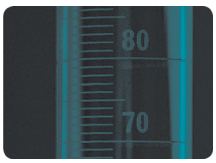

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Cheng-Hua Wang[1] and Shiu-Chun Chen[2]

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Bibliometric and Social Network Analysis for Data Mining: The Intellectual Structure of Tourism Destination Literature

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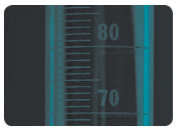

Cheng-Hua Wang[1] and Shiu-Chun Chen[2]

Bibliometric and Social Network Analysis for Data Mining: The Intellectual Structure of Tourism Destination Literature

Reference

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ABSTRACT

Data mining can extract useful information from large databases. This paper presents the evolution of the intellectual structure in tourism destination literature as determined by means of bibliometric and social network analysis of 17 552 citations of 414 articles published in Social Sciences Citation Index and Sciences Citation Index journals from 1955 to 2011. This study found that tourism destination research is organized into four different concentrations of interest: destination image, tourist experience and stakeholder involvement, structural equation modeling, and customer relationship management. Future tourism destination research will probably continue to focus on these topics. This study presents a new way for researchers to profile development patterns objectively and provides a key reading method for searching useful research directions.

Keywords

data mining, bibliometric, social network analysis, tourism destination, intellectual structure

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[1] Associate Professor, Graduate School of Business and Operations Management, Chang Jung Christian Univ., Changda Rd., Gueiren District, Tainan City 71101, Taiwan.

[2] Ph.D. Student, Graduate School of Business and Operations Management, Chang Jung Christian Univ., Changda Rd., Gueiren District, Tainan City 71101, Taiwan (Corresponding author), e-mail: chenshiuchuan@yahoo.com

Introduction

Data mining functions that are developed in commercial and research communities for a variety of domains, including marketing, banking, finance, manufacturing, and health care, are useful for decision making, problem solving, clustering, and knowledge structure discovery. Tourism has rapidly grown and become a driver of regional and national economic development [1]. The tourism industry is characterized by increasing global competition among tourism destinations. The tourism destination is central to tourism and is seen as determining the overall attractiveness of tourism locations that are considered complex networks [2–6]. Some scholars actively study

tourism destination attractiveness using various sources, and their combined efforts have created an impressive body of literature. Studies have used bibliometric analysis to probe the evolution of the field of tourism psychology and its effects in science, cross-institutional collaboration, the application of statistical methods to tourism research, the investigation of academic leadership, or journal quality assessment and ranking in tourism research [7–17]. However, the literature has not objectively identified the mainstream of the evolution of tourism destination knowledge.

The importance of tourism destinations has yielded extensive research on numerous issues. However, the research results have generally been disseminated by journals and books, with the hundreds of related publications causing confusion regarding subject areas and published articles related to tourism destination development. Along with these issues, this paper also examines the state of the evolution of tourism destination research, the intellectual sub-fields that have emerged from tourism destination research and the relationships among them, the emerging works and journals that exist on tourism destinations, and the important literature that exists on tourism destinations. This work is important for motivating future tourism researchers to provide a fast, systematic, and key reading method and to search for useful fresh research directions. However, the literature has so far failed to answer the existing questions.

Bibliometrics can help one examine the growth in citations and understand how tourism destination popularity has been discussed in the literature. Bibliometrics describes the influence of a cited paper on the literature [18]. It has been widely applied in research on the literatures of various disciplines, and it evaluates academic performance based on literature citations. Bibliometrics can capture a snapshot at a distinct time of a changing and evolving knowledge structure [19]. However, researchers have traditionally relied on multivariate analysis (namely, Pearson correlation, cluster analysis, or factor analysis) to identify interrelationships among articles and important research issues in the bibliometric literatures [20]. The analysis of statistical methods appears inappropriate in theory and practice [21]. For example, factor analysis of multivariate analysis is used to explain the interrelationships observed among the original variables by creating a much smaller number of derived variables or factors. Such factor analysis handles the classification of non-variables (namely, articles or authors) in ways that appear inappropriate [21]. Additionally, the most popular publications are not those that focus most heavily on each of the special subjects [22]. Meanwhile, the use of factor loadings for articles is not directly proportional to the raw citations (i.e., the number of times they are cited).

Network analysis acquires network properties and characteristics of tourism destinations in order to examine their connection density or structural configuration [23–25]. Social network analysis (SNA) can also identify the number and structure of the subgroups within the networks, as well as their evolution [26]. UCINET is a comprehensive software package for SNA. UCINET can handle raw data created by the respondent sample [27] and can conduct a structural analysis of the network mathematically [28,29]. Node-level metrics measure the embedding of an individual node in a network. Three types of node-level metrics, namely, degree, closeness, and betweenness [30], are used to measure centrality. High centrality applies to nodes that are considered central and particularly visible in the network [30,31], reflect the degree of relational activities, and are essential in the network. Betweenness centrality plays an important intermediary role, is a potential control point for resource flow, and has an excellent capacity to facilitate or constrain interactions between other nodes. Restated, SNA can solve analysis problems of bibliometrics and identify interaction relationships among network members, the number and structure of the subgroups, and the most important article.

Within each discipline, journal articles, books, and monographs perform the fundamental role of storing and disseminating knowledge [32]. Databases form and collect research results from various disciplines, encouraging rapid knowledge dissemination. The ISI Web of Knowledge database has an excellent reputation as the world's leading citation database and is popular among researchers. The Sciences Citation Index (SCI) and Social Sciences Citation Index (SSCI) contain over 10 000 journals and cover various research disciplines compiled by the ISI Web of Knowledge database. This study used a keyword search approach and bibliometric and social network analysis to examine the evolution of the intellectual structure in order to provide a favorable direction for research on tourism destinations. Especially, this investigation differs from the literature and might serve as a benchmark for future research examining changes in tourism destinations. The methodology of this investigation also provides a method of quantitative analysis and a tool for identifying the articles and journals most widely cited in a given field, as well as for detecting relational links among them.

Literature Review

TOURISM DESTINATION

Tourism has rapidly increased and become a driver of regional and national economic development [33]. This trend has created increased focus on various issues such as strategic destination planning [34,35], dynamic destination management [36], destination competitiveness [37], collaborative destination marketing [38], destination marketing organizations [39,40], destination governance [41], and destination brand personality or equity [42–44]. Some studies have used bibliometric analysis. The literature has paid growing attention to tourism psychology, and co-authorship and institutional collaboration increased during the period from 1990 to 2005 [7]. Ye et al. [17] examined

cross-institutional collaboration in tourism and hospitality research using a co-authorship network model. The results reveal significant associations between research performance and the centricity position of a university. The line regression model, factor and principal component analysis, and analysis of variance are the most common techniques used in tourism research. The increased use of structural equation modeling can effectively overcome the need to apply advanced statistical models, which might have allowed the achievement of isomorphism with the complex reality during the period from 1998 to 2001 [11].

Sheldon [15] represents an initial systematic that used three tourism journals, namely, the *Annals of Tourism Research* (*Annals*), *Journal of Travel Research* (*JTR*), and *Tourism Management* (*TM*), to analyze the authorship of tourism research during the 1980s (1980 to 1989). Sheldon's analytical results suitably recognize the contributions of tourism scholars and their institutions to tourism knowledge. Ryan [14] also ranked these scholars, but that ranking was based on all the journal articles on tourism research published on leisuretourism.com. Zhao and Ritchie [16] identified 57 leading scholars who had each published more than 11 articles in eight journals between 1985 and 2004. These 57 scholars were identified as leading and prolific scholars among the larger group of scholars working in this area. Pechlaner et al. [12] rated 22 tourism and hospitality journals according to their readership frequency, scientific relevance, practical relevance, reputation, and importance for the academic careers of contributors. The results show that *Annals*, *JTR*, and *TM* were clearly identified as the top three tourism journals, a finding exactly consistent with those presented in Ref 15, and more than 75 tourism journals exist globally, of which over 40 are internationally recognized [10]. Pechlaner et al. [13] presented similar findings and identified significant differences between evaluators located in the United States and those located elsewhere. Ryan [14] also identified the top 10 tourism journals based on the frequency of search hits as identified by leisuretourism.com. The ranking list contains seven tourism journals, like that of Pechlaner et al. [13]. Chen [8] used bibliometric analysis to identify the issues of *Annals*, *JTR*, and *TM* that were most frequently cited in tourism destination journals.

A research community or knowledge domain creates a platform that is commonly shared with researchers or members so that they may collaborate and advance their collective knowledge. A research community or knowledge domain can be considered as a large network of researchers linked via formal and informal communication channels. Such a situation might encourage new scholars to enter the field of research. In addition, providing systematic and key reading methods and useful tools can help future researchers identify the intellectual subfields that have emerged from tourism destination research and their relationships, the emerging works and journals on tourism destinations, and the important articles on tourism destinations.

BIBLIOMETRICS

The quantitative analysis of literature is referred to as bibliometrics. Bibliometrics is the mathematical and statistical analysis of patterns that appear in publications and documents [45] and describe the influence of the cited paper on the citing paper [18]. Articles referring to text from previous studies are called citing literature. Citing behavior implies endorsement and traces provenance, and it determines researcher standing and influence [46]. But citation fails to clarify the structure of the relationship of influence between literatures within a field [47]. A reference is cited literature. Heavily cited documents are likely to exhibit a stronger influence on the subject and reflect more peer recognition than less frequently referenced documents [48], and they can represent the key concepts, methods, or ideas shared by the citing documents and indicators of activity or importance in the specific field of research.

Co-citation comprises linkage data among texts, whereas cited references are variables attributed to texts. Co-citation analysis involves analyzing the frequency with which A and B are co-cited by specific documents [49] in order to assess the similarity between them [50,51], establishing a cluster or "core" of earlier literature [49]. Therefore, co-citation studies compile co-citation counts in a matrix form and statistically scale them in order to capture a snapshot at a distinct time of a changing and evolving knowledge structure [52]. The co-citation statistic method includes canonical analysis, Pearson's correlation coefficient, cluster analysis, multidimensional scaling, and factor analysis. These methods support empirical investigations of the structure and scholarly activity of various disciplines [53–55].

Bibliometrics can provide objective views through the examination of citations, co-citations, or a combination of the two, and it offers a quantitative measure of similarities between different studies. Bibliometrics has been widely applied in research on various disciplines and literature and has been used to evaluate academic performance based on cited literature. If systematically used, bibliometrics causes the dispersal of subjects or the concentration of research results, and it clarifies the growth in citations of major articles over a given time period; special discipline development; interdisciplinary relations; knowledge maps; frequently cited authors, journals, and core works; and overall knowledge construction.

SOCIAL NETWORK ANALYSIS

SNA is a graphical method used to analyze the nature and pattern of relationships among members of a particular domain [56]. SNA is also one technique that provides systematic and effective qualitative methods of assessing networks of relationships to map and evaluate the strength of links [57]. UCINET is a comprehensive software package for SNA that can deal with

raw data created by the respondent sample [27] and perform structural analysis of the network mathematically, for example, through factor analysis, correlation coefficients, cluster analysis, or multidimensional scaling [28,29]. SNA has been broadly applied in sociology, anthropology [58,59], management [60], citation and co-publication patterns [61], logistics and supply chain management [62], and numerous other disciplines.

Network metrics can be calculated at the node and network levels, helping one gain a more comprehensive and systematic view of network dynamics. Node-level metrics measure the embedding of an individual node in a network. Three types of node-level metrics, namely, degree, closeness, and betweenness, are used to measure centrality. Centrality is associated with social status [30,63], power [64], and prestige [65] and reflects the relative importance of individual nodes in a network. The degree of centrality refers to a node's being connected to numerous other nodes. Betweenness of centrality refers to how much a node falls between all combinations of pairs of other nodes in the network. Betweenness is generally viewed as a form of goalkeeping for other nodes [66,67] and is the potential point of control for resource flow [31]. High betweenness exerts an important intermediary role and has an excellent capacity to facilitate or constrain interactions between other nodes [30].

SNA is a highly objective means of analyzing the nature and pattern of relationships between different actors in a network. SNA is also a graphical analysis method and can be used to visually represent a network. When applied to the study of academic domains, SNA can identify interaction relationships among network members, the number and structure of the subgroups, and the most important article. When applied to different time periods, SNA can graphically display the dynamic evolving relationships among publications.

Methodology

This study adopted a four-stage approach in which a different method was used at each stage to examine tourism destination evolution. In order to obtain a collection of representative research papers on tourism destination, the first stage was to identify the database sources. This study gathered sample data from SCI and SSCI publications compiled by the ISI Web of Knowledge database. ISI has a great reputation as the world's leading citation database and is popular with researchers. Additionally, co-citation analysis can retrieve core documents from the ISI database [68,69]. This study adopted the "keyword" method to input "tourism destination" or "tourist destination" searches as the ISI topic. The results were not limited to any particular field or area, confirming the true interdisciplinary nature of the tourism destination evolution. An article that continues to be cited has historic value and is likely to spawn follow-up studies [22]. In order to achieve a longitudinal study of tourism destination evolution over different periods [70] and to show how tourism destination research has evolved, the study period was divided into two parts, with the first running from 1955 to 2011 and the second from 2007 to 2011. In such a study, checks should be performed to correct inconsistencies in the input, such as misspelled names, missing volume or page numbers, or inconsistencies in the citation format, so as to prevent biased results.

The top 1 % and top 10 % of the most frequently cited research papers provide new indicators for identifying "world class" scientific excellence at the aggregate level [71]. Heavily cited documents are likely to have been more influential than less frequently cited documents [72,73], indicating their importance or activity in the field. Thus, during the second stage, a citation analysis was performed for each of the source articles using Excel, in which citations were sorted, summed, subtotaled, ranked, and screened. Following a series of operations, the citation analysis revealed the most cited publications.

Three subjects of co-citation analysis are document co-citation analysis, author co-citation analysis, and journal co-citation analysis. Author co-citation and document co-citation analysis are performed to examine the intellectual structure of science studies [18,20,68,74]. However, author co-citation analysis analyzes only first authors and ignores other co-authors, causing the influence of co-authors to be underestimated [75]. Document co-citation analysis was adopted so that the problem of self-citation could be avoided. UCINET is a comprehensive software package for SNA that performs structural analysis of a network mathematically through factor analysis, correlation coefficients, cluster analysis, or multidimensional scaling [28,29]. In its third stage, this study used UCINET to deal with raw data created by non-variables (i.e., articles or authors) [27] and used graphic visualization to display the results and link relationships among publications. We used Pearson's correlation coefficient, multidimensional scaling (MDS), and the method for document co-citation used by White and Griffith [20] to detect minor structural changes in tourism destination research. Pearson's correlation was adopted as a measure of similarity to indicate the likeness relationship across all documents [76,77]. Factor analysis studies maximize the explanatory variance while minimizing the number of factors used to identify similarities and differences among actors. MDS uses Euclidean distances to perform data reduction and generate a map that shows the relative positions of the documents. Mapping is based on the principle that similar papers should be located closer together [78]. MDS uses the stress to measure the goodness of fit. The stress value is usually less than 0.2, suggesting acceptable fit for the co-citation data [68]. Thus MDS or factor analysis is performed to reduce the dimensionality of the *n*-dimensional data in a space.

Centrality reflects the relative importance of individual nodes in a network. High betweenness of centrality can facilitate or constrain interactions between other nodes [30], and might

reveal an important intermediary role and serve as a potential point for controlling resource flow [31]. During the final stage, UCINET 6.0 was used to determine the betweenness of centrality to measure the positional attributes of each node and represent the importance of an article regarding a tourism destination from the node-level perspective.

Results

RESULTS OF THE CITATION ANALYSIS

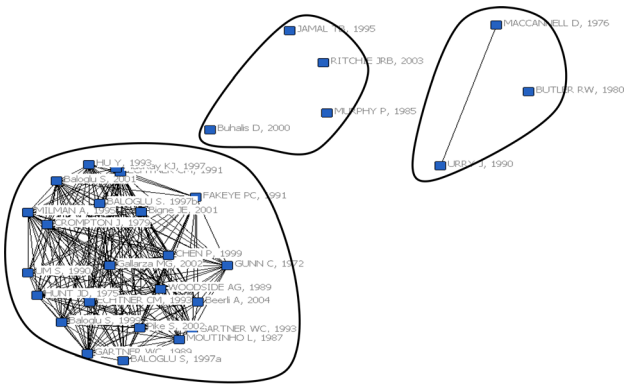
This study gathered 414 articles and 17 552 citation sources, with Excel employed for citation analysis. The time frame was divided into two periods in this study, as listed in **Table 1**. The first time period ranged from 1955 to 2011, and the second time period was from 2007 to 2011. The most cited tourism destination author from 1955 to 2011 was Butler [79], followed by Baloglu and McCleary [80], Gallarza et al. [81], and Baloglu [82]. From 2007 to 2011, the most cited authors were Baloglu and McCleary [80], followed by Gallarza et al. [81], Butler [79], and Baloglu [82].

The rankings show how the most popular publications stand the test of advancing decades, fade, or perhaps grow in popularity. **Table 1** lists the changing popularity of the top 30 publications between 1955 and 2011 and between 2007 and 2011. From 2007 to 2011, some articles, such as those by Yoon and Uysal [83], Anderson and Gerbing [84], Murphy et al. [6],

TABLE 1 List of highly cited articles.

1955–2011		2007–2011	
Full Citation Index for Document	Frequency (Citation Frequency $\geq$ 12)	Full Citation Index for Document	Frequency (Citation Frequency $\geq$ 9)
Butler, R. W., 1980	30	Baloglu, S., 1999, *Ann. Tourism Res.*, Vol. 26, p. 868	26
Baloglu, S. and McCleary, K. W., 1999	27	Gallarza, M. G., 2002, *Ann. Tourism Res.*, Vol. 29, p. 56	21
Gallarza, M. G., 2002, *Ann. Tourism Res.*, Vol. 29, p. 56	23	Butler, R. W., 1980, *Can. Geogr.-Geogr. Can.*, Vol. 24, p. 5	19
Baloglu, S., 2001, *Tourism Manage*, Vol. 22, p. 127	23	Baloglu, S., 2001, *Tourism Manage.*, Vol. 22, p. 127	19
Fakeye, P. C., 1991, *J. Travel Res.*, Vol. 30, p. 10	22	Milman, A., 1995, *J. Travel Res.*, Vol. 33, p. 21	18
Milman, A., 1995, *J. Travel Res.*, Vol. 33, p. 21	21	Echtner, C. M., 1991, *J. Tourism Studies*, Vol. 2, p. 2	17
Echtner, C. M., 1991, *J. Tourism Studies*, Vol. 2, p. 2	20	Buhalis, D., 2000, *Tourism Manage.*, Vol. 21, p. 97	16
Echtner, C. M., 1993, *J. Travel Res.*, Vol. 31, p. 3	20	Fakeye, P. C., 1991, *J. Travel Res.*, Vol. 30, p. 10	16
Mackay, K. J., 1997, *Ann. Tourism Res.*, Vol. 24, p. 537	19	Gartner, W. C., 1993, *J. Travel Tourism Mar.*, Vol. 2, p. 191	16
Woodside, A. G., 1989, *J. Travel Res.*, Vol. 27, p. 8	19	Mackay, K. J., 1997, *Ann. Tourism Res.*, Vol. 24, p. 537	16
Gartner, W. C., 1993, *J. Travel Tourism Mar.*, Vol. 2, p. 191	18	Ritchie, J. R. B., 2003, *Competitive Destinat.*	15
Hunt, J. D., 1975, *J. Travel Res.*, Vol. 13, p. 1	18	Echtner, C. M., 1993, *J. Travel Res.*, Vol. 31, p. 3	14
Urry, J., 1990, *Tourist Gaze Leisure*	18	Hunt, J. D., 1975, *J. Travel Res.*, Vol. 13, p. 1	13
Gunn, C., 1972, *Vacationscape Design*	18	Pike, S., 2002, *Tourism Manage.*, Vol. 23, p. 541	13
Buhalis, D., 2000, *Tourism Manage.*, Vol. 21, p. 97	17	Beetli, A., 2004, *Ann. Tourism Res.*, Vol. 31, p. 657	12
Crompton, J., 1979, *J. Travel Res.*, Vol. 17, p. 18	17	Chen, P., 1999, *J. Travel Res.*, Vol. 37, p. 256	12
Gartner, W. C., 1989, *J. Travel Res.*, Vol. 28, p. 16	17	Gartner, W. C., 1989, *J. Travel Res.*, Vol. 28, p. 16	12
Um, S., 1990, *Ann. Tourism Res.*, Vol. 17, p. 432	17	Urry, J., 1990, *Tourist Gaze Leisure*	12
Baloglu, S., 1997, *J. Travel Res.*, Vol. 35, p. 11	16	Baloglu, S., 1997, *J. Travel Res.*, Vol. 35, p. 11	12
Hu, Y., 1993, *J. Travel Res.*, Vol. 32, p. 25	16	Bigne, J. E., 2001, *Tourism Manage.*, Vol. 22, p. 607	11
Pike, S., 2002, *Tourism Manage.*, Vol. 23, p. 541	15	Gunn, C., 1972, *Vacationscape Design*	11
Ritchie, J. R. B., 2003, *Competitive Destinat.*	15	Yoon, Y., 2005, *Tourism Manage.*, Vol. 26, p. 45	11
Baloglu, S., 1997, *J. Vacation Marketing*, Vol. 3, p. 221	13	Anderson, J. C., 1988, *Psychol. Bull.*, Vol. 103, p. 411	10
Chen, P., 1999, *J. Travel Res.*, Vol. 37, p. 256	13	Baloglu, S., 1997, *J. Vacation Marketing*, Vol. 3, p. 221	10
Maccannell, D., 1976, *Tourist New Theory L*	13	Baloglu, S., 1999, *J. Travel Res.*, Vol. 38, p. 144	10
Bigne, J. E., 2001, *Tourism Manage.*, Vol. 22, p. 607	13	Beerli, A., 2004, *Tourism Manage.*, Vol. 25, p. 623	10
Beerli, A., 2004, *Ann. Tourism Res.*, Vol. 31, p. 657	12	Crompton, J., 1979, *J. Travel Res.*, Vol. 17, p. 18	10
Jamal, T. B., 1995, *Ann. Tourism Res.*, Vol. 22, p. 186	12	Murphy, P., 2000, *Tourism Manage.*, Vol. 21, p. 43	10
Moutinho, L., 1987, *Eur. J. Marketing*, Vol. 21, p. 5	12	Fornell, C., 1981, *J. Marketing Res.*, Vol. 18, p. 39	9
Murphy, P., 1985, *Tourism Community AP*	12	Oppermann, M., 2000, *J. Travel Res.*, Vol. 39, p. 78	9
		Kozak, M., 2001, *Ann. Tourism Res.*, Vol. 28, p. 784	9
		Churchill, G. A., 1979, *J. Marketing Res.*, Vol. 16, p. 64	9

FIG. 1 Critical themes in tourism destination research (1955 to 2011). The stress of the final configuration was 0.197.



Fornell and Larcker [85], Oppermann [86], Kozak [87], and Churchill [88], were popular, whereas works by Woodside and Lysonski [89], Um and Crompton [90], Hu and Ritchie [5], Jamal and Getz [91], Moutinho [92], Murphy [93], and MacCannell [94] saw the largest declines in popularity.

RESULTS OF THE CO-CITATION ANALYSIS

A co-citation matrix was based on the 30 most frequently cited articles from 1955 to 2011 and 2007 to 2011 (see **Table 1**). The co-citation matrixes included 30 articles cited between 1955 and 2011 and 32 articles cited between 2007 and 2011. The co-citation frequencies were also tabulated using Excel. Each of the 30 or 32 articles was paired with other articles within the set, and the co-citation frequency of each pair was calculated. These counts then were used to form 30 by 30 (1955 to 2011) and 32 by 32 (2007 to 2011) square co-citation matrixes.

First, the co-citation matrix was transformed into the Pearson's correlation matrix for the following statistical analyses to measure similarity between articles. Multidimensional scaling was performed to generate a map and present subgroups of tourism destination research explaining the similarities and differences. The results are shown in **Fig. 1** (1955 to 2011) and **Fig. 2** (2007 to 2011), which are diagrammatic visualizations of the co-citation network locations that show those links (correction coefficients) exceeding 0.7. **Figure 1** (1955 to 2011) forms three groups, and **Fig. 2** (2007 to 2011) forms four groups. The stress value (0.197 or 0.155, lower than an acceptable value of 0.2) displayed an outstanding fit to the data [68].

Although **Figs. 1** and **2** present a clear picture, they mainly focus on the core area and make only a limited amount of data available. Factor analysis allows data reduction in more dimensions with precise numbers. Each subfield corresponding to the extracted factor represents an intellectual specialty that is defined to load highly on that subfield/factor [54]. In this study we performed factor analysis with a Varimax rotation. **Table 2** lists the most important factors (eigenvalue > 1), along with articles with a factor loading of at least 0.4. Articles with a loading of less than 0.4 were dropped from the final results [20]. **Table 2** also shows that three factors were extracted with 77.40 % of the explained variance from 1955 to 2011. We assigned names to the factors based on the authors' interpretation of the work and the contributions of the author.

The first set of main research topics focused on destination image. Destination image plays a critical role in an

FIG. 2
Critical themes in tourism destination research (2007 to 2011). The stress of the final configuration was 0.155.

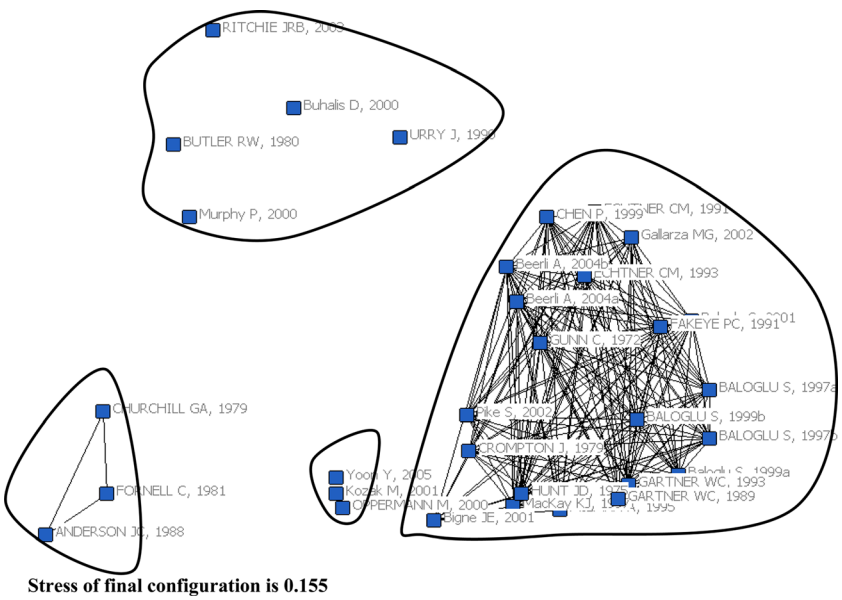


TABLE 2 Document factor loading.

1955–2011				2007–2011			
Factor 1: Destination Image	58.9 % Variance	Factor 3: Stakeholder Involvement	9.0 % Variance	Factor 1: Destination Image	49.50 % Variance	Factor 3: Structural Equation Modeling	9.58 % Variance
MacKay, K. J., 1997	0.915	Buhalis, D., 2000	0.908	Baloglu, S., 1997	0.917	Anderson, J. C., 1988	0.863
Bigne, J. E., 2001	0.913	Ritchie, J. R. B., 2003	0.813	Beerli, A., 2004	0.913	Fornell, C., 1981	0.903
Chen, P., 1999	0.911	Jamal, T. B., 1995	0.773	MacKay, K. J., 1997	0.910	Churchill, G. A., 1979	0.777
Baloglu, S., 2001	0.898	Murphy, P., 1985	0.734	Gunn, C., 1972	0.908		
Gunn, C., 1972	0.893			Hunt, J. D., 1975	0.898		
Baloglu, S., 1997	0.888			Gartner, W. C., 1989	0.898		
Beerli, A., 2004	0.881			Baloglu and Brinberg, 1997	0.885		
Echtner, C. M., 1991	0.877			Baloglu, S., 1997	0.863		
Hunt, J. D., 1975	0.875			Echtner, C. M., 1991	0.853		
Baloglu, S., 1997	0.863			Pike, S., 2002	0.853		
Gartner, W. C., 1989	0.860			Baloglu, S., 2001	0.850		
Pike, S., 2002	0.841			Fakeye, P. C., 1991	0.831		
Fakeye, P. C., 1991	0.831			Milman, A., 1995	0.819		
Milman, A., 1995	0.831			Crompton, J., 1979	0.810		
Echtner, C. M., 1993	0.828			Echtner, C. M., 1993	0.812		
Gallarza, M. G., 2002	0.810			Chen, P., 1999	0.798		
Hu, Y., 1993	0.804			Beerli, A., 2004	0.828		
Crompton, J., 1979	0.794			Gallarza, M. G., 2002	0.787		
Moutinho, L., 1987	0.755			Baloglu, S., 1997	0.752		
Gartner, W. C., 1993	0.753			Gartner, W. C., 1993	0.717		
Um, S., 1990	0.712			Bigne, J. E., 2001	0.708		
Baloglu, S., 1999	0.699						
Woodside, A. G., 1989	0.684						

Factor 2: Tourist Demand and Host Attitudes	9.5 % Variance	Factor 2: Tourist Experience and Stakeholder Involvement	12.62 % Variance	Factor 4: Customer Relationship Management	4.00 % Variance
Urry, J., 1990	0.939	Buhalis, D., 2000	0.937	Kozak, M., 2001	0.811
Maccannell, D., 1976	0.932	Butler, R. W., 1980	0.836	Oppermann, M., 2000	0.690
Butler, R. W., 1980	0.780	Ritchie, J. R. B., 2003	0.805	Yoon, Y., 2005	0.638
		Murphy, P., 2000	0.662		
		Urry, J., 1990	0.581		

Note: Baloglu, S, 1997a presents Balogle (1997); Baloglu, S, 1997b presents Baloglu and Brinberg (1997).

individual's choice [80,89,95–98]. A place's image is constructed from memories, overall impressions, imagination, or the mental portrayal of a destination, categorized as organic, induced, or modified-induced [3,99,100], that represents the travel experience [101]. Destination image is measured based on cognitive and affective dimensions [102–104] or according to holistic, functional-psychological, and unique-common characteristics [80,105]. To present the global image, most studies have followed a multi-attribute approach such as a structured or an unstructured approach [105,106]; the former is much more widely applied than the latter [81,107,108]. Many studies have been conducted in the area of destination image on positioning [105,106], tourism marketing [80,92], the contribution of visuals [109], travel behavior [105], individuals' personal characteristics [90,110], brand personality, or awareness of tourism destinations [82,103].

The second group focused on tourist demand and host attitudes. Tourists have the desire to experience difference, and their preferences are reflected in what is known as the "tourist gaze." This gaze can be either static or dynamic and can be influenced by the tourism industry by means of promotional materials, guidebooks, and tourist maps [111]. Tourists quest for authenticity through tourism. Hosts might strive to protect the community from unwanted social impacts or create staged "authentic" presentations of their own culture and mislead tourists into accepting modified attractions [94]. The social, cultural, and psychological determinants of the tourist create a need for help in understanding tourism behavior [94,111]. Six stages of tourist area evolution can explain the development of tourist destinations. The kinds of tourists attracted to a destination will change over the evolutionary cycle as a result of different tastes and preferences. Additionally, it is implicit that local

people's attitudes toward tourism keep changing throughout various stages of tourism development [79].

The third factor is stakeholder involvement. Tourism is a community product; the residents are involved early in the tourism planning process, and their involvement often is irreversible [93]. Tourism also needs multiple stakeholders such as government officials, public organizations, tourism industry associations, resident organizations, social agencies, and special interest groups [91]. Community participation can increase a community's carrying capacity by reducing tourism's negative impacts while enhancing its positive effects [91,93]. Therefore, tourism destinations are complex networks that involve a large number of co-producing actors delivering a variety of products and services [2].

Four factors were extracted from the data from 2007 to 2011 and together explain over 75.70 % of the correlation matrix. **Table 2** lists the four most important factors, along with articles that had a factor loading of at least 0.4. This study also assigned names to the factors. The first set of main research topics still focused on destination image is the same as that from 1955 to 2011. The second group focused on tourist experience and stakeholder involvement. Tourists search for visual experiences that differ from what they normally see at home [111]. Government control, responsiveness to tourism, and attitudes toward tourists can also affect tourists' experience [6]. Buhalis wrote an article [2] based on Butler's [79] destination life-cycle model that addresses the fact that the development of marketing strategies requires tourism officials to measure and identify how satisfactorily they provide products. New technologies and the Internet have enabled tourism officials to enhance their competitiveness and local co-operation, and they have also increased the importance of suppliers and the multiplicity of the individually produced products and services that help to make up the overall tourism product [2]. This shows that a destination needs the public and private sector to coordinate delivery [112].

The third group focused on structural equation modeling. Two-step structural equation modeling was used for model testing. First, confirmatory factor analysis was conducted to evaluate the reliability, convergent validity, and discriminate validity of the measurement model. The reliability and internal validity of the measurement model were examined by calculating the composite reliability (CR) and average variance extracted (AVE). If CR coefficients exceed 0.6 and the AVE of each measure accounts for more than 50 % of the variance, it indicates that the variance captured by the construct exceeds that due to the measurement error [85]. The convergent and discriminant validity of the correlation patterns were also obtained to determine whether the measures had good convergent and discriminant validity [84,88].

The last group was used to study customer relationship management. Companies are engaged in a battle not only of products or services, but also of perceptions in the consumer's mind. The degree of tourists' loyalty and the value of previous experiences in a destination influence further revisit intention and the chance that a visitor will recommend that destination to others [86]. Word-of-mouth recommendation is especially crucial, and is also a reliable source of information for potential tourists [83]. Satisfaction is the antecedent of subsequent visits to the same destination and neighboring destinations [87]. Destination managers should establish a higher tourist satisfaction level in order to create positive post-purchase tourist behavior and thereby improve and sustain destination competitiveness [83].

Based on the results of the factor analysis and MDS, this study identified some subgroups that had a close mutual relationship. The comparison of results from MDS and factor analysis for the periods from 1955 to 2011 and 2007 to 2011 showed that future tourism destination research trends toward a focus on destination image, tourist experience and stakeholder involvement, customer relationship management, and the use of Structural Equation Modeling (SEM). They also represent bridges between paradigms and a broader spectrum of influences among works that formed in the different research fronts.

THE PATTERN OF EVOLUTION IN TOURISM DESTINATION RESEARCH

If the factor loading is 0.7 or greater, the articles make a significant or relevant contribution within the corresponding field and have a wide-ranging influence on the network. Restated, the factor loadings for articles are not directly proportional to the raw citations they receive. Moreover, the most popular publications are not the ones that load most heavily on each of the special subjects [22]. For example, articles by Butler [79] and Baloglu and McCleary [80] are the most cited articles dealing with the tourism destination in the two periods, but they had relatively low factor loadings. In fact, these two articles influenced multiple articles and have had a wide-ranging influence on the discipline as a whole.

To overcome this problem and further explore important scholars and the status of each scholar, in this study we created a co-citation matrix drawing on the top 30 articles in each period and used UCINET 6.0 to analyze the centrality of each article in the respective network (shown in **Table 3**). **Table 3** lists the results for betweenness centrality. **Table 3** shows that an article by Buhalis [2] is the most influential article in the tourism destination literature, followed by the work of Gunn [3] and Urry [111], from 1955 to 2011. The range of betweenness centrality numbers is large (0 to 162.744), showing that more nodes need these three articles to reach other nodes. Buhalis [2] explains that destination marketing should balance the strategic objectives of all stakeholders, as well as the sustainability of local resources, and should lead to optimism regarding the impact of tourism. For the period from 2007 to 2011, the

TABLE 3 Social network results for influential authors in two periods.

1955–2011			2007–2011		
Article	Betweenness	Number of Factor	Article	Betweenness	Number of Factor
Buhalis, D., 2000	162.744	3	Urry, J., 1990	31.854	2
Gunn, C., 1972	77.035	1	Kozak, M., 2001	17.911	4
Urry, J., 1990	38.023	2	Yoon, Y., 2005	17.911	4
Murphy, P., 1985	32.133	3	Bigne, J. E., 2001	17.670	1
Fakeye, P. C., 1991	27.078	1	Oppermann, M., 2000	11.178	4
Janal, T. B., 1995	16.733	3	Buhalis, D., 2000	10.429	2
Ritchie, J. R. B., 2003	16.733	3	Murphy, P., 2000	8.640	2
Baloglu, S., 2001	1.845	1	Pike, S., 2002	7.881	1
Gallarza, M. G., 2002	1.845	1	Crompton, J., 1979	6.644	1
Woodside, A. G., 1989	1.845	1	Beerli, A., 2004	3.671	1
Crompton, J., 1979	1.845	1	Butler, R. W., 1980	3.426	2
MacKay, K. J., 1997	1.845	1	Fornell, C., 1981	1.693	3
Milman, A., 1995	1.845	1	Anderson, J. C., 1988	1.610	3
Gartner, W. C., 1993	1.845	1	Gunn, C., 1972	1.207	1
Beerli, A., 2004	1.845	1	Chen, P., 1999	1.207	1
Baloglu, S., 1997	1.845	1	Beerli, A., 2004	1.207	1
Chen, P., 1999	1.845	1	Echtner, C. M., 1993	1.207	1
Echtner, C. M., 1993	1.845	1	Gallarza, M. G., 2002	1.207	1
Echtner, C. M., 1991	1.845	1	Echtner, C. M., 1991	1.207	1
Hu, Y., 1993	1.845	1	Churchill, G. A., 1979	0.600	3
Pike, S., 2002	1.845	1	Ritchie, J. R. B., 2003	0.143	2
Bigne, J. E., 2001	1.845	1	Baloglu, S., 1999	0.136	1
Mouthinho, L., 1987	1.845	1	Gartner, W. C., 1993	0.136	1
Um, S., 1990	0.000	1	Gartner, W. C, 1989	0.136	1
Gartner, W. C., 1989	0.000	1	Milman, A., 1995	0.136	1
Baloglu, S., 1999	0.000	1	Fakeye, P. C., 1991	0.136	1
Butler, R. W., 1980	0.000	2	Hunt, J. D., 1975	0.136	1
Baloglu, S., 1997	0.000	1	MacKay, K. J., 1997	0.136	1
			Baloglu, S., 1997	0.136	1
			Baloglu, S., 1997	0.136	1

highest centrality number was reduced to 31.18. Urry's book [111] stood out as the most influential work in the field, followed by articles by Kozak [87] and Yoon and Uysal [83]. The range of betweenness centrality numbers was from 31.854 to 0.136, smaller than that for the period from 1955 to 2011, indicating that tourism destination research was more connected, and fewer nodes need articles to reach other nodes than in the period from 1955 to 2011.

Using the factors distinguished the importance or influence of each article. This study found that during the period between 2007 and 2011, in terms of the destination image factor, the importance of work by Bigné et al. [101] and Pike [107] increased progressively. In the same time period, the importance of work by Gunn [3], Fakeye and Crompton [98], and Baloglu [82] exhibited a declining trend. Regarding the tourist experience and stakeholder involvement factor, the work of Urry [111] is most prominent, followed by that of Buhalis [2] and Murphy et al. [6]; for the customer relationship management factor, articles by Kozak [87] and Yoon and Uysal [83] were the most influential works. The SEM factor is the work of Fornell and Larcker [85] and Anderson and Gerbing [84].

Conclusion and Recommendations

CONCLUSION AND IMPLICATIONS

This study adopted bibliometric techniques and social network analysis (SNA) to analyze the citation and co-citation data published in the SSCI and SCI databases from 1955 to 2011. Based on the results of this study, the most cited tourism destination articles from 1955 to 2011 and from 2007 to 2011 were those by Butler [79], Baloglu and McCleary [80], Gallarza et al. [81], and Baloglu [82]. The most cited articles were published in journals with increasing trends, and collaborative works were cited more than works by individuals. Based on the co-citation matrix created from data about the most cited articles, the study found that tourism destination research was organized according to a

different concentration of interests from 1955 to 2011: destination image, tourist demand and host attitudes, and stakeholder involvement. Additionally, the field was organized into four different concentrations from 2007 to 2011: destination image, tourist experience and stakeholder involvement, customer relationship management, and using SEM. This study proposes that future studies continue to focus on these topics.

The most popular publications are not the ones that load most heavily on each of the special subjects [22]. This study further utilized the centrality analysis of SNA to confirm the most important scholars and the status of each scholar, and to overcome the aforementioned problem. This study found that an article by Buhalis [2] was the most important article on tourism destination, followed by the works of Gunn [3] and Urry [111], from 1955 to 2011. From 2007 to 2011, a book by Urry [111] stood out as the most important work in the field, followed by articles by Kozak [87] and Yoon and Uysal [83]. Using the factors allowed us to distinguish the importance or influence of each article from 2007 to 2011; in terms of destination image factor, the importance of articles by Bigné et al. [101] and Pike [107] increased progressively. The importance of work by Gunn [3], Fakeye and Crompton [98], and Baloglu [82] exhibited a declining trend. In terms of the tourist experience and stakeholder involvement, Urry's book [111] is most prominent, followed by works by Buhalis [2] and Murphy et al. [6]; in terms of customer relationship management, articles by Kozak [87] and Yoon and Uysal [83] were the most important works. The SEM factor is the work of Fornell and Larcker [85] and Anderson and Gerbing [84]. It is worth noting that the most important works have served as bridges for the topic of tourism destination.

LIMITATIONS AND FUTURE RESEARCH

Author choice is crucial in determining the configuration of the field [68]. Although this study adopted article citation and ranked 30 articles to map the intellectual structure of tourism destination, it is difficult to entirely avoid subjectivity in determining the number of articles to be included in analysis. Furthermore, because of methodological limitations, numerous recent articles are cited in limited number so as not to present high centrality in the co-citation network. Future studies could increase the number of articles to create a co-citation matrix or include other approaches, such as content analysis, to present a more comprehensive picture of tourism destination evolution.

Each article occupies a unique position in the tourism destination literature, and this position affects its ability to control resources. A degree of centrality reflects the degree of relational activities and is essential in the network. The closeness centrality focuses on the closeness of a node to all the other nodes in the network and reveals the efficiency of the network and how quickly an actor can gain access to resources. This study also found that the most frequently cited articles were almost all collaborative works rather than individual ones. However, the degree of participation of each author differs, as do numbers of self-citations. The ability to obtain and control resources also differs. This study suggests that future researchers should use three kinds of centrality to examine the best controllers and their relationships.

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