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Citation practices in tourism research: Toward a gender conscientious engagement

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ABSTRACT

This study explores gender gaps and differences in citation practices of scholars in the top-cited articles in tourism research. The results suggest that male researchers dominate the authorship of those articles and are more likely to engage in self-citation than females. The study also finds a disparity in citation counts between male- and female-authored articles. Controlling for other factors, author gender is an important determinant of citation counts. The study advocates for a more gender conscious citation practices and provides potential gender-based interventions to reduce the citation gap. The research raises awareness about the dangers of the perfunctory use of citations and paves the way for further debates on the politics and embedded inequalities of citations in tourism research.

Introduction

Gender roles are an institutionalized system of social practices that results in unequal advantages for men, women, and intersex people at individual, organizational, and societal levels. Despite ongoing research and interventions aimed at gender convergence, gender inequality persists across several spheres of academic practices. The scientific debates on the gender aspects of tourism research systems thus far have primarily focused on inequalities in academic productivity and leadership measured by research output, professorial positions, and editorial board membership (Basurto-Barcia & Ricaurte-Quijano, 2017; Lundine, Bourgeault, Clark, Heidari, & Balabanova, 2018; Munar et al., 2015; Pritchard & Morgan, 2017; Walters, 2018). Mirroring the conclusions of other disciplines, various studies suggest that tourism academia is male-dominated and characterized by gendered and other hierarchies, such as race, culture, language and class, that have implications for tourism knowledge production (Chambers, Munar, Khoo-Lattimore, & Biran, 2017; Hall, 2013, 2016; Munar, Khoo-Lattimore, Chambers, & Biran, 2017; Pritchard & Morgan, 2017).

Academic leadership and performance in tourism has long been assessed using citation indices (e.g. Hall, 2011; Law, Ye, Chen, &

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Leung, 2009; Leung, Sun, & Bai, 2017; Pritchard & Morgan, 2017; Strandberg, Nath, Hemmatdar, & Jahwash, 2018). The growing stream of research reflects the increasing use of citation by higher education institutions as a proxy for measuring academic impact and scientific achievements that has significant implications for hiring, tenure, and promotion (Hall, 2011; Tahamtan & Bornmann, 2018). At the same time however, numerous criticisms have been leveled against the use of citation as a performance indicator, such as indices favoring established scholars, particular areas of scholarship over others, and those working in fields with higher citation frequencies (Geraci, Balsis, & Busch, 2015; Rodríguez, 2017). Another major caveat of citation indices of relevance here is that they are highly gendered and biased against women researchers. For various reasons, women researchers receive comparatively less citation than men researchers (Geraci et al., 2015; Mott & Cockayne, 2017). Some studies also demonstrate that articles where a woman is the first-author, irrespective of the gender of the co-author(s), are disadvantaged in citation counts (Caplar, Tacchella, & Birrer, 2017). In an analysis of most cited authors in tourism, hospitality, and leisure, Hall (2016) found that the overall proportion of females in the 500 most cited tourism researchers was 34.6% as compared to 26.4% overall for hospitality (n = 72) and 44.2% for leisure (n = 43), suggesting not only overall gender imbalance but also substantial differences between fields.

Citing others work is a formal acknowledgement process of scholarship. In this way, citations become “reproductive technologies” as they emphasize certain ideas, theories, concepts, methodologies, and scholars (Ahmed, 2013). Thus, conscientious citation practices are important because they impact on who and what is cited and who and what is left out of an intellectual discussion, shaping the (re)production of knowledge (Mott & Cockayne, 2017). Researchers examining exclusionary practices in citation behaviors argue that reference lists can become highly politicized, reflecting alliances and allegiances based on gender and other hierarchies that work in ways to reproduce inequalities in knowledge, perpetuating existing systems of power and structure in a field (Ahmed, 2017; Bridges, 2019; Mott & Cockayne, 2017). Therefore, to cite narrowly or to cite researchers only from a particular gender is damaging not only to the tourism field and its researchers, but also to the impression of tourism held by those who are less familiar with the subject area, especially those working in other disciplines.

Some tourism researchers have already examined how masculinism has shaped tourism research in ways that hinder equality and diversity in knowledge production (Chambers et al., 2017; Munar et al., 2015, 2017; Swain, 2016). Therefore, any gender bias, conscious or unconscious, in citation practices that are detrimental to female scholars will only perpetuate patriarchal tourism knowledge systems, limiting intellectual inquiry. Gender differences in citation practices appear to be discipline specific (Maliniak, Powers, & Walter, 2013). Despite evidence pointing out that citation counts privilege some groups of researchers over others, there has been little discussion of whether citation practices in the tourism and hospitality field are gendered. The majority of existing studies on citation adopt a passive approach to gender issues, ignoring potential gender inequalities in citation practices (Law et al., 2009; Leung et al., 2017; Pritchard & Morgan, 2017; Strandberg et al., 2018). The fervent debates on the gendered nature of citation in the literature provide significant impetus for broadening the intellectual space surrounding gender equality in tourism research production and utilization. In addition, given the significance of citations as a means of quality assessment, seeking a better understanding of the gendered nature of citations in tourism also contributes to the development of a critical quality perspective on knowledge creation and production, whereby analysis should question the underlying assumptions and consider power relationships and emancipatory interests (McAdam, 2004).

The normative and social constructivist theories of science have been most instrumental in explaining citation behaviors of scholars (Baldi, 1998; Meyer, Waldkirch, Duscher, & Just, 2018; Moed & Garfield, 2004). While the normative approach to citation behaviors argues that a researcher cites an article because of its intellectual content, for social constructivists, factors grounded in social norms, belief and value systems, including the gender of the researcher, are important determinants of citation (Baldi, 1998; Meyer et al., 2018; Mingers & Xu, 2010). This paper explores gender differences in citation behaviors of tourism and hospitality researchers by testing the two competing theoretical perspectives on citation behaviors. The study answers the following research questions: (1) Is there a relationship between author gender and self-citation behavior? (2) Controlling for other determinants of citations, is there a relationship between author gender and the citation counts of an article? The study contributes to the limited research on the gendered nature of scholarly practices in tourism academia (Munar et al., 2017). It is important to fully understand gender differences in citation because it is easy for well-meaning policies in higher education to aggravate rather than attenuate gender inequalities (Caffrey et al., 2016). We hope that by identifying the gender gap in citations and its underlying causes, we can start addressing it and foster a more conscious citation culture among tourism researchers.

Theoretical perspectives on citation

Generativity, which is the ability of researchers to build upon the works of others, is a fundamental process of scientific investigation. Researchers demonstrate generativity in their study by using previous studies to back-up claims, discuss findings, develop theoretical arguments, justify methodology, and support conclusions, which are some of the underlying reasons why they cite other people's work (Garfield, 1979). Citing previous studies grants a researcher's work integrity and credibility and renders it theoretically and methodologically sophisticated and sound. Citing is therefore a common scholarly practice in academia and points to the origin of scientific ideas and illustrates their development over time. In this way, citation can quantify some aspects of the scholarly influence of a study within an academic field and, given its capacity to be statistically analyzed and its promotion as an ‘objective’ measure, it is increasingly used as a measure of impact and quality (Meyer et al., 2018).

From a market-based perspective, citations reveal preferences for ideas and knowledge in a particular discipline (Meyer et al., 2018). At a more practical level, citation counts are used in research assessment exercises and by academic institutions as a means of measuring institutional and individual performance. Decisions regarding tenure and promotion of academic and research staff may be strongly influenced by citation counts (Hall, 2011; Tahamtan & Bornmann, 2018). The scholarly and practical importance of, as well

Table 1
Determinants of citations and their theoretical and empirical basis.

Determinants	Operationalization	Empirical basis
Normative theory of citation (*Merton, 1957*)		
Methodology	Research methods: qualitative; quantitative; mixed-methods; or conceptual/literature reviews Sample: individuals; businesses; destinations; multiple; or conceptual	Baldi (1998); Bettencourt and Houston (2001); Biscaro and Giupponi (2014); Bornmann et al. (2012); Hartley (2007); Stremersch et al. (2007); Weale, Bailey, and Lear (2004)
Subject area	Tourism or hospitality	Antoniou, Antoniou, Georgakarakos, Sfyroeras, and Georgiadis (2015); Bettencourt and Houston (2001); Bornmann et al. (2012); Marx and Bornmann (2015)
Presentation	Number of figures; number of tables	Meyer et al. (2018)
Length	Number of pages	Antoniou et al. (2015); Bornmann, Leydesdorff, and Wang (2014); Bornmann and Williams (2013); Meyer et al. (2018)
Social constructivist theory of citation (*Baldi, 1998*; *Latour & Woolgar, 1986*)		
Gender of author(s)	Only female authors; female first author at least one male co-author; female solo author; male first author at least one female co-author; male solo author; or only male authors	Atchison (2017); Baldi (1998); Caplar et al. (2017); Geraci et al. (2015); Helmreich et al. (1980); Judge et al. (2007); Larivière et al. (2013); Maliniak et al. (2013); Meyer et al. (2018); Mott and Cockayne (2017); Mingers and Xu (2010);
Gender of first author	Male or female	
Gender of corresponding author	Male or female	Nosek et al. (2010); Østby, Strand, Nordås, and Gleditsch (2013); Schisterman et al. (2017)
Number of authors	Number of male authors; number of female authors; and total number of authors	Annalingam, Damayanthi, Jayawardena, and Ranasinghe (2014); Ayres and Vars (2000); Biscaro and Giupponi (2014); Bornmann and Daniel (2010)
Self-citation	Number of self-citations	Fowler and Aksnes (2007); Schreiber (2008); Wilhite and Fong (2012)
Author influence	*h*-index of first author; Editorship/Editorial board member of journals Academic position of first author: Professor; Associate Professor; Assistant Professor/Lecturer; or others	Bjarnason and Sigfusdottir (2002); Collet, Robertson, and Lup (2014); Jiang, He, and Ni (2013); Meyer et al. (2018) Ayres and Vars (2000); Biscaro and Giupponi (2014); Pagel and Hudetz (2011)
References	Number of journal references; number of references from same journal; and number of references from non-journal sources	Antoniou et al. (2015); Biscaro and Giupponi (2014); Bornmann et al. (2014); Yu, Yu, Li, and Wang (2014)
Collaboration	No collaboration; same institution; inter-institution (same country); or inter-country	Annalingam et al. (2014); Antoniou et al. (2015); Farshad, Sidler, and Gerber (2013)
Country of location of first author	Developed or developing	Lee, Lee, and Jun (2010); Miettunen and Nieminen (2003); Vaughan and Shaw (2005)
Other determinants		
Age of the article	Year of publication	Ayres and Vars (2000); Lachance and Larivière (2014); Marx and Cardona (2003); McMinn and Fleming (2011)
Title/key words characteristics	Number of words in title; acronym in title; combinational title; number of keywords; Number of keywords present in title and abstract	Jamali and Nikzad (2011); So, Kim, Choi, and Park (2015)

as the criticisms leveled against citation counts as a proxy for measuring research impact have meant that citation practices have become an area of investigation in their own right across various academic disciplines. The great majority of studies investigate the factors influencing publication citation counts, usually of articles (e.g. Didegah & Thelwall, 2013; Hall, 2016; Meyer et al., 2018; Qian, Rong, Jiang, Tang, & Xiong, 2017; Tahamtan & Bornmann, 2018). The determinants of citation counts are usually analyzed through two competing theoretical lenses: the normative and social constructivist views of citation (MacRoberts & MacRoberts, 1987; Meyer et al., 2018; Small, 2004).

Normative theory of citation

The normative theory of citation, also commonly referred to as the universalistic view of citation, has its roots in the seminal work of Robert K. Merton (1957) who theorized that the social system of science includes the structures and processes of the publication system (Small, 2004). The approach is based on the assumption that science is a normative institution governed by rewards and sanctions (Merton, 1957). The theory posits that citing the works of previous scholars is a form of reward and recognition and citations are a symbolic view of intellectual debt. Researchers are motivated to reference previous studies because they are worthy of citing and, in so doing, they give credit where credit is due (Small, 2004). Under the normative approach, citations are influenced by the cognitive, methodological, or content of the cited studies (Baldi, 1998). Given the theory's focus on the intellectual component of an article as the driver of citation, the normative approach considers citation analysis as an appropriate tool for assessing scientific results and implicitly supports the use of citation counts in the performance assessment of institutions and individual researchers. As presented in Table 1, the normative theory of citation has been supported by empirical studies carried out in the fields of marketing (Stremersch, Verniers, & Verhoef, 2007), accounting (Meyer et al., 2018), and general management (Judge, Cable, Colbert, & Rynes, 2007; Mingers & Xu, 2010).

Social constructivist theory of citation

The social constructivist theory of citation is derived from the constructivist view of science (Collins, 2004; Knorr-Cetina, 1981; Latour & Woolgar, 1986). The theory challenges the normative approach to citation motives, positing that scientific knowledge is socially constructed, rather than governed by a set of rewards and sanctions (Baldi, 1998; Meyer et al., 2018; Mingers & Xu, 2010). Knowledge is determined not by facts, but primarily by social norms, institutions, values, belief systems, and practices (Feyerabend, 1993). In contrast to the normative approach suggesting that articles are cited for "what" the authors say, social constructivists argue that it is "who" the authors of an article are that primarily determines citation (Stremersch et al., 2007), with the "why" being driven by human interest, politics, and power relations in the development of knowledge (Alvesson & Willmott, 1996; McAdam, 2004). The theory postulates that researchers use citation as a tool for persuasion and do not necessarily cite an article because of its intellectual content or merit. Instead, authors cite articles that are written by prominent and eminent researchers, editors and editorial board members who are potential referees of their papers, and/or those based at established and reputed institutions (Baldi, 1998; Moed & Garfield, 2004). Such an approach to citation analysis, social constructivists argue, perpetuates and shapes existing patterns of social and institutional stratification (Baldi, 1998). As presented in Table 1, support for the social constructivist view on citation behaviors abounds in the literature. Factors such as the authors' reputation and visibility (Meyer et al., 2018; Mingers & Xu, 2010), and academic rank (Ayres & Vars, 2000; Biscaro & Giupponi, 2014; Pagel & Hudetz, 2011), nature of collaboration (Miettunen & Nieminen, 2003; Vaughan & Shaw, 2005), and gender (Atchison, 2017; Caplar et al., 2017; Geraci et al., 2015; Larivière, Ni, Gingras, Cronin, & Sugimoto, 2013; Maliniak et al., 2013) influence citation counts of articles.

Gender and citation practices

Social constructivists view knowledge as a socially constructed process (Barnes, 2014), conditioned by "who" is cited and "who" is left out of an intellectual conversation (Meyer et al., 2018). These same issues reflect the known gender imbalances in many scientific fields, including tourism, and raise the importance of investigating the gender dimension of citation practices. Suggesting a relationship between authors' gender and citation counts may sound politically incorrect to some readers and spurious to others, but social constructivists support such a claim (Moed & Garfield, 2004). The consequences of gendered citation practices are numerous. Any prejudice against female authors by citers shapes the direction and (re)production of tourism knowledge in such a way that it can serve to reinforce and perpetuate existing gendered hierarchies and practices that characterize tourism knowledge systems (Chambers et al., 2017; Munar et al., 2017; Swain, 2016).

If female-authored articles receive less impact, then in systems where citation counts are significant for career paths, female researchers will experience career attrition and be disadvantaged in appointment, promotion, tenure and funding decisions, exacerbating gender differences (Thelwall, 2018). Rossiter's (1993) claim made over 25 years ago that "women scientists have been ignored, denied credit, or otherwise dropped from sight", still applies today in several fields (p. 325). This issue is highlighted by the awarding of a Nobel Prize in Physics to Donna Strickland in 2018, the first female physics winner in 55 years, who had previously been denied a Wikipedia entry because her work was regarded as not significant enough (Cecco, 2018). Similarly, *PLOS One* was criticized for sexism in the peer-review process of a paper written by two female researchers, where one of the reviewers made adverse comments about women's aptitude for science and advised the two authors to work with male biologists to improve the quality of the research. This issue prompted considerable public discourses that eventually led to the stepping down of the then journal editor and the reviewer (Morello, 2015).

Early studies in the field of sociology (Cole, 1979; Helmreich, Spence, Beane, Lucker, & Matthews, 1980) revealed that male researchers received more citation than their female counterparts. Symonds, Gemmell, Braisher, Gorringe, and Elgar's (2006) study on life scientists in ecology and evolutionary biology finds that the *h*-index is strongly biased against female researchers. In the fields of psychology (e.g. Geraci et al., 2015; Nosek et al., 2010) and international relations (e.g. Maliniak et al., 2013), studies demonstrate notable gender effects in citation counts, with males having higher impact scores than females. Several studies report that publications having a female as the first author are disadvantaged in citation counts (Caplar et al., 2017; Larivière et al., 2013; Schisterman, Swanson, Lu, & Mumford, 2017). However, some other research finds no or negligible gender bias in citation counts (Andersen & Nielsen, 2018; Østby, Thelwall, 2018). Based on the preceding theoretical and empirical discussions, we hypothesize that articles written by female authors have lower citation counts than articles written by male authors.

Studies on citation have also investigated the gender dimension of self-citation behaviors of scholars. Self-citation, which refers to the act of citing one's own research, is an essential part of scientific work that reflects the accumulative nature of knowledge (Mishra, Fegley, Diesner, & Torvik, 2018). Self-citation has an effect on the visibility of a researcher's work as well as overall number of citations. Studies carried out across different fields confirm the influence of the gender of an author on self-citation. For example, King, Bergstrom, Correll, Jacquet, and West's (2017) study based on 1.5 million research papers reveals that men are more likely to engage in self-citation than women. Other studies, such as that by Maliniak et al. (2013), reveal similar findings. Contrary to these results, Mishra et al. (2018) find no gender effect on self-citation, concluding that such a practice is the hallmark of productive researchers, irrespective of their gender. Accordingly, we propose that male authors are more likely to engage in self-citation than female authors.

Data sources and methods

The study relies on data extracted from Google Scholar (GS). GS is the most suitable source for measuring the overall influence of

scholarly activities than other databases such as Web of Science and Thomson Reuters (Harzing & van der Wal, 2009). It is more inclusive (Hall, 2016; Hall & Page, 2015) and captures far more unique citations than other bibliometric databases (Andersen & Nielsen, 2018). For example, compared to Web of Science that contains more restrictive citation index, GS contains less gender bias in this selection for citation sources because of its wider coverage (Andersen & Nielsen, 2018). Consequently, GS has been widely used to investigate the drivers of citations (Andersen & Nielsen, 2018; Hall, 2016; Law et al., 2009; Lee, Law, & Ladkin, 2014). GS metric displays a list of the top journals across disciplines, ranked by their *h5*-index. For the purpose of this study, we use the most-cited articles published in the top-10 journals ranked by their *h*-index in GS metric as at January 2017.

The existing literature provides empirical evidence on a number of variables that influence citation counts as well as ways of measuring them. Although the main interest of this research lies in determining the influence of author gender on citation, we extracted several other potential drivers of citation from each article using a content analysis method. The theoretical and empirical basis of the various determinants of citations used in the present study is presented in Table 1. Following Baldi, (1998), Bornmann, Schier, Marx, and Daniel (2012), Hartley (2007), and Stremersch et al. (2007), we grouped those determinants under the normative (e.g. field of research; research methodology; scale of analysis; presentation; and article length) or the social constructivist theoretical perspectives (e.g. gender of authors, number of male and female authors; total number of authors; gender of corresponding author; author influence; nature of collaboration; nature of references; self-citation; developmental status of country of first-author). We also collected data on the presentational characteristics of an article given their influence on citation (Hartley, 2007; Stremersch et al., 2007; Tahamtan, Afshar, & Ahamdzadeh, 2016).

We spent considerable effort in determining the gender of authors. In line with the approach adopted by previous studies (Ashmos Plowman & Smith, 2011), we assessed gender using name association, identification of personal pronoun used, and inspection of photos and profile of an author available on institutional website, GS, Academia, LinkedIn, Researchgate, and other social media platforms. In some cases, we sought advice from other colleagues in our network. Given the use of multiple sources of information, we were able to assign gender to all article authors. Following the findings of previous studies that articles with a female as the first author are disadvantaged in citation counts (Caplar et al., 2017; Schisterman et al., 2017), we used the author-gender classification of Araújo and Fontainha (2017) and assigned an article to one of the following categories: only female authors; female first author and at least one male co-author; female solo author; only male authors; male first author and at least one female co-author; male solo author. For each article, the corresponding citation count it received in GS as at 24 January 2017 was recorded as the dependent variable.

Statistical methods

First, we performed some descriptive statistical analysis on the data. Then, we explored the influence of author gender on citation counts further using a regression equation that included a comprehensive set of determinants of citation. We used a generalized linear model (GLM) that is useful in dealing with non-linear distribution responses. Due to the over-dispersed nature of citation counts, a negative binomial distribution with log-link function (available as an option in GLM in SPSS) is considered to be the best fitting model for citation data (Mingers & Xu, 2010; Nielsen, 2017). One of the challenges in analyzing the determinants of citation counts is that many variables are auto-correlated (Vanclay, 2013). Following Berk (2003), we resolved multi-collinearity issues by deleting the following variables from the regression equation with variance inflation factor value of greater than five: types of collaboration; scale of analysis; number of male authors; number of female authors; and the gender of the corresponding author.

Results

The top ten journals ranked by GS based on their h5-index as at January 2017 are presented in Table 2. A total of 431 most-cited articles have been published in these journals based on the h5-index of each journal, i.e. if the journal has an h5-index of 50 then there would be 50 most cited articles. Among the ten journals, *Tourism Management* and *Cornell Hospitality Quarterly* has the highest (79) and lowest (27) h5-index respectively. The 431 articles have received a total citation count of 36,119, with a mean and median citation count of 83.80 (SD = 49.12) and 71 respectively. The minimum and maximum number of citations an article has received are

Table 2
Top journals in Google Scholar metric (as at January 2017).

Journals	h5-index	N (%)	Total cites	Mean citation	Min	Max
Tourism Management	79	79 (18.3)	9820	124.30	79	373
Annals of Tourism Research	60	60 (13.9)	6396	106.60	61	248
International Journal of Hospitality Management	57	57 (13.2)	4976	87.30	57	178
Journal of Travel Research	44	44 (10.2)	3861	87.75	45	248
Journal of Sustainable Tourism	42	42 (9.7)	3233	76.98	42	182
International Journal of Contemporary Hospitality Mgt.	35	35 (8.1)	2091	59.74	35	224
International Journal of Tourism Research	30	30 (7.0)	1468	48.93	31	105
Current Issues in Tourism	29	29 (6.7)	1574	54.28	29	173
Journal of Travel and Tourism Marketing	28	28 (6.5)	1402	50.07	29	212
Cornell Hospitality Quarterly	27	27 (6.3)	1298	48.07	27	121
Total	–	431 (100)	36,119	83.83	–	–

Table 3
Article and author breakdown by gender (Articles: $N = 431$; Authors: $N = 1031$).

	n	Percentage
Article breakdown by author gender		
Only male authors	171	39.7
Only female authors	60	13.9
Cross-gender collaboration	200	46.4
Total	431	100
Article breakdown by first-author gender		
Male	264	61.25
Female	167	38.75
Total	431	100
Author breakdown by gender		
Male	667	64.70
Female	364	35.30
Total	1031	100

27 and 373 respectively, with a standard deviation of 49.12. These figures suggest even among most-cited articles, considerable variance in citation counts exists.

As presented in Table 3, the 431 articles are written by 1031 authors, where males constitute 64.70% ($n = 667$) while females accounts for only 35.30% ($n = 364$) of all authors. Articles written by only men authors represent 39.7% ($n = 171$) and those authored by only women represent 13.9% ($n = 60$) of the sample. Around 46% ($n = 200$) of the articles involve cross-gender collaboration. More than half of the articles has a man as first author ($n = 264$, 61.3%) while the remaining has as first-author a woman ($n = 167$, 38.7%).

Gender and citation practices

We determined whether the gender composition of authors (only male; only female; and both) and the gender of the first author influence citation counts. Results are presented in Table 4. The ANOVA test suggests that author gender significantly determines the number of citation an article receives ($F = 5.57, p < 0.01$). A post-hoc analysis using Turkey-HSD indicates that the citation count of articles written by only male authors is significantly higher ($\tilde{x} = 93.17$, $\sigma = 49.60$) than those written by only females ($\tilde{x} = 73.32$, $\sigma = 34.05$). We further confirm a gender bias in citation by demonstrating a significant difference in citation count of articles based on first-author gender ($t = 4.02, p < 0.001$). Articles having a male as first author receive significantly higher citation ($\tilde{x} = 90.75$, $\sigma = 53.53$) than those having a female as first author ($\tilde{x} = 72.81$, $\sigma = 38.89$). The findings also suggest considerable differences in self-citation behaviors between male and female authors ($F = 3.51, p < 0.05$). Articles written by only female authors contain a lesser number of self-cited references ($\tilde{x} = 2.95$ $\sigma = 2.80$) than those authored by only male researchers ($\tilde{x} = 5.04$, $\sigma = 5.89$) and by authors of both genders ($\tilde{x} = 4.63$, $\sigma = 5.29$). Furthermore, articles having a male as the first author contain more self-cited references ($\tilde{x} = 5.01$, $\sigma = 5.87$) than those having by a female as the first author ($\tilde{x} = 3.84$, $\sigma = 4.20$). This difference is statistically significant ($t = 2.40, p < 0.05$).

Generalized linear model of citation

In order to weigh the influence of gender on citation count and understand how this variable reacts against other predictors of citation, we use the GLM technique. Table 5 reports the regression coefficients, standard errors, odds ratio, and confidence interval

Table 4
Citation practices by gender and first-author gender.

Article	Citation counts			Self-citation		
	Mean citation	SD	Mean difference	Mean self-citation	SD	Mean difference
Authors						
Male only authors	93.17[a]	49.60		5.04[a]	5.89	
Female only authors	73.32[b]	34.05	$F = 5.57^{**}$	2.95[b]	2.80	$F = 3.51^{*}$
Both gender	78.94[b]	51.35		4.63[a]	5.29	
First-author						
Male	90.75	53.53	$t = 4.02^{***}$	5.01	5.87	$t = 2.40^{*}$
Female	72.81	38.89		3.84	4.20	

Superscript denotes groups that are significantly different from each other based on Tukey-HSD post-hoc analysis.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

Table 5
Final generalized linear model (negative binomial model).

Parameter	B	Std. error	Wald χ^2	Odds ratio	CI (95%)	
					LB	UB
Tourism[a]	0.18	0.06	8.79**	1.20	1.06	1.36
Acronym in title[b]	0.19	0.12	2.80	1.21	0.97	1.52
Combinational title[c]	−0.03	0.05	0.30	0.97	0.87	1.08
Supplementary materials[d]	−0.23	0.11	4.46*	0.79	0.64	0.98
Only female authors[e]	−0.22	0.07	11.90**	0.80	0.70	0.91
Female first author at least one male co-author[e]	−0.21	0.07	9.16**	0.81	0.91	0.93
Female solo author[e]	−0.35	0.13	7.37**	0.71	0.55	0.91
Male first author at least one female co author[e]	0.03	0.07	0.18	0.97	0.84	1.12
Male solo author[e]	−0.18	0.11	2.73	0.84	0.68	1.03
Qualitative[f]	−0.27	0.08	10.88***	0.76	0.65	0.99
Quantitative[f]	−0.23	0.08	9.24***	0.79	0.68	0.92
Mixed[f]	−0.14	0.11	1.58	0.87	0.70	1.08
Developed country[g]	−0.02	0.06	0.19	0.98	0.88	1.09
Associate Professor[h]	0.02	0.09	0.07	1.02	0.86	1.23
Assistant Professor[h]	−0.14	0.12	1.76	0.87	0.72	1.07
Doctoral student[h]	−0.13	0.12	1.23	0.88	0.70	1.10
Age of article	−0.06	0.03	3.37	0.95	0.89	1.00
Number of words in title	0.01	0.01	2.13	1.01	1.00	1.02
Number of keywords	0.05	0.02	4.83*	1.05	1.01	1.09
Number of keywords in title and abstracts	−0.02	0.01	4.48*	0.981	0.96	1.00
Number of figures	0.04	0.01	7.79**	1.04	1.01	1.07
Number of tables	0.02	0.01	2.82	1.02	1.00	1.04
Number of authors	−0.02	0.04	0.42	0.98	0.912	1.05
Number of journal references	0.00	0.00	0.16	1.00	0.98	1.00
Number of references from other sources	0.00	0.00	0.87	1.00	1.00	1.00
Number of references from same journal	0.02	0.01	17.29***	1.02	1.01	1.04
Number of self-citation	−0.01	0.01	0.82	0.99	0.98	1.01
Number of pages	−0.01	0.00	5.03*	0.99	0.98	1.00
h-index of first author	0.04	0.01	7.17**	1.04	1.01	1.07
(Scale)	1.00					
(Negative binomial)	0.190	0.0148				
Goodness of fit:						
Deviance value/df = 1.12						
χ^2 value/df = 1.338						
Log likelihood = −1723.171						
AIC = 3506.34						
BIC = 3622.35						
Omnibus test:						
Log-likelihood $\chi^2 = 109.97_{(29)}$ ($p < 0.001$)						

Notes: Reference group:
[a] Hospitality journals.
[b] No acronym in title.
[c] No combinational title.
[d] No supplementary materials.
[e] Articles with only male authors.
[f] Conceptual papers.
[g] Developing country.
[h] Professor.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

for the GLM predicting citation counts. Several variables, including the gender of authors, have a significant influence on citation counts. For the variable gender, the reference group is 'articles written by only male authors' (more than one male author). An article written by only female authors receives 20% less citations compared to one written only by only male authors (Odds ratio: 0.80; CI: 0.70–0.91). An article with a female as the first author and at least one male co-author receives 19% less citation than one written by only male authors (Odds ratio: 0.81; CI: 0.91–0.93). An article written by a sole female author receives 29% less citation compared to one written by only male authors (Odds ratio: 0.71; CI: 0.55–0.91). The citation count of an article written by a male as the first author and at least one female as co-author (Odds ratio: 0.97; CI: 0.84–1.12) and one written by a solo male author (Odds ratio: 0.84; CI: 0.68–0.1.03) does not differ significantly from that written by only male authors.

Discussion of results

This research analyzes the gender gap in authorship and citation practices in the most-cited articles in tourism and hospitality. On the optimistic side, we find that a large proportion of these articles is the result of cross-gender collaboration. Gender heterogeneity in authorships is promising for the tourism and hospitality community of scholars as gender diversity in authorship may be influential on the quality of scientific output (Ghiasi, Harsh, & Schiffauerova, 2018; O'Connor et al., 2018). O'Connor et al. (2018) demonstrate empirically that research involving cross-gender collaboration is more impactful than those with homogenous gender. Likewise, Campbell, Mehtani, Dozier, and Rinehart's (2013) study finds support for the hypothesis that gender-heterogeneous working groups produce higher quality science. This is because studies involving cross-gender collaboration broadens the research problem, improves analytical approaches, and results in articles that are theoretically and methodologically rigorous, increasing their scientific impact (Campbell et al., 2013; O'Connor et al., 2018). Therefore, cross-gender collaboration has the potential to project women researchers as the co-producers of some of the most prolific articles in tourism and hospitality, improving their academic and social status.

Encouraging as these results may sound, they provide only a partial picture of the prevailing state of gender issues in tourism and hospitality research. A deeper analysis reveals some disheartening conclusions. A gender gap exists in terms of female authorship as a proportion of the total number of authors of the most-cited articles. This gap reflects global trends, where women accounts for only 30% of fractionalized authorship (Larivière et al., 2013). Under-representation of female researchers persists further in the first-authorship of those articles, corroborating results of studies in other fields (Fishman, Williams II, Goodman, & Ross, 2017; Lin, Kocher, Klausner, & Raman, 2017). Although it can be misleading to empirically attribute one's contribution in an article just from author order (Helgesson & Eriksson, 2018), the dominant belief in many academic disciplines is that the lead author position holds greater merit and prestige and is an indicator of academic leadership (Fairclough & Thelwall, 2015; Peffers & Hui, 2003).

However, designation of the first author in an article is often determined by factors beyond meritocracy such as power relationships and other hierarchies (Balkin, Trevino, Fitza, Gomez-Mejia, & Tadikonda, 2018). Gaughan and Bozeman's (2016) study illustrates how power dynamics between male and female researchers determined authorship, where the senior authors wield their power and rank over junior collaborators. Therefore, in a tourism academy characterized by masculinized academic practices, a power imbalance in favor of men may undermine women's 'true' contribution to research (Basurto-Barcia & Ricaurte-Quijano, 2017; Figueroa-Domecq, Pritchard, Segovia-Pérez, Morgan, & Villacé-Molinero, 2015; Munar et al., 2015, 2017). This has implications for authorship and citation practices and for critically understanding knowledge creation. Therefore, collaboration patterns and authorship dynamics between male and female are important indicators of gender (in)equality (Ghiasi et al., 2018). Thus, the tourism academy should assess gender gap in scholarship not only in terms of female authors as a proportion of total authors, but also the disproportionate representation of women in first-authorship as another important dimension of gender bias.

To provide deeper insights on the prevailing state of gender inequality, we ground our analysis in the normative and social constructivist theoretical perspectives on citation. Our results reveal considerable differences in self-citation practices which are most prevalent in articles written by only male authors. In the case of gender heterogeneous articles, we find that articles with a female as the first author include a lower number of self-cited references than articles with a male as the first author. These findings lead us to conclude that males are more likely to engage in self-citation practices than females, confirming the results of previous studies (King et al., 2017; Mishra et al., 2018). Among the various factors that explain higher self-citation practices among male tourism researchers is that when compared to females, they produce considerably more research articles, face lower social penalties for self-promotion, and specialize more in research (King et al., 2017). In contrast, any attempt at self-promotion through self-citation by women is met with resistance by both women and men in academia (Rudman, Moss-Racusin, Phelan, & Nauts, 2012). Such a backlash against women is also likely to be more prevalent in a tourism academy and in research and teaching institutions characterized by male dominated gendered hierarchies (Pritchard & Morgan, 2017).

The GLM analysis delves further into profound gender inequality by providing deeper insights on the dynamics between authorship positioning, gender, and citation counts. An article with a female as the sole author is the most disadvantaged in citation counts compared to male only authored articles. The citation gap decreases slightly for an article written by multiple female authors and that written by a female as the first author and having at least one male co-author. What makes these results interesting is that they seem to suggest that presence of a male author in an article makes it more citable. Nevertheless, there *is* a clear disparity in citation counts between male and female-authored articles with our findings mirroring those in other fields (Ghiasi et al., 2018; Larivière et al., 2013; Maliniak et al., 2013).

Our results lend support to the social constructionist perspective on citation suggesting that an article does not get cited because of 'what' is said, but because of 'who' said it, with citation and other similar academic practices shaped by existing social norms, beliefs system, and practices (Meyer et al., 2018; Stremersch et al., 2007). If so, then our findings make sense. Recently, feminist tourism researchers have explored the different forms of gender inequality in the academy and how canons of tourism knowledge are constructed through masculinized practices (Basurto-Barcia & Ricaurte-Quijano, 2017; Chambers et al., 2017; Munar et al., 2015, 2017). Even celebratory portraits published in tourism journals are dominated by male researchers (Ek & Larson, 2017). These various studies remind us of how gendered practices and stereotypes in the tourism academy perpetuate the underrepresentation of women in authorship, professorial positions, and leadership positions in academic journals (Munar et al., 2015; Pritchard & Morgan, 2017). Working environments become even more masculinized as male researchers promote their own networks, furthering the interests of other males.

Homosocial practices contribute to the under-recognition of women researchers, making their works less visible and citable (Nielsen, 2018), a process referred to as the Matthew-Matilda effect (Rossiter, 1993). The latter alludes to the situation that if there are more males as prolific authors and in leadership positions, then they are already highly visible scholars and their works are likely

to garner more citations than female researchers who constantly have to struggle to gain recognition for their works (Dion, Sumner, & Mitchell, 2018; Geraci et al., 2015). Gender homophily which is "the principle that a contact between similar people [or groups] occurs at a higher rate than among dissimilar people", complicates matters further for women (McPherson, Smith-Lovin, & Cook, 2001, p. 416). Gender homophily in citation implies that male scholars will disproportionately cite papers written by other males than female scholars do.

For various structural reasons such as heavier teaching, administrative, and family responsibilities (Ceci, Ginther, Kahn, & Williams, 2014) and gendered hierarchies in academic practices (Basurto-Barcia & Ricaurte-Quijano, 2017), women's productivity falls below that of men, disadvantaging them in bibliometric indicators (Jump, 2015). Furthermore, studies on gender and genre of academic outputs suggest that women are more likely to publish in books than in journal articles (Clemens, Powell, McIlwaine, & Okamoto, 1995; Potter, Higgins, & Gabbidon, 2011). Thus, the emphasis of highly influential bibliometric databases such as Web of Science and Scopus, which are much more driven by journal articles than other forms of academic publishing (Hall, 2016), may structurally discriminate against women who are more likely to focus on books and book chapters as means of conveying academic knowledge (Leahey, 2006). Therefore, it is not surprising that women appear less frequently as prolific authors in academic leadership studies in tourism and hospitality (Pritchard & Morgan, 2017; Zhao & Ritchie, 2007), aggravating the gender divide in output driven metrics such as citation counts.

From a normative approach to citation, women's epistemological and methodological orientation has been suggested as an explanation for the citation gap (Nielsen, 2018). In tourism, research suggests that women tend to gravitate toward constructivist and qualitative methodological approaches (Nunkoo, Hall, & Ladsawut, 2017), a trend also observed in the wider social sciences (Nielsen, 2018). Women's affiliation to qualitative research methodologies in the social sciences potentially emanates from the quantitative-qualitative feminist divide, where feminists consider qualitative methods to advance the cause of women in society, while quantitative methods to defend the masculine status-quo (Maynard & Purvis, 1994). Nunkoo et al.'s (2017) study of articles published in *Annals of Tourism Research* reveals that research approaches are highly gendered, characterized by women's strong preference for qualitative approaches. The disproportionate share of women researchers in the academy (Munar et al., 2015) and a publication system where the most prestigious journals have traditionally favored positivist approaches (Brown & Samuels, 2018; Law et al., 2009) have contributed to the quantification of tourism research, leaving less space for qualitative work to get published (Figueroa-Domecq et al., 2015). Consequently, articles that use quantitative methods receive incremental increases in citations, a process perpetuated by the Matthew-Matilda effect. Thus, it is not surprising that several studies find positivistic research to attract more citations than non-positivist ones, thereby providing a further explanation of the gender gap in citation counts (Maliniak et al., 2013).

Gender conscientious engagement

"Research is not an innocent or distant academic exercise but an activity that has something at stake and that occurs in a set of political and social conditions" (Smith, 2012, p. 20-21). As tourism scholars, there is a responsibility to carry out research conscientiously, mindful of how academic practices perpetuate gender and other gaps in knowledge production and how these inequalities manifest themselves in such indicators as citation counts - what McAdam (2004) refers to as "emancipatory interests" in critical quality perspectives (p. 700). A gender conscientious engagement toward citation practices is multi-scalar, requiring reflexive actions that implicate researchers, the international scientific community, departments and institutions, publishers, journal editors, reviewers, and professional organizations (Mott & Cockayne, 2017). Eliminating the gender gap in citation requires new international norms against biased citation practices (Murdie, 2018). A norm is "a standard of appropriate behavior for actors" (Finnemore & Sikkink, 1998, p. 891). As advocates of gender equality in tourism academia become successful in highlighting the pervasive gender gap in citation, increasing numbers of scholars should recognize the problem and design actions to generate new gender-neutral norms.

Norms are promulgated internationally through the efforts of entrepreneurs (Finnemore & Sikkink, 1998). We consider authors, reviewers, journal editors, and professional organizations as the entrepreneurs of a gender conscientious norm of citation practices. While discourses such as those we advocate in this article may help nurture a norm of gender conscientious citation practices (Murdie, 2018), actions have to be taken at a more practical level to support the development of the norm. In Table 6 we present different gender-based interventions with entrepreneurs having the primary responsibility for promoting and implementing those initiatives. Raising awareness of the gender gap in citation is the responsibility of all entrepreneurs (Maliniak et al., 2013). Journal editors can encourage authors to be more gender neutral in their citation practices. For example, the submission guidelines of *International Studies Quarterly* urge authors to pay attention to "overlooked authors and literature". Recent tools, such as the Gender Balance Assessment Tool (available on https://vad-ev.de/en/toolbox-en/gender-balance/), can estimate gender balance in syllabi and references (Sumner, 2018). To bridge the gender citation gap, editors can also ask authors to limit gratuitous self-citation and instead look to cite appropriate works from more junior scholars, including their dissertations, the latter often providing unacknowledged inspiration for research and publications.

As is the case for some journals in political science and international relations, editors of tourism journals could also consider adopting a triple-blind review process, where they are unaware of the authors' identity at the initial stage of the editorial process. Such a process eliminates any implicit and unconscious gender bias that may exist and sends an important social signal to the international research community that all papers are treated equally (Brown & Samuels, 2018). Alternatively, editors should ensure that a gender balance exists among reviewers. Editor and publisher reports on the performance of their journals could explicitly provide breakdowns of article submission and publication by gender of authors and by first-author gender to raise awareness of any possible gender gaps that exist. Closing the gender gap in citation also requires us to re-think about the ways graduate students are

Table 6
Potential gender-based interventions to reduce citation gap.

Interventions	Entrepreneurs of a gender conscientious norm			
	Authors	Gatekeepers/ publishers	Professional organizations	Universities
• Raise awareness of implicit/explicit gender-bias in citation practices	✓	✓	✓	✓
• Nurture a culture of collaborative research	✓	✓	✓	✓
• Encourage women led mixed-gender teams	✓	✓	✓	✓
• Read through the references prior to submitting papers as a way to self-consciously draw attention to whose work is being cited	✓			
• Introduce sociology of knowledge as part of graduate training			✓	✓
• Recruit more women researchers			✓	✓
• Mentorship programs for women			✓	✓
• Conduct gender audits of editorial processes		✓		
• Adopt triple-blind review		✓		
• Adopt gender-balanced blind review		✓		
• Discourage gratuitous self-citation	✓	✓		
• Editorial/journal citation guidelines		✓		
• Journal reports addressing gender issues		✓		

trained. The sociology of knowledge and its implications for gender equality agenda should be a core component of the doctoral research curriculum. Those engaged in graduate training should also show the benefits of collaborative research that are based solely on research capabilities and outcomes rather than on hierarchical considerations (Brown & Samuels, 2018). Finally, initiatives to recruit more women into the tourism academy and mentorship programs assisting them to publish, co-author, and lead mixed-gender research teams are likely to narrow the gender citation gap.

Research limitations

Notwithstanding the value of our study, it is not free from limitations. First, our sample is restricted to only 10 journals and 1031 authors of the top-cited articles in tourism and hospitality from those journals. The association between gender and citations may be different for less highly ranked journals and those where editors and editorial board members are mostly women. Women are more likely than men to submit articles to such journals (Brown & Samuels, 2018; Dion et al., 2018). Inclusion of a larger set of journals and/or other publishing forms, such as books and book chapters, may provide different insights on the dynamics between authorship, gender, and citation practices. Second, while the study has focused on the main drivers of citations that reflect the universalistic and social constructivist theoretical perspectives, it omits certain article characteristics such as quality, accessibility and visibility, study topic and certain author characteristics such as reputation, previous citations, race, age, and productivity that influence citation (Tahamtan et al., 2016). Incorporating these determinants in the GLM could have changed the magnitude and direction of some of the relationships. Third, the research does not assess whether journal editors and reviewers treat articles written by women differently which may impact on publication success and citation as some previous studies indicate (Van den Brink & Benschop, 2014). Finally, the study uses a purely quantitative method to understand gender differences in citation behaviors. Academic practices are shaped by several factors such as power dynamics, culture, and norms that are not readily quantifiable (Gaughan & Bozeman, 2016). Therefore, interpretive research approaches are required to unveil the complex nature of citation behaviors among researchers.

Conclusion

The institutionalization of research evaluation has spawned a great deal of research and practical interest in bibliometric indicators and metrics and their uses. Citation counts are an established measure of scientific impact widely used in promotion criteria, tenure decisions, research awards, and evaluations of department and universities (Garfield, 1979; Meyer et al., 2018; Tahamtan & Bornmann, 2018). However, the introduction of performance and ranking metrics like citation counts "initiate sweeping changes in status systems, work relations, and the reproduction of inequality" (Espeland & Sauder, 2007, p. 2–3) and have even been described in a tourism context as "systems of surveillance and control" (Hall, 2005, p. 653). Quantitative measures take several elements of the social world for granted, disregarding qualitative differences between individuals and those elements of social relationships that do not ascribe to them (Nielsen, 2018). The gender gap in citation does not only perpetuate hegemonic masculinity, but also masculinizes the knowledge base by promoting certain ideas at the detriment of others. This also influences the direction of scientific discourses and knowledge as certain epistemologies, methodologies, theories, and ideas remain under incorporated in scholarship (Murdie, 2018). This research provides evidence of the gender gap in authorship of the top-cited articles in tourism and hospitality and the gendered nature of citation practices. It also emphasizes on the importance of reflexive research on the sociology of tourism knowledge.

Although citation is just one of several metrics where gendered hierarchies in the tourism academy manifest, it is important to use it consciously, recognizing its ability to unfairly categorize scholars as 'good' or 'poor', and 'productive' or 'unproductive'. If citation counts are to be used as a proxy for merit, it is important that they are considered through a critical lens, taking into account existing

gender and power hierarchies, social factors, differences in expertise, epistemological, theoretical, and methodological orientations between men and women, all of which shape citation practices. A gender-blind approach in the usage of citation counts may only continue to perpetuate discriminatory practices in tourism research. Conceptually framing citation discourses gender conscientiously and developing appropriate gender-focused journal policies would be a positive movement toward a more gender-inclusive agenda for the tourism community. Authors, journal editors, and referees that determine tourism knowledge creation and reproduction have to be constantly reminded that connecting our writings with a larger body of studies and ideas provide researchers with better answers to research problems. Rethinking about whether those being cited represent the diversity of those comprising the tourism field is important to break any inherent hierarchies in the tourism academe. We hope that this article contributes toward a gender conscientious engagement in citation practices among tourism scholars, raises awareness about the dangers of the perfunctory use of citations and citation analysis, and paves the way for further debates on the politics of citations in tourism research.

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