\Gamma(a^{-1})}\left(\frac{a^{-1}}{a^{-1}+\mu_{it}}\right)^{a^{-1}}\left(\frac{\mu_{it}}{a^{-1}+\mu_{it}}\right)^{y_{it}}, & y_{it} > 0 \end{cases} \quad (3)$$

Where the mean of the distribution is $E(y_{it})=(1-\omega_{it})\mu_{it}$. The covariates Z_{it} and X_{it} are incorporated by using the log link for ω_{it} and μ_i, meaning, $log\left(\frac{\omega_{it}}{1-\omega_{it}}\right) = \sum_{j=1}^{m} Z_{jit}\gamma_j$ and $log(\mu_{it}) = \sum_{j=1}^{k} X_{jit}\beta_j$. The parameters of the model are estimated using maximum likelihood.

Under the zero-inflated Poisson model, we maximize the log-likelihood, defined by

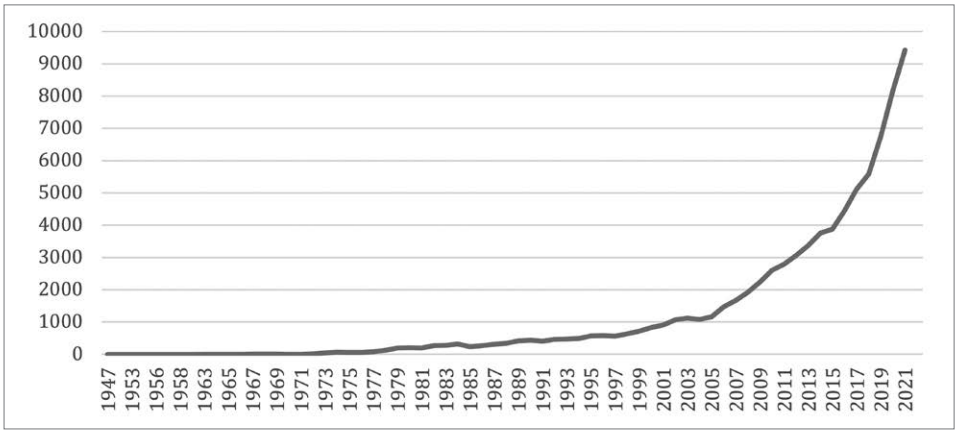
$$\sum_{j\in S} \omega_j \, ln\{F_j + (1-F_j)exp(-\lambda_j)\} + \sum_{j\notin S} \omega_j \, ln\{ln(1-F_j) - \lambda_j + \xi_j y_j - ln(y_j!)\} \quad (4)$$

where ω_j are the weights for each article j in year t and S is the set of observations for which the observed outcome $y_j = 0$.

4.1. Data

We have extracted all records of articles published in 58 tourism and hospitality journals indexed in Scopus and published between January 2004 and December 2018. The list of these journals is listed in the Appendix. This data frame of fifteen years was chosen to account for the most recent trends in tourism and hospitality research. Since the beginning of 2000, the number of scientific articles on tourism and hospitality has significantly grown, with journals gaining a reputation in academia. The evolution of articles published over the years suggests that 2004 marks the beginning of a steady growth lasting fifteen years at the same pace (Figure 1).

Figure 1
The number of articles per year



A database was constructed to organize the variables according to the conceptual model defined. Articles without any evidence of authorship, keywords, or affiliation were removed. The data analysis is based on N=16,288 articles published over the fifteen years. These papers were organized in an unbalanced panel dataset to account for the year-based citations, representing 101,968 observations. Table 1 provides the descriptive statistics of the different variables used in the modelling exercise.

Table 1
Descriptive statistics for variables included in the model

H	Variables	Mean	Std. dev.	Min	Max
Y	Yearly average citations per article	2.74	5,360	0	183
H1	Citations lag in years				
	0 years	0.20	0,3983	0	1
	One year	0.33	0,4701	0	1
	Two years	0.47	0,4993	0	1
H2	Type of article				
	Conceptual article	0.13	0,3374	0	1
	Empirical article	0.83	0,3724	0	1
	Bibliometric article	0.04	0,1846	0	1
H3	Number of scientific areas per article				
	Undefined	0.01	0,1028	0	1
	One scientific area	0.31	0,4611	0	1
	Two scientific areas	0.58	0,4942	0	1
	Three or more scientific areas	0.11	0,3086	0	1
H4	Authors' features				
	The top 300 authors with the highest number of citations and publications	0.33	0,4718	0	1
	The bottom authors	0.67	0,1353	0	1
H5	Year of publication (2004-2018)	Dummy variables		0	1
	2004	0.08	0,2670	0	1
	2005	0.07	0,2611	0	1
	2006	0.09	0,2759	0	1
	2007	0.08	0,2704	0	1
	2008	0.09	0,2795	0	1
	2009	0.08	0,2684	0	1
	2010	0.08	0,2778	0	1
	2011	0.08	0,2722	0	1

Table 1 ***(continued)***

H5	2012	0.08	0,2656	0	1
	2013	0.07	0,2470	0	1
	2014	0.06	0,2402	0	1
	2015	0.05	0,2198	0	1
	2016	0.05	0,2091	0	1
	2017	0.04	0,1920	0	1
	2018	0.02	0,1402	0	1
H6	Number of country affiliations per article				
	One country	0.78	0,4160	0	1
	Two countries	0.20	0,3972	0	1
	More than two countries	0.03	0,1599	0	1
H7	Number of authors per article				
	One author	0.31	0,4610	0	1
	Two authors	0.36	0,4793	0	1
	Three authors	0.23	0,4214	0	1
	Four authors	0.07	0,2610	0	1
	Five or more authors	0.03	0,1742	0	1
H8	5-year impact factor	69.42	54,9401	4	179

Table 1 also presents the proportion of citations according to their characteristics. In the year of publication, 20 per cent of publications are already cited, and 33 per cent are cited one year after publication. Citations are distributed evenly across the years (around 8%), with a natural sample selection decrease in the later years. We can identify the nature of the article. Most articles are empirical (83%), only a small portion are bibliometric (4%), and the remaining are conceptual. Although almost one-third (31%) focus on one scientific area, many data analysed refer to two or more scientific areas. In terms of the characteristics of the authors, Table 1 shows that 74 per cent have nine citations. Nearly one-third of the articles have only one author (31%), 36 per cent have two authors, and the rest have three or more authors. The average five-year impact factor of the journals is very high at 69.42 (the impact factor of the journals considered ranges between 4 and 179).

4.2. Results

The least-squares regression analysis of total citations was estimated to test the set of hypotheses of the insignificant categories of the variables. Considering the number of year citations for the 16,288 articles not organized in panel data, those observations account for 27.9 per cent of the variation of the response variable.

Table 2
Linear regression model considering the total number of citations

Hypothesis	Variables	(1) Total citations	
		β	Std. error
H1 Citations lag in years	Citations after one year	-9,630***	(0,931)
	Citations two years or more after the publication	-22,890***	(0,913)
H2 Type of article	Empirical paper	-5,090***	(1,064)
	Literature review	6,764***	(1,980)
H3 Number of scientific areas per article	One scientific area	1,602*	(0,822)
	Two scientific areas	-0,588	(1,180)
	Three or more scientific areas	1,348	(3,479)
H4 Authors' features	top 300 authors	12,970***	(0,781)
	bottom authors	-2,722	(2,168)

Table 2 ***(continued)***

H5 Year of publication	2004	0	(0)
	2005	-1,922	(2,615)
	2006	-1,966	(2,498)
	2007	-5,837**	(2,481)
	2008	-8,914***	(2,403)
	2009	-15,950***	(2,404)
	2010	-14,480***	(2,325)
	2011	-20,440***	(2,298)
	2012	-25,840***	(2,269)
	2013	-28,860***	(2,276)
	2014	-32,960***	(2,238)
	2015	-33,940***	(2,231)
	2016	-38,220***	(2,184)
	2017	-40,780***	(2,141)
	2018	-39,310***	(2,127)
H6 Number of country affiliations per article	Two countries	-0,080	(0,881)
	Three or more countries	0,322	(1,919)
H7 Number of authors per article	Two authors	3,733***	(0,899)
	Three authors	1,335	(1,005)
	Four authors	0,844	(1,349)
	Five or more authors	-1,267	(1,831)
H8 Five year-impact factor	Impact factor	0,256***	(0,00729)
	Constant	46,580***	(2,363)
	Constant		
	Observations	160288	
	R-squared	0,279	
	Cross-section	YES	

Note. Standard errors in parentheses.
*** p<.01. ** p<.05. * p<.10.

The lag between the year of publication and the year of the first citation explains total citations (β=-9.6, p<.05, when the lag is one year) and (β=-22.9, p<.05, when the lag is two years), and as such, H1 is accepted. This result suggests that the more time the publication takes to be cited, the smaller the number of citations the article will achieve. This may be explained by the number of empirical studies that become out of date very fast. Empirical articles significantly negatively influence the number of total citations (β=-5.09, p<.05). In contrast, bibliometric articles positively influence the number of total citations (β=6.76, p<.05). Hence, H2 is not rejected, suggesting that bibliometric articles have the potential to be more read than their empirical counterparts.

Despite the multidisciplinary nature of tourism research, articles relying on one scientific area seem to influence the most robust total citations (β=1.60, p<.01. In contrast, articles with more than one scientific area are insignificant, resulting in the partial non-rejection of H3. These results suggest that citations are still very restricted to tourism.

As far as the authors' features are concerned, the results suggest mixed effects. The prestige of one of the authors is a significant determinant in gathering more citations (β=12.97, p<.05). In contrast, the remainder, 67% of the authors not so prolific in terms of publications and citations are not proved to be significant, resulting in partial acceptance of H4. These results suggest that the prestige of the authors matters and reinforces the bandwagon effect of research (Leibenstein, 1950), i.e., the more prestigious authors are frequently cited the most.

The following hypothesis tests the influence of the year of the publication on total citations (H5). The results are negatively influencing total citations. These coefficients increase in absolute value over the years (when the publication year was 2007, the coefficient is β=-5.83, p<.05, and in 2018, β=-39.31, p<.05). The hypothesis

was partially accepted as the first three years were not significant. These results also suggest that at least one year is needed to be cited. Still, citations appear to follow momentum since, as time goes by, the probability of obtaining more citations may decrease.

The geographical scope of the collaborations in tourism research is insignificant, so H6 is rejected. This result contradicts the claim for cross-cultural research that tourism academia is striving to reach by generalizing the results and creating their own body of knowledge (Correia & Kozak, 2022). Collaborations in research reflected in the number of authors per article are significant in accruing citations only if the number of authors per article is kept to two authors (β=3.73, p <.05). Therefore, H7 presents mixed effects. The results suggest that the halo effect of more authors promoting the article does not directly imply more citations. The journal's impact factor explains its relationship with the number of citations (β=.25, p<.05). H8 is accepted, but surprisingly, this is not the most relevant variable; it is one of the less important.

The next set of models estimates yearly citations through a linear model by ordinary least square (1), and count data models are used to infer the robustness of the results. Regarding the count data probability models, we used the binomial distribution (2), Poisson (3), negative binomial distributions (4), and Zero Inflated Poisson (5). Table 3 provides the results. H1 was accepted as in all models, the lag between the year of publication and the year of the first citation present negative and significant coefficients (β=-2.73, p<.05, when the lag is two years). Count data models corroborate this feature observed with the linear regression model. These results suggest that yearly citations tend to decrease as time goes by.

Table 3
Regression models considering the year number of citations

Hypothesis	Variables	(2)		(3)		(4)		(6)		(7)	
		Year citations		Year citations		Year citations		Year citations		Inflate	
		B	Std. error	B	Std. error	B	Std. error	B	Std. error	β	Std. error
H1 Citations lag in years	Citations after one year	-1,426***	(0,143)	-0,317***	(0,028)	-0,336***	(0,022)	-0,184***	(0,028)		
	Citations two years or more after the publication	-2,738***	(0,121)	-1,054***	(0,033)	-1,127***	(0,027)	-0,716***	(0,039)		
H2 Type of article	Empirical paper	-0,473***	(0,116)	-0,156***	(0,031)	-0,132***	(0,029)	-0,146***	(0,031)		
	Literature review	0,824**	(0,414)	0,198**	(0,086)	0,071	(0,057)	0,240***	(0,089)		
H3 Number of scientific areas per article	One scientific area	0,00581	(0,052)	-0,0417	(0,028)	-0,074***	(0,024)				
	Two scientific areas	-0,206***	(0,064)	-0,153***	(0,038)	-0,150***	(0,035)				
	Three or more scientific areas	0,072	(0,151)	-0,108	(0,104)	-0,086	(0,097)				
H4 Authors' features	top 300 authors	1,253***	(0,084)	0,413***	(0,024)	0,375***	(0,021)	0,396***	(0,023)		
	bottom authors	-0,310***	(0,077)	-0,899***	(0,041)	-0,836***	(0,039)	-0,980***	(0,040)		
H5 Year of publication	2004	0	(0)	0	(0)	0	(0)	0	(0)		
	2005	-0,022	(0,237)	-0,032	(0,075)	-0,043	(0,065)	-0,027	(0,077)		
	2006	0,186	(0,207)	-0,003	(0,064)	-0,004	(0,062)	0,006	(0,064)		
	2007	0,060	(0,197)	-0,046	(0,063)	0,000	(0,062)	-0,047	(0,063)		
	2008	0,216	(0,246)	0,026	(0,077)	-0,033	(0,057)	0,024	(0,080)		
	2009	-0,046	(0,181)	-0,082	(0,062)	-0,063	(0,058)	-0,086	(0,063)		
	2010	0,223	(0,208)	0,013	(0,067)	-0,017	(0,055)	0,003	(0,068)		
	2011	-0,110	(0,180)	-0,132**	(0,059)	-0,139**	(0,054)	-0,119**	(0,059)		
	2012	-0,364**	(0,169)	-0,198***	(0,056)	-0,185***	(0,054)	-0,181***	(0,057)		
	2013	-0,452***	(0,167)	-0,230***	(0,057)	-0,227***	(0,053)	-0,205***	(0,057)		
	2014	-0,735***	(0,165)	-0,308***	(0,057)	-0,342***	(0,053)	-0,274***	(0,058)		
	2015	-0,665***	(0,168)	-0,312***	(0,058)	-0,357***	(0,054)	-0,261***	(0,058)		
	2016	-1,127***	(0,161)	-0,532***	(0,057)	-0,604***	(0,053)	-0,456***	(0,059)		
	2017	-1,515***	(0,155)	-0,825***	(0,055)	-0,916***	(0,053)	-0,747***	(0,057)		
	2018	-1,708***	(0,151)	-1,212***	(0,062)	-1,354***	(0,060)	-1,243***	(0,064)		

Table 3 ***(continued)***

H6 Number of country affiliations per article	Two countries	0,024	(0,113)	0,008	(0,034)	0,026	(0,025)				
	Three or more countries	0,178	(0,180)	0,070	(0,055)	0,115**	(0,047)				
H7 Number of authors per article	Two authors	0,256***	(0,084)	0,092***	(0,031)	0,096***	(0,025)	0,079**	(0,032)		
	Three authors	0,043	(0,097)	0,029	(0,035)	0,057**	(0,028)	0,014	(0,033)		
	Four authors	-0,038	(0,128)	0,021	(0,048)	0,079*	(0,043)	0,008	(0,045)		
	Five or more authors	-0,308**	(0,136)	-0,094*	(0,053)	-0,042	(0,049)	-0,090*	(0,051)		
H8 Five year-impact factor	Impact Factor	0,026***	(0,000)	0,007***	(0,000)	0,007***	(0,000)	0,006***	(0,000)		
	Constant	2,780***	(0,211)	0,896***	(0,067)	0,912***	(0,064)	1,042***	(0,067)		
H3 Number of scientific areas per article	One scientific area									-0,599***	(0,031)
	Two scientific areas									0,081*	(0,048)
	Three or more scientific areas									0,090	(0,140)
H6 Number of country affiliations per article	Two countries									-0,234***	(0,036)
	Three or more countries									-0,555***	(0,090)
	Constant									-0,630***	(0,032)
	Observations	101,968		101,968		101,968		101,968		101,968	
	R-squared	0,197									
	Cross-section										
	Painel pooled OLS	YES									
	Zero Inflated Poisson pooled							YES		YES	
	Neg Bin pooled					YES					
	Poisson pooled			YES							

Note. Standard errors in parentheses.
*** p<.01. ** p<.05. * p<.10.

It is noteworthy that empirical articles resulted in negative and significant coefficients (β=-.47, p<.05) in the linear model, with the other models corroborating this. This result suggests that empirical articles are less likely to be cited yearly, possibly due to a decrease. Regarding bibliometric articles, the coefficient is positive and significant in the linear model and most other models except model 3. This result suggests that bibliometric articles are more likely to obtain more citations yearly. Therefore, H2 was not rejected, as the coefficients are significant in most models.

The study presents partial evidence to reject H3. Articles with more than one scientific area are significant and negative for the Poisson model (model 3) and the zero-inflated Poisson (model 5), suggesting those articles are less likely to be cited. Two scientific areas are significant and negative (β=-.20, p<.05) for all models except for model five, where the coefficient is positive but significant only at a 10% significance level. These results suggested that the multidisciplinary approach in tourism research must be reconsidered as this seems to yield more negative citations.

There has been partial evidence to reject H4, proposing that those articles written by better-known authors are more likely to be cited every year (β=1.25, p<.05) in the linear model and with similar results in the other models. Complementarily, articles written by different authors are less likely to be cited (β=-.31, p<.05). These results suggest that the tourism research community is still very restricted and that the barriers to entry persist (Tribe, 2006).

Furthermore, H5 was partially not rejected as the date of publication started to negatively influence citations yearly in the year 2012 (β=-0.36, p<.1, in the linear model). The weight of this coefficient increases in the more recent articles; for instance, articles published in 2018 present a negative coefficient (β=-1.70, p<.05), and the other models corroborate this result. These results suggest that research has a lifetime.

Due to little evidence, H6 was rejected as the number of countries affiliated with the article hardly influences the number of citations yearly. This result contradicts the call for cross-country research (Correia & Kozak, 2022). Results suggest that several authors per article or two have a positive and significant impact (β=0.25, p <.05) on the linear model, which the other models corroborate. Three or four authors have non-significant coefficients, but five or more authors have a significant and negative coefficient (β=-0.30, p<.05) in the linear model, with the other models corroborating this result. This may suggest that articles authored by five or more authors are seen as not likely to be cited. As a result, H7 was partially not rejected.

Lastly, H8 was not rejected as the journal's impact factor positively and significantly influences the results (β=.026, p< the other models corroborate .05 in the linear model, and the result). Nevertheless, the coefficient is the lowest, suggesting that the journal's prestige is not a determinant when deciding what to cite.

5. Conclusion and implications

This paper aims to comprehensively analyse the determinants of citations of articles published in the field of tourism. To this end, different econometric models were used. The hypothesis was elaborated on based on the available literature and data. Distinct from the earlier studies in other fields in terms of size, scope, duration, and methodology (e.g., Bai et al.; Ruan, Zhu, et al., 2020; Teixeira et al., 2020), this study, based on 101,968-panel observations of fifteen years, contributes to the literature on tourism in various ways. First, to the best of our knowledge, this is one of the first studies to assess citations through econometric models. Second, this paper fosters the understanding of citation dynamics. Third, this methodology could and should be replicated over different time frames to monitor the progress and in other scientific areas to observe the similarities and differences.

We think that this paper would be relevant as it gives rise to the debate led by Jafar by creating the knowledge platform (Xiao, 2013), subsequently followed by Tribe (truth about tourism, 2006), and Correia and Kozak (past, present and future, 2022). Over the years, tourism research has been viewed as a tribe community (Tribe, 2010) to share knowledge with other scientific areas. Furthermore, tourism research has been quoted as empirical with small and weak methodological and theoretical support (Tribe, 1997, 2006). Despite this, the emerging literature in tourism defends a multidisciplinary approach where different platforms and strategies should be mixed with significant contributions to the industry (Wen et al., 2022; Wen et al., 2021). In and out of tourism, impact factors of journals, rankings of authors, and authors' productivity indexes are announced daily to reinforce the prestige of authors, journals, or institutions in a game where not publishing is to perish (Ioannidis, 2022).

The paper concludes that despite the ranking challenges when citing an article, the journal's impact factor is important but less than the quality of the article. If the journal's prestige does not determine citations, the prestige of the authors does. Despite the claims for multidisciplinary research, this has very few, if any, impacts on citations. In parallel to earlier studies claiming that co-authored papers attract more citations (e.g., Thelwall et al., 2023), other networks are essential and significantly acclaimed, but two authors seem sufficient to write a paper to be cited. More than three is too many despite the debate that collaborations would help reduce the workload of multiple authors.

Moreover, cross-country research should be redefined. The coefficients are inconclusive, even if this relates to the very few articles that use a geographical approach and comprise more than two countries. Overall, the likelihood of an article being cited increases when the authors are better known, the article is bibliometric, and it is the work of no more than two authors. As a recommendation, editors may welcome the submission of bibliometric studies on an occasional basis to show the current state of the art of the accumulated knowledge in the field.

Lastly, the study also conveys its limitations as the data is represented until 2018. As is known, due to the pandemic (e.g., Ioannidis et al., 2022), there have been thousands of conceptual and empirical papers, more collaborations for the co-authorship of articles, and more citations received even immediately after their publications. Due to increased submissions, tourism scholars tend to submit their articles to non-tourism journals, thinking that academia is universal and cross-disciplinary. The number of citations by non-tourism journals is also likely to increase, so the consequence of this practice may be more apparent over the following years.

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Appendix

The distribution of articles by tourism and hospitality journals

Journals	Frequency	Percent
Tourism Management	1777	10.9
Annals of Tourism Research	990	6.1
Journal of Travel Research	664	4.1
Journal of Sustainable Tourism	774	4.7
Tourism Economics	615	3.8
Tourism Recreation Research	443	2.7
Current Issues in Tourism	586	3.6
Asia Pacific Journal of Tourism Research	688	4.2
Journal of Travel and Tourism Marketing	495	3.0
Tourism Geographies	412	2.5
African Journal of Hospitality, Tourism and Leisure	296	1.8
International Journal of Tourism Research	497	3.0
Tourism Analysis	503	3.1
Anatolia	373	2.3
Tourism Management Perspectives	324	2.0
International Journal of Contemporary Hospitality Management	242	1.5
Journal of Vacation Marketing	224	1.4
Tourism	279	1.7
Scandinavian Journal of Hospitality and Tourism	285	1.7
International Journal of Hospitality Management	198	1.2
Journal of Tourism and Cultural Change	227	1.4
Tourismos	306	1.9
Tourism Review	195	1.2
Journal of Heritage Tourism	233	1.4
Journal of Destination Marketing and Management	215	1.3
Journal of Environmental Management and Tourism	194	1.2
Tourism Planning and Development	217	1.3
Journal of Hospitality and Tourism Management	167	1.0
Tourist Studies	209	1.3
Journal of Teaching in Travel and Tourism	193	1.2
Tourism and Hospitality Research	205	1.3
Journal of Sport and Tourism	180	1.1
Journal of Ecotourism	165	1,0
Journal of Hospitality and Tourism Research	140	.9
Journal of China Tourism Research	165	1.0
European Journal of Tourism Research	166	1.0
Geojournal of Tourism and Geosites	129	.8
Journal of Hospitality, Leisure, Sport and Tourism Education	162	1.0
International Journal of Culture, Tourism, and Hospitality Research	140	.9

Appendix *(continued)*

International Journal of Tourism Cities	94	.6
Journal of Quality Assurance in Hospitality and Tourism	106	.6
Tourism, Culture and Communication	138	.8
e-Review of Tourism Research	90	.6
Cuadernos de Turismo	81	.5
Journal of Policy Research in Tourism, Leisure and Events	100	.6
Tourism in Marine Environments	124	.8
International Journal of Hospitality and Tourism Administration	75	.5
Journal of Hospitality and Leisure Marketing	69	.4
International Journal of Tourism Policy	100	.6
Journal of Tourism Futures	61	.4
Journal of Travel Medicine	81	.5
International Journal of Culture, Tourism and Hospitality Research	108	.7
Journal of Hospitality Marketing and Management	95	.6
Tourism and Hospitality, Planning and Development	103	.6
Cornell Hotel and Restaurant Administration Quarterly	16	.1
Journal of Hospitality and Tourism Education	56	.3
Journal of Outdoor Recreation and Tourism	51	,3
Information Technology and Tourism	58	,4
Journal of Hospitality and Tourism Technology	65	.4
Journal of Convention and Event Tourism	69	.4
International Journal of Religious Tourism and Pilgrimage	33	.2
Journal of Tourism History	53	.3
Tourism and Hospitality Management	56	.3
Journal of Human Resources in Hospitality and Tourism	52	.3
Travel Medicine and Infectious Disease	52	.3
Tourism Review International	47	.3
Leisure/ Loisir	1	.0
Journal of Geographical Systems	1	.0
Total	16308	100.0

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