



## Opinion Piece

## Interdisciplinary research in tourism

Fevzi Okumus<sup>a,\*</sup>, Mathilda van Niekerk<sup>a</sup>, Mehmet Ali Koseoglu<sup>b</sup>, Anil Bilgihan<sup>c</sup><sup>a</sup> Rosen College of Hospitality Management, The University of Central Florida, FL 32819, USA<sup>b</sup> School of Hotel and Tourism Management, The Hong Kong Polytechnic University, Hong Kong<sup>c</sup> Department of Marketing, Florida Atlantic University, Boca Raton, Florida USA

## ARTICLE INFO

## Keywords:

Interdisciplinary  
Multidisciplinary  
Transdisciplinary  
Tourism  
Hospitality  
Collaboration

## ABSTRACT

This study investigates how tourism scholars view interdisciplinary research. Data were collected from 356 tourism scholars globally. Results reveal confusion and disagreement among tourism scholars regarding how interdisciplinary research has been defined. Strong attachment to the tourism field and feeling comfortable and familiar with commonly used methodologies provide barriers to interdisciplinary research. Moreover, results suggest that tourism scholars should establish and work in research clusters with scholars from other disciplines to facilitate interdisciplinary research. This is one of the first studies offering research findings and discussion aiming to improve understanding of tourism as an interdisciplinary field of research.

## 1. Introduction

A discipline refers to a detailed knowledge area with distinct borders, a shared language among scholars, and generally shared views and theories (Alvargonzalez, 2011; Leavy, 2011). Specialization in one discipline may, however, blind scholars to the broader context of an issue, creating tunnel vision. Indeed, this tunnel vision may result in limited appreciation of other perspectives, preventing creative breakthroughs (Leavy, 2011; Repko, 2012). Therefore, there has been an increased emphasis on research involving multiple disciplines (Choi & Pak, 2006).

Interdisciplinary research refers to an active collaboration between two or more disciplines working together on a research project (Repko, 2012). Researchers from various disciplines can go beyond their disciplinary boundaries; question their own methodologies, goals, and assumptions; and, if needed, integrate new epistemologies and methodologies to study a research topic of interest (Choi & Pak, 2006; Repko, 2012). During the interdisciplinary research process, the autonomy of each discipline is not maintained, leaving room for the integration and activate participation of scholars from different disciplinary backgrounds (Choi & Pak, 2006; Choi & Pak, 2007; Fawcett, 2013; Leavy, 2011; Millar, 2011, 2013; Repko, 2012). For instance, in an interdisciplinary research project, tourism development at a specific destination might be studied together by economists, planners, historians, and sociologists. During this project, an ongoing interaction and collaboration is expected among the researchers from the different disciplines regarding the research design, data collection, and writing

the research findings and recommendations. The benefits of such research projects are well documented. Collaborative research groups endeavor to merge multiple perspectives and viewpoints (Zehrer & Benckendorff, 2013). They have the ability to oppose various perspectives and viewpoints that is unlikely to be found in a single individual (Beaver, 2001) and enable solving complex problems (Bozeman & Corley, 2004). Scientific collaboration triggers atypical thinking and increases the creativity and innovation of research (Laudel, 2001; Uzzi & Spiro, 2005).

Extensive literature focuses on how scientific collaboration patterns have grown and evolved, and what the dynamics of these collaborations are, as collaboration has been an important phenomenon for the productivity of scholars, institutions, and countries in scientific research. Two methods have been used to delve into the nature, dynamics, and structure of collaborative research. First, scholars have utilized bibliometric methods, including co-authorship analysis or equations showing collaboration trends using secondary data extracted from authors' published studies (Koseoglu, Rahimi, Okumus, & Liu, 2016; Zupic & Cater, 2015). These studies address the growth and evolution of a given discipline's social structure or the impact of this social structure on the productivity of authors, institutions, or countries via both co-authorship and citation analysis (Ferligoj, Kronegger, Mali, Sniijders, & Doreian, 2015; Hoekman, Frenken, & Tijssen, 2010; Kronegger, Mali, Ferligoj, & Doreian, 2015; Leydesdorff & Vaughan, 2006).

Second, researchers have conducted surveys or interviews to explore the nature or dynamics of interdisciplinary research or collaboration via primary data. These studies have focused on the meaning

\* Corresponding author.

E-mail addresses: [Fevzi.okumus@ucf.edu](mailto:Fevzi.okumus@ucf.edu) (F. Okumus), [Mathilda.vanniekerk@ucf.edu](mailto:Mathilda.vanniekerk@ucf.edu) (M. van Niekerk), [Mehmetali.koseoglu@polyu.edu.hk](mailto:Mehmetali.koseoglu@polyu.edu.hk), [trmaliktr@yahoo.com](mailto:trmaliktr@yahoo.com) (M.A. Koseoglu), [abilgihan@fau.edu](mailto:abilgihan@fau.edu) (A. Bilgihan).

of interdisciplinary research or collaboration; the costs and benefits of this research method; who is collaborating; what boundaries exist; what the collaboration experiences are; and what norms, practices, and ethical issues exist in the collaboration processes (Bozeman & Corley, 2004; Bozeman & Youtie, 2015; Bozeman, Gaughan, Youtie, Slade, & Rimes, 2015; Katz & Martin, 1997; Lewis, Ross, & Holden, 2012; Schummer, 2004; Sonnenwald, 2007; Youtie & Bozeman, 2014). Many studies have examined the disciplinary diversity (interdisciplinary or multidisciplinary) in collaboration research using bibliometric methods (Rafols & Meyer, 2010; Yegros-Yegros, Rafols, & D'Este, 2015). However, there remains a dearth of studies exploring what interdisciplinary and multidisciplinary research means, how collaboration takes place, what enablers and barriers exist, and how diversity impacts productivity.

Research in tourism has focused on either a single disciplinary or multidisciplinary approach. It is, therefore, recommended that more interdisciplinary research should take place in the tourism field (Darbellay & Stock, 2012). Nevertheless, tourism scholars may have limited knowledge about interdisciplinary research, or they may have different views on interdisciplinary research. In the tourism literature, several studies have used bibliometric analysis to examine how authorship trends and co-authorship networks have grown and evolved (Hu & Racherla, 2008; Ye, Li, & Law, 2013; Ye, Song, & Li, 2012). However, there is limited research for the tourism academic community questioning the meaning of interdisciplinary research, as well as the enablers of and barriers to interdisciplinary research. Although the focus of Zehrer and Benckendorff's (2013), Benckendorff and Zehrer (2016) studies was not explicitly interdisciplinary research, the concept was identified as a major motive for collaboration between tourism academics. Both papers raise further questions about interdisciplinary research in tourism. Having identified this gap in the field, this study aims to investigate how tourism scholars view interdisciplinary research, identify the enablers of and barriers to interdisciplinary research, and suggest how to facilitate interdisciplinary research in the tourism field. This is one of the first studies in the tourism field on this subject, and the research findings can assist tourism scholars to initiate and manage interdisciplinary research projects.

## 2. Theoretical foundation

### 2.1. Tourism as a field of study

Disagreement exists among tourism scholars as to whether tourism is an academic community, academic study, field, or academic discipline (Belhassen & Caton, 2009; Benckendorff & Zehrer, 2013; Xiao & Smith, 2006). Terms such as academic community, field, and discipline have been used loosely and their meaning changes based on the author, source, context, and discipline. For example, according to Tribe (Tribe, 1997, 2006, 2010), tourism as a field of study is a new addition to academia. Until the 1990s, tourism was not an accepted field of research or viewed as a standalone academic discipline (Jansen-Verbeke, 2009). In recent years, those who study tourism have referred to it in multiple ways: an academic discipline, a practice as an economic tool, or a component of a different academic discipline. Some of these academic disciplines include economics, psychology, geography, anthropology, business studies, and marketing (Echtner & Jamal, 1997; Jafari & Aaser, 1988; Jafari & Brent Ritchie, 1981; Sheldon, 1991). Consequently, tourism research needs and lend itself to collaboration from many different areas of study (Tribe, 1997, 2000, 2004, 2006, 2010).

### 2.2. Collaboration in research

Collaboration in research refers to interactions between at least two scientists, institutions, or countries with respect to a mutually shared, super-ordinated goal (Sonnenwald, 2007). Two types of collaborations exist: formal collaboration and informal collaboration (Katz & Martin,

1997). Formal collaboration includes manuscript co-authorships; and joint presentations at conferences, meetings, seminars, and workshops. Informal collaboration includes conversations with and feedback received from colleagues, journal editors, and manuscript referees (Laband & Tollison, 2000). Words like multidisciplinary (multi), interdisciplinary (inter), and transdisciplinary (trans) research have been used to show disciplinary diversity (Alvargonzalez, 2011).

For example, Choi and Pak (2006) defined these three concepts by showing the differences among them:

Multidisciplinary [research] draws on knowledge from different disciplines but stays within the boundaries of those fields. Interdisciplinarity analyzes, synthesizes and harmonizes links between disciplines into a coordinated and coherent whole. Transdisciplinarity integrates the natural, social and health sciences in a humanities context, and in doing so transcends each of their traditional boundaries. (Choi & Pak, 2006, p. 359, p. 359)

Transdisciplinarity is defined as “research across disciplinary boundaries and in collaboration with stakeholders ... [that] orients scientific research towards issues of social concern” (Tötzer, Sedlacek, & Knoflacher, 2011, pp. 840–841). A principal push for transdisciplinary research is the need for timely and innovative responses to complex, real-world issues (Kemp & Nurius, 2015). Common words for multidisciplinary, interdisciplinary, and transdisciplinary are additive, interactive, and holistic, respectively (Choi & Pak, 2007). Viewed broadly, multidisciplinary, interdisciplinary, and transdisciplinary research represent a continuum of increasing disciplinary integration and interdependence (Kemp & Nurius, 2015). Interdisciplinary collaboration focuses on “integrating, interacting, linking, focusing, [and] blending,” whereas multidisciplinary collaboration uses “juxtaposing, sequencing, [and] coordinating,” and transdisciplinary collaboration focuses on “transcending, transgressing, and transforming” (Klein, 2010). Table 1 summarizes the main characteristics of multi/interdisciplinary and transdisciplinary research by considering dimensions like collaboration, style/time, goals, roles, rules, boundaries, methodologies, and outcome.

In this study, interdisciplinary collaboration refers to collaboration between scholars who study different disciplines to analyze, synthesize, and harmonize the links between disciplines into a coordinated and coherent whole. Interdisciplinary collaboration helps researchers resolve a real-world or complex problem, provide different perspectives on a problem or a comprehensive service. Additionally, interdisciplinary research helps develop consensus regarding definitions and guidelines for complex issues and conditions (Choi & Pak, 2007; Edler, Fier, & Grimpe, 2011; Millar, 2011; Wagner, 2006, 2008).

The strategic benefits of collaboration can motivate scholars, organizations, institutions, and countries to establish projects and research agendas to solve complex problems (Georghiou, 2001; Hoegl & Proserpio, 2004; Katz & Martin, 1997; Katz, 1994; Lima, Liberman, & Russell, 2005; Martin-Sempere, Rey-Rocha, & Garzon-Garcia, 2002; Smeby & Trondal, 2005; Zitt, Bassecoulard, & Okubo, 2000). Additionally, the impacts of these collaborations (Aksnes, 2003; Bridgstock, 1991; Goldfinch, Dale, & DeRouen, 2003; Katz & Hicks, 1997; Narin, Stevens, & Whitlow, 1991) and the role of these collaborations in the academic community (Barabasi, Jeong, Neda, Ravasz, Schubert, & Vicsek, 2002; Ding, 2011; Fischbach, Putzke, & Schoder, 2011; Han, Zhou, Pei, & Jia, 2009; Lee, Kwon, & Kim, 2011; Ordóñez-Matamoros, Cozzens, & Garcia, 2010) are investigated.

Choi and Pak (2007) identified several enablers of research collaboration. These enablers include having a good selection of team members; having good team leaders; the maturity and flexibility of the team members; the personal commitment of team members; the physical proximity of team members; using the Internet and email as a supporting platform; having incentives, institutional support, and

**Table 1**

The characteristic of Multi/Inter/Trans disciplinary research.

Source: Choi &amp; Pak, 2006; 2007; Chua &amp; Yang, 2008; Darbellay &amp; Stock, 2012; Fawcett, 2013; Leavy, 2011; Millar, 2011, 2013; Pless, 1995; Weiler, Moyle, &amp; McLennan, 2012.

Dimensions	Multidisciplinary research	Interdisciplinary research	Transdisciplinary research
Collaboration	Participants from different disciplines work independently.	Participants from different disciplines work together on one project.	Participant from different disciplines, as well as stakeholders and non-academics, work together.
Style/time	Participants from different disciplines work on different aspects of a project.	Participants from different disciplines work jointly.	Participants from different disciplines work together using a shared conceptual framework.
Goals	Participants have separate goals.	Participants have shared goals.	Participants have shared goals and shared skills.
Roles	Participants have separate but inter-related roles.	Participants have common roles.	Participants have role release and role expansion.
Rules	Participants maintain their disciplinary rules.	Participants surrender some aspects of their disciplinary rules.	Participants develop a shared conceptual framework, drawing from discipline-specific bases.
Boundaries	Participants do not challenge their disciplinary boundaries.	Blurs disciplinary boundaries.	Transcends the disciplinary boundaries.
Methodologies	Separate methodologies	Common/shared methodologies	
Outcome	The outcome is the sum of individual parts	The outcome is more than the sum of the individual parts	
Example (Choi & Pak, 2006, p. 359, p. 359)	A salad.	A melting pot.	A cake.

supportive environment for research in the workplace; having a common goal and shared vision; having clarity and rotating roles; having strong communication among team members; and having constructive comments among team members. Choi and Pak (2007) also identified specific barriers to collaboration. The barriers include having a poor selection of disciplines and team members; having a poor team functioning process; the lack of proper measures for evaluating the success of interdisciplinary work; the lack of guidelines regarding multiple authorship in research publications; language problems; insufficient time; insufficient funding for the project; institutional constraints; discipline conflicts; team conflicts; a lack of communication between the disciplines; and having an unequal distribution of power among the disciplines. Hesse-Biber (2016) elucidated three primary inhibitors of interdisciplinary healthcare research: disciplinary comfort zones, a lack of attention to team dynamics, and low levels of reflexivity among interdisciplinary team members. Additionally, Schuitema and Sintov (2017) identified the challenges with and barriers to interdisciplinary energy research, including the lack of knowledge and skills to conduct interdisciplinary research; limited funding for interdisciplinary research; unfit funding evaluation criteria; unsupported publication processes for interdisciplinary research in short-term, academic promotion and tenure processes; and not a fully adapted interdisciplinary research university-level systems.

### 2.3. Interdisciplinary research collaboration in tourism

Several studies in tourism have addressed research collaboration within the tourism field. For example, McKercher and Tung (2016) investigated fractional authorship, referring to the allocation of authorship credits on multi-authored publications in 60 tourism and hospitality journals between 1980 and the end of 2015. McKercher and Tung (2016) found that, although the number of articles published in academic journals has grown, the production per author has declined. Ye et al. (2013) examined research collaboration by utilizing social network analysis on articles published in six leading tourism and hospitality journals between 1991 and 2010. Ye et al. (2013) identified authors from tourism and hospitality research collaborations who played critical roles in establishing networks. Additionally, they evaluated the authors' collaboration strategies regarding extroversive collaboration and introversive collaboration.

Hu and Racherla (2008) vetted the co-authorship network structures in articles published in leading hospitality journals from 2001 to 2005. Based on their findings, they argued that "the hospitality research community is a large yet cohesive knowledge network that is still evolving through rich collaborations that are important for its

advancement as a scientific field" (p. 311). Racherla and Hu (2010) revealed patterns of collaborations in the tourism research community by employing social network analysis to examine articles published in the top three tourism journals from 1996 to 2005: *Annals of Tourism Research*, *Journal of Travel Research*, and *Tourism Management*. Racherla and Hu (2010) suggested that the tourism research community has the rich networks of collaboration that are common in other scientific enterprises, with network analysis showing a significantly higher degree of clustering and dispersion when compared to other domains. By considering tourism and hospitality journals, other studies have also focused on authorship, co-authorship, or institutional collaborations among researchers in tourism and hospitality (Jogaratnam, Chon, McCleary Mena, & Yoo, 2005; Sheldon, 1991; Ye et al., 2012; Zhao & Ritchie, 2007).

Tourism research has multidisciplinary, interdisciplinary, and transdisciplinary characteristics (Liburd, 2012; Tribe & Liburd, 2016, 2017). For example, Belhassen and Caton (2009) showed how tourism epistemology deals with interdisciplinary by offering a framework including three dimensions: tourism morphology and the construction of tourism lingo; the production of a plurality of interpretations; and practical problem solving and the applicability of scholarship. Additionally, Coles, Hall, and Duval (2006) discussed how a post-disciplinary outlook "beyond disciplines" that is more problem-focused, based on more flexible modes of knowledge production, plurality, synthesis, and synergy furthers the field's understanding of several significant contemporary research themes. However, no empirical study has addressed the meaning of multidisciplinary, interdisciplinary, and transdisciplinary collaborations among tourism researchers.

Zehrer and Benckendorff (2013) also examined the reasons for collaboration in their work, illustrating that collaboration among tourism researchers is primarily driven by personal factors, such as the need to increase one's efficiency and make progress more rapidly, to reduce isolation, and to gain travel opportunities, rather than synergy factors, resource factors, or economic factors. Additionally, they found that tourism researchers believe research collaboration improves the quality of research, overall productivity, and esteem and visibility within the academic community. As indicated by Oviedo-García (2016, p. 590),

Although tourism is considered inherently interdisciplinary, multidisciplinary research is a first step that reveals the maturity of a research field, facilitating the synergy of philosophies and techniques arising from multiple disciplines. However, the emergence of a new discipline will only happen through the integration of different concepts and methods generating new concepts and knowledge.

Consequently, no research has identified the enablers of and barriers to research collaboration or for the integration in tourism.

### 3. Methodology

#### 3.1. Research instrument

Based on a literature review (Bozeman & Corley, 2004; Bozeman & Youtie, 2015; Bozeman et al., 2015; Choi & Pak, 2007; Katz & Martin, 1997; Lewis et al., 2012; Millar, 2011; Repko, 2012; Schummer, 2004; Sonnenwald, 2007; Youtie & Bozeman, 2014), an online questionnaire (see Appendix) was developed that included three sections. The first section asked questions about the demographic characteristics of the participants. The second section asked about the differences between interdisciplinary research and multidisciplinary research (Millar, 2011). The final section included statements about the barriers to and enablers of interdisciplinary research, which were adopted from previous studies on collaboration among academic disciplines (Choi & Pak, 2006, 2007; Chua & Yang, 2008; Darbellay & Stock, 2012; Leavy, 2011; Millar, 2011; Weiler, Moyle, & McLennan, 2012). Each question was measured using a five-point Likert scale (i.e., 1 = strongly disagree to 5 = strongly agree). The questionnaire was pretested with faculty members and Ph.D. students at one of the largest hospitality colleges in the United States. Several statements about barriers and enablers were subsequently modified to improve question clarity. After the pretest and the revisions to the questionnaire were made, the final questionnaire was administered.

#### 3.2. Sample and data collection

In this study, a purposive sampling technique was employed (Bryman & Bell, 2015). An invitation email was sent to several academic e-mail groups in tourism. A total of 576 hospitality and tourism scholars from 193 different countries and 182 higher education institutions participated in the study. A total of 431 surveys were completed, with 356 ultimately proving usable. A summary of the 356 usable questionnaires has been provided (see Tables 2 and 3). Of all participants, 33.7% considered themselves both hospitality and tourism researchers, 28.1% considered themselves hospitality researchers, and 25% considered themselves tourism researchers. The primary research discipline of the participants was tourism (18.8%), followed by management (14.6%), marketing (11.2%), hospitality (10.1%), and finance

and accounting (5.9%).

### 4. Results and discussion

#### 4.1. Meaning of interdisciplinary research

Respondents were asked whether differences exist between interdisciplinary research and multidisciplinary research. Approximately 40% of the participants indicated these two concepts were somewhat similar, followed by very different (25.3%), very similar (14.6%), completely different (11.8%), exactly the same (3.7%), and not sure (2.8%). After this, respondents were asked an open-ended question concerning what multidisciplinary research means and how they differentiate interdisciplinary research from multidisciplinary research. About 328 definitions were recorded. Many of them defined multidisciplinary research or collaboration as a simple collaboration of more than one discipline or collaboration of more than one researcher from a different background or expertise. Only a few respondents provided comprehensive and accurate definitions. A few examples from the respondents are provided in Table 4. Another question asked whether the meanings of interdisciplinary and multidisciplinary research are the same or different. Although 56% of the participants thought they were very similar or somewhat similar, 36% thought the meanings were very different or completely different. A follow up question was asked to find out how interdisciplinary research differs from multidisciplinary research. Sample answers are provided in Table 5.

When comparing these definitions with the definitions of interdisciplinary and multidisciplinary provided by Choi and Pak (2006), many of the participants did not accurately indicate what interdisciplinary research means. They could not differentiate interdisciplinary research from multidisciplinary research. Many respondents focused on collaboration between different disciplines or researchers with different backgrounds. The participants did not consider the output of the research or collaboration or how that output affects the discipline. When asked under what conditions they describe their research as interdisciplinary research or collaboration, one of the participants explained provided the following simile: “Multidisciplinary is like a fruit salad, while interdisciplinary is more like a fruit smoothie.” Table 6 illustrates that 81.5% of the participants considered their research interdisciplinary when using at least two disciplines to formulate it. It is evident that researchers consider the research process rather than the type of knowledge dissemination when describing

**Table 2**  
Profile of respondents.

Gender	n	%	Ranks	n	%	Countries	n	%
Male	211	59.3	PhD Student	38	10.7	United States of America	88	24.7
Female	129	36.2	Lecturer	35	9.8	United Kingdom	33	9.3
Total	340	95.5	Instructor	7	2.0	China	30	8.4
Missing	16	4.5	Postdoctoral Fellow	8	2.2	Turkey	22	6.2
Total	356	100.0	Assist. Prof.	83	23.3	Australia	21	5.9
Age			Assoc. Prof.	76	21.3	Hong Kong	18	5.1
18 and 25	4	1.1	Full Professor	68	19.1	Canada	12	3.4
26 to 30	30	8.4	Professor Emeritus	7	2.0	New Zealand	9	2.5
31 to 35	50	14.0	Other	23	6.5	Spain	9	2.5
36 to 40	64	18.0	Total	345	96.9	Malaysia	7	2.0
41 to 45	47	13.2	Missing	11	3.1	India	6	1.7
46 to 50	41	11.5	Total	356	100.0	Republic of Korea	6	1.7
51 to 55	34	9.6	<b>Administrative Role</b>			Greece	5	1.4
56 to 60	32	9.0	Yes	114	32.0	Netherlands	4	1.1
61 to 65	24	6.7	No	228	64.0	Norway	4	1.1
66 and over	9	2.5	Total	342	96.1	Finland	3	.8
Total	335	94.1	Missing	14	3.9	Israel	3	.8
Missing	21	5.9	Total	356	100.0	Italy	3	.8
Total	356	100.0				Others	38	10.7
						Total	321	90.2
						Missing	35	9.8
						Total	356	100

**Table 3**  
Respondents' article and grant numbers.

# of articles published in academic journals during academic career	n	%t	# of articles published in academic journals on average annually during the past five years	n	%	# of research grants secured for the past five years	n	%
Less than 5	77	21.6	0	33	9.3	0	86	24.2
Between 6 and 10	63	17.7	1	68	19.1	1	63	17.7
Between 11 and 15	44	12.4	2	71	19.9	2	59	16.6
Between 16 and 20	31	8.7	3	68	19.1	3	41	11.5
Between 21 and 25	17	4.8	4	31	8.7	4	26	7.3
Between 26 and 30	15	4.2	5+	70	19.7	5+	58	16.3
Over 30 articles	92	25.8	Total	341	95.8	Total	333	93.5
Total	339	95.2	Missing	15	4.2	Missing	23	6.5
Missing	17	4.8	Total	356	100.0	Total	356	100.0
Total	356	100.0						

**Table 4**  
Definitions related to multidisciplinary research.

Definition type	Definitions
Simple definitions:	A mix of disciplines and approaches. A process that incorporates more than two disciplines to achieve the goal of the research. Across many disciplines. Example: business + engineering.
Simple meaningful definition:	It means applying a scientific theory to different fields like tourism, hospitality, transport ... etc.
Simple definitions but not fully correct:	Multidisciplinary is an approach using several disciplines, but with little or no integration.
Comprehensive definition but confused with other research collaboration type:	Combining different core ideas together with various methods. Multidisciplinary refers to knowledge associated with more than one existing academic discipline or profession. A multidisciplinary community or project is made up of people from different disciplines and professions who are engaged in working together as equal stakeholders in addressing a common challenge. The key question is how well the challenge can be decomposed into nearly separable subparts, and then addressed via the distributed knowledge in the community or project team. The lack of shared vocabulary between people and communication overhead is an additional challenge in these communities and projects. However, if similar challenges of a particular type need to be repeatedly addressed, and each challenge can be properly decomposed, a multidisciplinary community can be exceptionally efficient and effective. A multidisciplinary person is a person with degrees from two or more academic disciplines, so one person can take the place of two or more people in a multidisciplinary community or project team. Over time, multidisciplinary work does not typically lead to an increase nor a decrease in the number of academic disciplines. This term refers to research that involves several different disciplines, which may involve collaborations across departments and divisions. It could also mean that within one department you have academics with a range of disciplinary backgrounds who are collaborating on the same project and hence bringing diverse strands of knowledge to it. The research methods being used are maintained by each discipline, and in this way, they are contributing their own knowledge and expertise without actively changing the methods involved in their research. Multidisciplinary research focuses on a specific scientific problem in tourism from the perspective of, and within the boundaries of, a single academic discipline. The researcher applies the concepts and methods of his discipline, and interprets research results at the level of, and from the perspective of, that discipline. Studying tourism from the perspective of a single discipline is a partial approach to the matter. The results of research by other disciplines of the same scientific problem cannot be synthesized or can be synthesized only to a very limited extent. Conclusions obtained in this way cannot be considered scientifically relevant.

interdisciplinary research.

4.2. Barriers to interdisciplinary research or collaboration

Table 7 presents the barriers to interdisciplinary research. The most highly supported statement was, "I identify strongly with my discipline (field)," followed by, "I feel more comfortable using the methodologies I know well in my discipline," and, "My interdisciplinary research grant submissions have not been successful." Regarding potential barriers, the t-test results indicated significant differences between the responses from the different genders in two items: "Working in interdisciplinary research teams is difficult because of different research philosophies," and, "My interdisciplinary research grant submissions have not been successful." The t-test results did not indicate significant differences between researchers who held administrative roles in their institutions.

An ANOVA test was conducted to indicate the differences related to barriers between the researchers' primary research areas, grant numbers in the past five years, average number of published articles, the total number of articles published during their academic careers, ages, and ranks. Significant differences emerged based on responses to the following statements: the number of grants secured in the past five

years, the average number of articles published annually, the number of articles published during their academic career, age, and rank. Common statements showing significant differences were: "The tenure and promotion system at my institution does not reward interdisciplinary research," "I feel more comfortable working on research projects with my graduate students than working with researchers from other disciplines," "My research collaboration attempts with colleagues from other disciplines have failed due to different research philosophies," "My interdisciplinary research grant submissions have not been successful," and, "Colleagues from other disciplines have declined my research collaboration offers."

4.3. Enablers of interdisciplinary research or collaboration

Table 8 presents the research findings concerning the enablers of interdisciplinary research. The statement with the most support was, "Funding agencies often encourage interdisciplinary research design," followed by, "Interdisciplinary research is encouraged at my institution," "I discuss my research with a network of colleagues from outside of my discipline," "If I pursue an interdisciplinary research project, my institution will support me with the necessary tools and resources," and,

**Table 5**  
Statements related to the differences between interdisciplinary research and multidisciplinary research.

Statement type	Differences
Statements showing no differences between the approaches:	Not really sure about this. No differences. Not very much - maybe it suggests a more integrative approach. I don't think it really does.
Statements describing interdisciplinary but not explaining differences:	To me, they mean the same thing. Linkage with two disciplines. Interdisciplinary is the integration of disciplines. Can span more than one discipline. Interdisciplinary research would be colleagues from your area coming to work together. Two or more different academic disciplines involve in a study. Involving other disciplines.
Statements simply explaining the differences:	Looking for new concepts, construct that mix different disciplines. The boundaries of disciplines would be remove more than before and there is more synergy in the project. Here the researchers try to come up with an integration of their knowledge, to gain a 2 + 2 = 5 perspective. Interdisciplinary research is more integrative than multidisciplinary research. It negotiates a middle ground between/among the primary disciplines. There are similarities. Interdisciplinary, however, is more integrated than multidisciplinary, in part perhaps because these individuals are themselves more diverse (polymaths, perhaps?). I believe someone once said multidisciplinary is like a fruit salad while interdisciplinary is more like a fruit smoothie.
Statements comprehensively explaining differences, but either not fully correct, or incorrect:	According to my knowledge of interdisciplinary research is different to multidisciplinary research in two ways. First, multidisciplinary research provides research across disciplines those are not having historical relations or not been practiced till date by a large number of researchers while interdisciplinary research takes care of disciplines related to each other and having high correlations. Second, interdisciplinary research attracts a large number of audience compared to multidisciplinary research. In interdisciplinary research there is no overlap of the theory or applications. Two disciplines remain different but collaborate on a topic that requires interdisciplinary approach using theories/frameworks from distinct fields. Ex; Behavioral Economics; Population Ecology; Sustainability and Energy Systems etc. In these instances, the 'mother' disciplines continue to remain different but cooperate on case by case basis. In this research, the primary investigators remain committed to the 'mother' disciplines but cooperate as case arises.
Statements comprehensively explaining the differences:	An interdisciplinary field is a field of study that crosses traditional boundaries between academic disciplines or schools of thought, as new needs and professions have emerged. Multidisciplinary field is a non-integrative mixture of disciplines in any that each discipline retains its methodologies and assumptions without change or development from other disciplines within the multidisciplinary relationship. Interdisciplinary means that you are trying to enlighten a concept in the frame of different disciplines which have a tight connection among each other. Therefore, the researcher is trying to define and identify something by different views that all have something in common with the subject and/or the concept. What differs from multidisciplinary at that point is that; in interdisciplinary you have to combine all disciplines under a roof but in multidisciplinary approach, you examine the same concept, but you do not need to make a connection and combine all the results of different disciplines and the methods these disciplines apply.

“I have established networks among faculty members who are interested in doing interdisciplinary research,” Regarding these enabling factors, the *t*-test results indicated significant differences between researchers occupying administrative roles in their institutions in one item: “My institution has programs to encourage interdisciplinary research among faculty members.” The *t*-test results did not indicate significant differences regarding gender. Another ANOVA test was conducted to indicate the differences relating to these enablers between researchers’ primary research areas, the number of grants secured in the past five years, the average number of published articles, the number of

articles published during their academic carriers, ages, and ranks. Based on the number of grants secured in the past five years, the average number of articles published annually, and rank, significant differences emerged in a few statements, including, “Interdisciplinary research is encouraged at my institution,” “If I pursue an interdisciplinary research project, my institution will support me with the necessary tools and resources,” “My institution provides me with funds to bring interdisciplinary research colleagues to campus,” and, “Funding agencies often encourage interdisciplinary research design.”

The research findings related to the enablers of and barriers to

**Table 6**  
Reasons to describe their research as interdisciplinary research.

Reasons	Yes	No	Does not Apply	Missing
I use research from multiple disciplines to formulate my research questions.	81.5	12.6	5.3	.6
To answer my research questions, I read research from multiple disciplines.	80.3	14.6	5.1	–
I use theories from multiple disciplines to conduct my research.	80.3	13.2	6.2	.3
I cite research from multiple disciplines.	78.4	15.7	5.6	.3
I use methods from multiple disciplines to conduct my research.	73.6	19.4	6.7	.3
My research implications are relevant or applicable to multiple disciplines.	68.3	23.0	7.3	1.4
I have published with colleagues from other disciplines.	57.3	32.0	9.3	1.4
My research team consists of researchers from multiple disciplines.	55.6	28.4	14.6	1.4
I have presented my research at an interdisciplinary conference.	53.1	36.5	9.0	1.4
I have published my research in an interdisciplinary journal.	52.5	36.0	10.7	.8
I have published my work in a journal outside my main discipline.	48.9	38.5	11.5	1.1
I have published work that has been frequently cited by scholars from other disciplines.	44.1	39.3	14.9	1.7
I have secured research grants working with researchers from multiple disciplines.	42.7	38.2	17.4	1.7
I have published my research in an interdisciplinary book.	37.4	45.5	15.7	1.4

**Table 7**  
Barriers to interdisciplinary research or collaboration.

Barriers (Cronbach's Alpha: .881)	Mean	Std
I identify strongly with my discipline (field).	3.72	1.100
I feel more comfortable using the methodologies I know well in my discipline.	3.38	1.125
My interdisciplinary research grant submissions have not been successful.	3.18	1.504
Colleagues from other disciplines do not value the research we do in our discipline.	2.95	1.153
Working in interdisciplinary research teams is difficult because of different research philosophies.	2.94	1.210
I feel more comfortable working on research projects with colleagues in my discipline than working with researchers from other disciplines.	2.92	1.186
Working in interdisciplinary research teams is difficult because of the amount of time required.	2.92	1.200
I feel more comfortable working on research projects with my graduate students than working with researchers from other disciplines.	2.90	1.227
My institution is less likely to support attending a conference outside my discipline (field).	2.85	1.155
My research collaboration attempts with colleagues from other disciplines have failed due to different research philosophies.	2.84	1.424
The tenure and promotion system at my institution does not reward interdisciplinary research.	2.83	1.257
During my graduate training, I was not encouraged to work with faculty members in different disciplines.	2.81	1.232
Colleagues from other disciplines have declined my research collaboration offers.	2.72	1.364
I prefer to work alone when conducting research.	2.50	1.152
I avoid interdisciplinary research because it may require work in teams.	2.27	1.093
I do not read research from another disciplinary perspective.	2.10	.987

interdisciplinary research and collaboration were similar to those of previous studies (e.g., Carayol & Nguyen Thi, 2005; Millar, 2011). Based on these findings, individuals, institutions, and funding agencies play a critical role in developing an interdisciplinary research environment. More specifically, the findings imply that the current lack of interdisciplinary research is likely caused by institutions and funding agencies that do not integrate or consider making interdisciplinary research a requirement. However, the interdisciplinary research processes impacted the number of grants secured for the past five years and the number of articles published annually. This finding implies that reward systems or incentive programs could be embedded into operational processes to stimulate interdisciplinary research. The interdisciplinary research environment enhances multidisciplinary research environment. Consequently, institutions should develop programs or events to that attract researchers from different disciplines (Carayol & Nguyen Thi, 2005). The research findings also suggest that career path chosen remains an important indicator for interdisciplinary research (Millar, 2013). Hence, these programs should create opportunities for collaboration.

**5. Conclusions and recommendations**

This study investigated how tourism scholars view interdisciplinary research and what enablers of and barriers to interdisciplinary research exist in the tourism field. This is one of the first studies on interdisciplinary research in the field of tourism. Several conclusions can be drawn based on this study's research findings and discussions. First, research in many disciplines can no longer operate independently as research problems are too complex; instead, such research problems requires close collaboration and expertise of researchers from different disciplines in order to solve the problems (Fawcett, 2013). In recent years, interdisciplinary research has gained global attention, and

governments, universities, and funding agencies often encourage interdisciplinary research approaches (Millar, 2013). However, there is a lack of knowledge and limited understanding among tourism scholars of the concept of interdisciplinary research. Second, several studies (Belhassen & Caton, 2009; Coles et al., 2006; Echtner & Jamal, 1997; Jafari & Brent Ritchie, 1981; Laws & Scott, 2015; Liburd, 2012; Sayer, 1999; Tribe, 1997) addressed the epistemological and ontological roots of tourism knowledge. In recent years, Laws and Scott (2015) have used the mosaic metaphor to explain the body of knowledge in tourism, and to show how tourism researchers produce valuable knowledge relevant to the academic community. Additionally, Tribe and Liburd (2016) developed a new perspective that extends the scope of interdisciplinarity by focusing on epistemology, ontology, axiology, power, networks, and knowledge management via the system approach (input, process and output). Munar and Jamal (2016) considered Khun's paradigm perspective to explain the paradigm shifts in tourism research and opening up of new approaches in the field. Finally, Isaac and Platenkamp (2017) suggested a critical theory approach for generating valuable knowledge in tourism, while supporting the use of the paradigm terminology, as suggested by Munar and Jamal (2016). These arguments suggest that the epistemology of the tourism field is highlighted by how independent or dependent tourism is on other disciplines to produce knowledge. Tribe and Liburd (2016) emphasize the inevitability of interdisciplinary and multidisciplinary research in tourism by stating:

We are all part of a knowledge production machine, the elements of which are often hidden or taken for granted (black boxed). If we wish to claim greater agency and participate in research for a better world, we need to have a sophisticated understanding of how this machine works so that we might mobilise our forces for greater agency and more mindful research and impact in the world [of

**Table 8**  
Enablers of interdisciplinary research or collaboration.

Enablers (Cronbach's Alpha: .914)	Mean	Std
Funding agencies often encourage interdisciplinary research design.	3.67	1.225
Interdisciplinary research is encouraged at my institution.	3.56	1.042
I discuss my research with a network of colleagues from outside of my discipline.	3.55	1.013
If I pursue an interdisciplinary research project, my institution will support me with the necessary tools and resources.	3.54	1.054
I have established networks among faculty members who are interested in doing interdisciplinary research.	3.51	1.143
During my graduate training, I was prepared to conduct interdisciplinary research.	3.50	1.088
My institution supports faculty members to establish research networks to conduct interdisciplinary research.	3.48	1.120
My institution has programs to encourage interdisciplinary research among faculty members.	3.44	1.148
Researchers from other disciplines often approach me to work together on research projects.	3.42	1.182
My institution provides me with funds to attend an interdisciplinary conference.	3.41	1.100
My institution provides me with funds to bring interdisciplinary research colleagues to campus.	3.20	1.194

tourism] ... The tourism knowledge system reveals not only the mainstream processes of theoretical advancement, practical problem-solving and real-world engagement but also the radical possibilities of ontological politics in tourism research. (p. 59)

Considering this, the primary contribution of this study is to determine how researchers can advance the tourism field further to produce valuable knowledge through interdisciplinary research. The findings of this study suggest that some confusion and disagreement exist among tourism scholars concerning the meaning of interdisciplinary research and the differences between interdisciplinary and multidisciplinary research. The primary reasons to describe research as interdisciplinary include using research from multiple disciplines to formulate research questions, responding to research questions from multiple disciplines, using theories from multiple disciplines to conduct research, and using methods from multiple disciplines to conduct research. Since the field requires more interdisciplinary research studies in tourism (Bauer, 2015; Butler, 2015; Filep, 2014; Gretzel, 2011; Hall, 2015; Rojas, Malow, Ruffin, Roth, & Rosenberg, 2011), such confusion and disagreements should be resolved. Tourism scholars should use the correct terminology based on the exact nature of interdisciplinary and multidisciplinary research. If they do not know the exact nature of the research or the level of the involvement from the multiple disciplines, they should use the term “multiple disciplinary research,” as suggested by Choi and Pak (2006, p. 359). Graduate programs should also address how to design interdisciplinary and multidisciplinary research projects. Doctorate students need ongoing opportunities and support to conduct interdisciplinary research. Programs may consider requiring frequent interactions with mentors from different areas of expertise. Programs could also offer seminars emphasizing the interrelationships among disciplinary perspectives. Students should be exposed to different methodologies and fields, which could be achieved via course requirements and guidance from mentors.

Academic conferences should dedicate sessions to disseminating the correct use of the concepts. Such conferences should integrate the correct approach during the paper review process and for proposed conference sessions. Journal editors and reviewers are advised to encourage authors to use appropriate terms in their papers by considering the exact nature of the research or the level of the involvement from multiple disciplines. Editors may also consider devoting special issues to interdisciplinary and multidisciplinary research. Senior researchers should show commitment to using correct approaches when leading research projects. This study suggests there is a strong attachment to his or her primary discipline among researchers, which serves as a barrier to conducting interdisciplinary research. In this case, Generation Tourism researchers who have no parent discipline in this context (Filep, Hughes, Mostafanezhad, & Wheeler, 2015) can play an active role in the interdisciplinary and multidisciplinary research projects of tourism academia by building on the strong foundations of their predecessors. Consequently, a common goal and shared vision should be created to avoid discipline conflicts by confronting these problems directly (Choi & Pak, 2007). Finally, policy- and decision makers should clarify the concept and expectations for the interdisciplinary research process and also incentivize more interdisciplinary research.

The main barriers to interdisciplinary research include the researchers' strong attachments to their primary disciplines, feeling more comfortable using familiar methodologies, and failed grant submissions. Enablers of interdisciplinary research include the possibility of establishing research networks with scholars from different fields, discussing research projects with a network of colleagues from other disciplines, and academic institutions encouraging interdisciplinary research. The findings suggest that researchers' backgrounds, institution facilities, and collaboration types influence the nature and level of the interdisciplinary research they engage in (Lee & Bozeman, 2005). Consequently, both individuals and institutions should be responsible for encouraging and improving the level of interdisciplinary research by

focusing on the enablers of, barriers to, and strategies for enhancing multiple-disciplinary teamwork, as indicated other fields (Choi & Pak, 2007; Hesse-Biber, 2016; Schuitema & Sintov, 2017).

Finally, a researcher's background, including his or her age, gender, rank, status, family status, and citizenship, were found to impact the complexity of the interdisciplinary research they engage in (Lee & Bozeman, 2005). Results suggest that rank and age play critical roles in the complexity, scope and frequency of engaging in interdisciplinary research. Researchers should consider their colleagues' backgrounds when collaborating, and members of a research team should understand the expectations of their team members to improve how the team works (Choi & Pak, 2007). Institutional strategies, such as meeting promotion criteria, incentives, collaboration strategies, and job satisfaction, are enablers that impact the scope of interdisciplinary research (Lee & Bozeman, 2005). Institutions should revise their promotion criteria and incentive policies to encourage interdisciplinary research.

### 5.1. Limitations and future research

This study is one of the first in tourism research to provide critical discussions and suggestions for improving understanding regarding interdisciplinary research among tourism scholars. However, this study has several limitations. Future studies can collect data from a wider sample of tourism scholars. Additionally, this study did not consider why tourism scholars collaborated, which likely affects both barriers and enablers. New research can further examine these concepts. The levels of disciplinary diversity that can affect the barriers and enablers were not considered. Future studies can conduct qualitative research via in-depth interviews with senior researchers to gain a deeper understanding. Finally, future studies can share the processes of successfully completed interdisciplinary research projects.

### Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.tourman.2018.05.016>.

### References

- Aksnes, D. W. (2003). Characteristics of highly cited papers. *Research Evaluation*, 12, 159–170.
- Alvargonzalez, D. (2011). Multidisciplinarity, interdisciplinarity, Transdisciplinarity, and the sciences. *International Studies in the Philosophy of Science*, 25(4), 387–403.
- Barabási, A. L., Jeong, H., Neda, Z., Ravasz, E., Schubert, A., & Vicsek, T. (2002). Evolution of the social network of scientific collaborations. *Physica A: Statistical Mechanics and its Applications*, 311(3–4), 590–614.
- Bauer, I. L. (2015). Looking over the fence—how travel medicine can benefit from tourism research. *Journal of Travel Medicine*, 22(3), 206–207.
- Beaver, D. (2001). Reflections on scientific collaboration and its study. *Scientometrics*, 52, 365–377.
- Belhassen, Y., & Caton, K. (2009). Advancing understandings: A linguistic approach to tourism epistemology. *Annals of Tourism Research*, 36(2), 335–352.
- Benckendorff, P., & Zehrer, A. (2013). A network analysis of tourism research. *Annals of Tourism Research*, 43, 121–149.
- Benckendorff, P., & Zehrer, A. (2016). Career and collaboration patterns in tourism research. *Current Issues in Tourism*, 19(14), 1386–1404.
- Bozeman, B., & Corley, E. (2004). Scientists' collaboration strategies: Implications for scientific and technical human capital. *Research Policy*, 33(4), 599–616.
- Bozeman, B., Gaughan, M., Youtie, J., Slade, C. P., & Rimes, H. (2015). Research collaboration experiences, good and bad: Dispatches from the front lines. *Science and Public Policy*, 43(2), 226–244.
- Bozeman, B., & Youtie, J. (2015). Trouble in paradise: Problems in academic research co-authoring. *Science and Engineering Ethics*, 22(6), 1717–1743.
- Bridgstock, M. (1991). The quality of single and multiple authored papers—an unresolved problem. *Scientometrics*, 21, 37–48.
- Bryman, A., & Bell, E. (2015). *Business research methods*. USA: Oxford University Press.
- Butler, R. (2015). The evolution of tourism and tourism research. *Tourism Recreation Research*, 40(1), 16–27.
- Carayol, N., & Nguyen Thi, T. U. (2005). Why do academic scientists engage in interdisciplinary research? *Research Evaluation*, 14(1), 70–79.
- Choi, B. C., & Pak, A. W. (2006). Multidisciplinarity, interdisciplinarity and transdisciplinarity in health research, services, education and policy: 1. Definitions, objectives, and evidence of effectiveness. *Clinical and Investigative Medicine*, 29(6), 351.
- Choi, B. C., & Pak, A. W. (2007). Multidisciplinarity, interdisciplinarity, and

- transdisciplinarity in health research, services, education and policy: 2. Promoters, barriers, and strategies of enhancement. *Clinical and Investigative Medicine*, 30(6), 224–232.
- Chua, A. Y., & Yang, C. C. (2008). The shift towards multi-disciplinarity in information science. *Journal of the Association for Information Science and Technology*, 59(13), 2156–2170.
- Coles, T., Hall, C. M., & Duval, D. T. (2006). Tourism and post-disciplinary enquiry. *Current Issues in Tourism*, 9(4–5), 293–319.
- Darbellay, F., & Stock, M. (2012). Tourism as complex interdisciplinary research object. *Annals of Tourism Research*, 39(1), 441–458.
- Ding, Y. (2011). Scientific collaboration and endorsement: Network analysis of co-authorship and citation networks. *Journal of Informetrics*, 5(1), 187–203.
- Echtner, C. M., & Jamal, T. B. (1997). The disciplinary dilemma of tourism studies. *Annals of Tourism Research*, 24(4), 868–883.
- Edler, J., Fier, H., & Grimpe, C. (2011). International scientist mobility and the locus of knowledge and technology transfer. *Research Policy*, 40(6), 791–805.
- Fawcett, J. (2013). Thoughts about multidisciplinary, interdisciplinary, and transdisciplinary research. *Nursing Science Quarterly*, 26(4), 376–379.
- Ferligoj, A., Kronegger, L., Mali, F., Snijders, T. A. B., & Doreian, P. (2015). Scientific collaboration dynamics in a national scientific system. *Scientometrics*, 104(3), 985–1012.
- Filep, S. (2014). Consider prescribing tourism. *Journal of Travel Medicine*, 21(3), 150–152.
- Filep, S., Hughes, M., Mostafanezhad, M., & Wheeler, F. (2015). Generation tourism: Towards a common identity. *Current Issues in Tourism*, 18(6), 511–523.
- Fischbach, K., Putzke, J., & Schoder, D. (2011). Co-authorship networks in electronic markets research. *Electronic Markets*, 21, 19–40.
- Georghiou, L. (2001). Evolving frameworks for European collaboration in research and technology. *Research Policy*, 30(6), 891–903.
- Goldfinch, S., Dale, T., & DeRouen, K. (2003). Science from the periphery: Collaboration, networks and “periphery effects” in the citation of New Zealand Crown Research Institutes articles, 1995–2000. *Scientometrics*, 57, 321–337.
- Grezel, U. (2011). Intelligent systems in tourism: A social science perspective. *Annals of Tourism Research*, 38(3), 757–779.
- Hall, C. M. (2015). Tourism and biological exchange and invasions: A missing dimension in sustainable tourism? *Tourism Recreation Research*, 40(1), 81–94.
- Han, Y., Zhou, B., Pei, J., & Jia, Y. (2009). Understanding importance of collaborations in co-authorship networks: A supportiveness analysis approach. *Proceedings of the ninth SIAM international conference on data mining*.
- Hesse-Biber, S. (2016). Doing interdisciplinary mixed methods health care research: Working the boundaries, tensions, and synergistic potential of team-based research. *Qualitative Health Research*, 26(5), 649–658.
- Hoegl, M., & Proserpio, L. (2004). Team member proximity and teamwork in innovative projects. *Research Policy*, 33(8), 1153–1165.
- Hoekman, J., Frenken, K., & Tijssen, R. J. W. (2010). Research collaboration at a distance: Changing spatial patterns of research collaboration in Europe. *Research Policy*, 39, 662–673.
- Hu, C., & Racherla, P. (2008). Visual representation of knowledge networks: A social network analysis of hospitality research domain. *International Journal of Hospitality Management*, 27, 302–312.
- Isaac, R. K., & Platenkamp, V. (2017). Value free research: Weber revisited. *Annals of Tourism Research*, 63, 223–227.
- Jafari, J., & Aaser, D. (1988). Tourism as the subject of doctoral dissertations. *Annals of Tourism Research*, 15(3), 407–429.
- Jafari, J., & Brent Ritchie, J. (1981). Toward a framework for tourism education: Problems and prospects. *Annals of Tourism Research*, 8(1), 13–34.
- Jansen-Verbeke, M. (2009). The territoriality paradigm in cultural tourism. *Tourism*, 19(1–2), 25–31.
- Jogaratanam, G., Chon, K., McCleary, K., Mena, M., & Yoo, J. (2005). An analysis of institutional contributors to three major academic tourism journals: 1992–2001. *Tourism Management*, 26, 641–648.
- Katz, J. S. (1994). Geographical proximity and scientific collaboration. *Scientometrics*, 31(1), 31–43.
- Katz, J. S., & Hicks, D. (1997). How much is a collaboration worth? A calibrated bibliometric model. *Scientometrics*, 40, 541–554.
- Katz, J. S., & Martin, B. R. (1997). What is research collaboration? *Research Policy*, 26, 1–18.
- Kemp, S. P., & Nurius, P. S. (2015). Preparing emerging doctoral scholars for transdisciplinary research: A developmental approach. *Journal of Teaching in Social Work*, 35(1–2), 131–150.
- Klein, J. T. (2010). A taxonomy of interdisciplinarity. In R. Frodeman (Ed.). *The Oxford handbook of interdisciplinarity* (pp. 15–30). Oxford: Oxford University Press.
- Koseoglu, M. A., Rahimi, R., Okumus, F., & Liu, J. (2016). Bibliometric studies in tourism. *Annals of Tourism Research*, 61, 180–198.
- Kronegger, L., Mali, F., Ferligoj, A., & Doreian, P. (2015). Classifying scientific disciplines in Slovenia: A study of the evolution of collaboration structures. *Journal of the Association for Information Science and Technology*, 66(2), 321–339.
- Laband, D. N., & Tollison, R. D. (2000). Intellectual collaboration. *Journal of Political Economy*, 108(3), 632–662.
- Laudel, G. (2001). Collaboration, creativity and rewards: Why and how scientists collaborate. *International Journal of Technology Management*, 22(7–8), 762–781.
- Laws, E., & Scott, N. (2015). Tourism research: Building from other disciplines. *Tourism Recreation Research*, 40(1), 48–58.
- Leavy, P. (2011). *Essentials of transdisciplinary research*. Walnut Creek: Left Coast Press.
- Lee, S., & Bozeman, B. (2005). The impact of research collaboration on scientific productivity. *Social Studies of Science*, 35(5), 673–702.
- Lee, B., Kwon, O., & Kim, H. J. (2011). Identification of dependency patterns in research collaboration environments through cluster analysis. *Journal of Information Science*, 37(1), 67–85.
- Lewis, J. M., Ross, S., & Holden, T. (2012). The how and why of academic collaboration: Disciplinary differences and policy implications. *Higher Education*, 64(5), 693–708.
- Leydesdorff, L., & Vaughan, L. (2006). Co-occurrence matrices and their applications in information science: Extending ACA to the Web environment. *Journal of the American Society for Information Science and Technology*, 57(12), 1616–1628.
- Liburd, J. J. (2012). Tourism research 2.0. *Annals of Tourism Research*, 39(2), 883–907.
- Lima, M., Liberman, S., & Russell, J. M. (2005). Scientific group cohesiveness at the national university of Mexico. *Scientometrics*, 64(1), 55–66.
- Martin-Sempere, M. J., Rey-Rocha, J., & Garzon-Garcia, B. (2002). The effect of team consolidation on research collaboration and performance of scientists. Case study of Spanish university researchers in geology. *Scientometrics*, 55(3), 377–394.
- McKercher, B., & Tung, V. (2016). The rise of fractional authors. *Annals of Tourism Research*, 61, 213–267.
- Millar, M. M. (2011). *Interdisciplinary research among US doctoral graduates: An examination of definitions, measurement, early career outcomes, and sex differences*. Doctoral dissertation, Washington State University.
- Millar, M. M. (2013). Interdisciplinary research and the early career: The effect of interdisciplinary dissertation research on career placement and publication productivity of doctoral graduates in the sciences. *Research Policy*, 42(5), 1152–1164.
- Munar, A. M., & Jamal, T. (2016). What are paradigms for? In A. M. Munar, & T. Jamal (Vol. Eds.), *Tourism research paradigms: Critical and emergent knowledges. Tourism social science series: Vol.22*, (pp. 1–16). Bingley: Emerald Group Publishing Limited.
- Narin, F., Stevens, K., & Whitlow, E. S. (1991). Scientific co-operation in Europe and the citation of multinationally authored papers. *Scientometrics*, 21, 313–323.
- Ordóñez-Matamoros, H. G., Cozzens, S. E., & Garcia, M. (2010). International co-authorship and research team performance in Colombia. *The Review of Policy Research*, 27(4), 415–431.
- Oviedo-García, M.Á. (2016). Tourism research quality: Reviewing and assessing interdisciplinarity. *Tourism Management*, 52, 586–592.
- Pless, I. B. (1995). Interdisciplinary and multidisciplinary are not synonymous. *Journal of International Society for Child and Adolescent Injury Prevention*, 1, 65–66.
- Racherla, P., & Hu, C. (2010). A social network perspective of tourism research collaborations. *Annals of Tourism Research*, 37(4), 1012–1034.
- Rafols, I., & Meyer, M. (2010). Diversity and network coherence as indicators of interdisciplinarity: Case studies in bionanoscience. *Scientometrics*, 82, 263–287.
- Repko, A. (2012). *Interdisciplinary research process and theory*. Thousand Oaks, CA: Sage.
- Rojas, P., Malow, R., Ruffin, B., Roth, E., & Rosenberg, R. (2011). The HIV/AIDS epidemic in the Dominican Republic: Key contributing factors. *Journal of the International Association of Physicians in AIDS Care*, 306–315.
- Sayer, A. (1999). *Long live postdisciplinary studies! Sociology and the curse of disciplinary parochialism/imperialism*. Lancaster Department of Sociology, Lancaster University.
- Schuitema, G., & Sintov, N. D. (2017). Should we quit our jobs? Challenges, barriers and recommendations for interdisciplinary energy research. *Energy Policy*, 101, 246–250.
- Schummer, J. (2004). Multidisciplinarity, interdisciplinarity, and patterns of research collaboration in nanoscience and nanotechnology. *Scientometrics*, 59(3), 425–465.
- Sheldon, P. J. (1991). An authorship analysis of tourism research. *Annals of Tourism Research*, 18, 473–484.
- Smeby, J. C., & Trondal, J. (2005). Globalisation or Europeanisation? International contact among university staff. *Higher Education*, 49(4), 449–466.
- Sonnenwald, D. (2007). Scientific collaboration: A synthesis of challenges and strategies. *Annual Review of Information Science & Technology*, 41, 643–681.
- Tötzer, T., Sedlacek, S., & Knoflacher, M. (2011). Designing the future—a reflection of a transdisciplinary case study in Austria. *Futures*, 43(8), 840–852.
- Tribe, J. (1997). The indiscipline of tourism. *Annals of Tourism Research*, 24(3), 638–657.
- Tribe, J. (2000). Undisciplined and unsubstantiated. *Annals of Tourism Research*, 27(3), 809–813.
- Tribe, J. (2004). Knowing about tourism: Epistemological issues. In J. Phillimore, & L. Goodson (Eds.). *Qualitative research in tourism: Ontologies, epistemologies and methodologies* (pp. 46–62). New York, NY: Routledge.
- Tribe, J. (2006). The truth about tourism. *Annals of Tourism Research*, 33(2), 360–381.
- Tribe, J. (2010). Tribes, territories and networks in the tourism academy. *Annals of Tourism Research*, 37(1), 7–33.
- Tribe, J., & Liburd, J. J. (2016). The tourism knowledge system. *Annals of Tourism Research*, 57, 44–61.
- Tribe, J., & Liburd, J. J. (2017). Tourism knowledge: A robust, adaptable system (reply to Isaac and Platenkamp). *Annals of Tourism Research*, 63, 223–227.
- Uzzi, B., & Spiro, J. (2005). Collaboration and creativity: The small world problem. *American Journal of Sociology*, 111(2), 447–504.
- Wagner, C. (2006). International collaboration in science and technology: Promises and pitfalls. In L. Box, & R. Engelhard (Eds.). *Science and technology policy for development dialogues at the interfaces* (pp. 165–176). New York, NY: Anthem Press.
- Wagner, C. (2008). *The new invisible college science for development*. Washington D.C.: Brookings Institution Press.
- Weiler, B., Moyle, B., & McLennan, C. L. (2012). Disciplines that influence tourism doctoral research: The United States, Canada, Australia and New Zealand. *Annals of Tourism Research*, 39(3), 1425–1445.
- Xiao, H., & Smith, S. L. J. (2006). The maturation of tourism research: Evidence from a content analysis. *Tourism Analysis*, 10, 335–348.
- Yegros-Yegros, A., Rafols, I., & D'Este, P. (2015). Does interdisciplinary research lead to higher citation impact? The different effects of proximal and distal interdisciplinarity. *PLoS One*, 10(8), e0135095.
- Ye, Q., Li, T., & Law, R. (2013). A coauthorship network analysis of tourism and hospitality research collaboration. *Journal of Hospitality & Tourism Research*, 37(1), 51–76.
- Ye, Q., Song, H., & Li, T. (2012). Cross-institutional collaboration networks in tourism and

- hospitality research. *Tourism Management Perspectives*, 2(3), 55–64.
- Youtie, J., & Bozeman, B. (2014). Social dynamics of research collaboration: Norms, practices, and ethical issues in determining co-authorship rights. *Scientometrics*, 101(2), 953–962.
- Zehrer, A., & Benckendorff, P. (2013). Determinants and perceived outcomes of tourism research collaboration. *Tourism Analysis*, 18(4), 355–370.
- Zhao, W., & Ritchie, J. R. B. (2007). An investigation of academic leadership in tourism research: 1985–2004. *Tourism Management*, 28, 476–490.
- Zitt, M., Basseculard, E., & Okubo, Y. (2000). Shadows of the past in international co-operation: Collaboration profiles of the top five producers of science. *Scientometrics*, 47, 627–657.
- Zupic, I., & Cater, T. (2015). Bibliometric methods in management and organization. *Organizational Research Methods*, 18(3), 429–472.



**Fevzi Okumus**, PhD is the CFHLA Preeminent Chair Professor at the University of Central Florida's Rosen College of Hospitality Management. He is the Editor of the International Journal of Contemporary Hospitality Management (IJCHM) and the Co-Founding Editor-in-Chief of the Journal of Hospitality and Tourism Insights (JHTI). His research areas include strategy implementation, competitive advantage, crisis management, experience marketing and destination marketing. He has widely published in top tier journals. He serves on editorial boards of 24 academic journals. His email is [fevzi.okumus@ucf.edu](mailto:fevzi.okumus@ucf.edu)



**Dr. Mathilda Van Niekerk** is an Associate Professor at the University of Central Florida's Rosen College of Hospitality Management. She has over 110 academic publications. Her research focuses on stakeholder theory and community participation within the tourism destinations as well as the impacts of tourism, festivals and events on their livelihood. She serves on the editorial boards of several academic journals and is the Co-Founding Editor-in-Chief of the Journal of Hospitality and Tourism Insights (JHTI) and the Managing Editor of the International Journal of Contemporary Hospitality Management (IJCHM). Her email is [Mathilda.vanniekerk@ucf.edu](mailto:Mathilda.vanniekerk@ucf.edu)



**Dr. Mehmet Ali Koseoglu** is an Assistant Professor of Hospitality Management at the Hong Kong Polytechnic University. He is the Editor of the International Journal of Bibliometrics in Business and Management (IJBBM). His research interests include strategic management and bibliometric analysis in tourism and hospitality. He has published in leading hospitality and tourism journals including *Annals of tourism Research*, *International Journal of Hospitality Management*, and *International Journal of Contemporary Hospitality Management*. His email is [mehmetali.koseoglu@polyu.edu.hk](mailto:mehmetali.koseoglu@polyu.edu.hk)



**Dr. Anil F Bilgihan**, is an Associate Professor in the Marketing Department and Hospitality Management at Florida Atlantic University. He has published over 50 refereed journal articles, three book chapters, one textbook (two editions), one journal editorial board, two industry reports and 48 refereed conference proceedings. His research focuses on social media marketing, online marketing & consumer behavior, strategic technology investment and IT-induced competitive advantage, online shopping motivations, e-commerce and m-commerce. His email is [abilgihan@fau.edu](mailto:abilgihan@fau.edu)