

# Bibliometric Analysis and Visualization for Sustainable Tourism Products



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**Abstract** The concept of Sustainable Tourism Products (STP) derives from the discussion of sustainable tourism. This paper takes Journal of Sustainable Tourism as an analyzed example and tries to provide a comprehensive bibliometric overview on the research of sustainable tourism products. Data of 750 articles and reviews published between 2008 and 2018 in the journal are collected from Web of Science Core Collection, using CiteSpace for collaboration analysis, co-citation analysis, and the keywords co-occurrence analysis. The visualization results show that sustainable tourism products have been developed in a very diverse way. 10 forms of sustainable tourism products research hotspots are identified which are ecotourism, nature-based tourism, volunteer tourism, rural tourism, wildlife tourism, indigenous tourism, community-based tourism, pro-poor tourism, heritage tourism and cultural tourism. This paper also describes the evolution and emerging trends of sustainable tourism research for practitioners.

**Keywords** Sustainable Tourism Products · Journal of Sustainable Tourism · Bibliometric analysis · Visualize analysis · CiteSpace

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## 1 Introduction

Sustainable tourism has emerged as the dominant paradigm in tourism development since the release of the 1987 Brundtland Report [1]. The World Tourism Organization [2, p. 21] defined Sustainable Tourism (ST) development as meeting the needs of present tourists and host regions while protecting and enhancing opportunities for the future. Sustainable Tourism is envisaged as leading to the management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems. The concept of Sustainable Tourism Products (STP) derived along with the discussion of sustainable tourism. There are in excess of 5000 published works on sustainable tourism [3]. The content of ST debate has broadened to include not only environmental but economic, social and cultural issues, political power and social equality [4]. STP can be defined as any tangible and intangible thing with sustainability attributes which can meet tourists' needs for balancing the experience during consuming and maintaining sustainable development of tourist destination.

The Journal of Sustainable Tourism (JST) is the only journal exclusively devoted to sustainable tourism research since 1993. On its homepage, JST describes itself as a leading academic publication that advances specifically critical understanding of the relationships between tourism and sustainable development. The journal has become the leading research publication dedicated to advancing the understanding and discussion of sustainable tourism, and it is also ranked highly as a journal in the general tourism field. According to the Web of Science journal impact report, JST ranks No. 1 among 5 journals of the same categories. Initially articulated goals for the JST, the first issue included the aim "to foster research and practice in ST; to help develop both a theoretical base for the subject and reliable empirical evidence of its results and impacts; to provide interdisciplinary perspectives and an international outlook on the subject matter" [5, p. 3]. Nowadays JST makes it, and in some respects, the journal could be seen as a thematic or specialist publication of tourism field rather than a general tourism journal [6]. With its outstanding in this specific niche subject, the publications in JST must have generated abundant information concerning about STP, so as to be selected as the objectives of this paper.

Berry [7] identified a number of barriers like mistrust government policy, poor administration and unclear lines of communication, to successful implementation of sustainable tourism practices. Lu and Nepal [4] employed a content analysis to review and bibliometrically analysed 341 papers published from 1993 to 2007 in JST, mapping out the research field, tourism forms, and subjects of ST. Ruhanen et al. [1, 8] implemented a bibliometric analysis by selecting ATR, JST, TM, and JTR, the four highest ranked journals in tourism field and had a further discussion in 2018, provided key insights into the nature of academic sustainable tourism research and point towards the possible future progress of this field. Bramwell et al. [6] published an editorial to mark the 25th anniversary of the inaugural issue of JST. That editorial advised some bright ways for the research in Sustainable tourism area, and offered

some strategic development suggestions for JST in the future to further increase its relevance, innovation and impact by reviewing the publications in JST over the past 25 years. All the studies mentioned above focused on the sub-field of tourism, while this paper tried to find out the development of STP. Bibliometric is defined as an approach to evaluate and monitor the progress of given disciplines by sorting data, including citations, author affiliations, keywords, themes discussed, and methods employed for published studies in this disciplines [9, 10]. This paper tries to present the bibliometric analysis results of STP by using CiteSpace software packages 5.0.

## 2 CiteSpace

CiteSpace5.0, a bibliometric Java application for analysing and visualizing social networks between contributors or between literatures, enables analysts to perform quantitative and qualitative studies of scientific subject domains more easily [11, 12]. Nodes and links are the key units of CiteSpace visualization graphs. The types of nodes include authors, institutions, countries, terms, keywords, categories, cited authors, references, cited journals, references, grants and articles. With CiteSpace5.0, collaborative networks, intellectual basis, landmarks, hotspots, emerging trends, and pivotal points of certain discipline can be defined through implementing co-citation and co-occurrence analysis. There are about 13,900 results keyword-searched CiteSpace by Google scholar on Jun. 5, 2018. CiteSpace has become a practical tool for bibliometric analysis.

## 3 Material and Methodology

### 3.1 Data Collection

Articles published in leading scientific journals are accepted as “certified knowledge” [13]. According to Samuel Clement Bradford’s literature distribution law, most of the key literatures of a curtain discipline would be published in few core journals, which reveal the research state, trends and scholar level of the discipline. JST, the leading journal focusing on the specific subject of ST as mentioned above, therefore, was selected as the only sample for this paper.

All the data of this paper were collected from ISI Web of Science Core Collection to make sure the data contain full records and can be employed co-citation analysis. Three steps were taken to get the data ready. Input “Journal of Sustainable Tourism” as the Publication Name, refine the search results by published year from 2008 to 2018, and choose Articles and Reviews types. Two members of research team checked some reviews from the results and determine not exclude reviews from the data. Second, export 750 data as plain text format and choose Full record and Cited

references to save contents. WOS offers statistic output and cited analysis of search results. The exported plain text files and cited analysis of search results from WOS are both utilized in this paper. Running CiteSpace and analysing the records of 750 articles is the third steps. The steps above were tried for times for several bibliometric testing since the proposal of this paper from March, 2019. Considering the numbers of articles published in JST are fixed but the cited data may increase daily, the data to analyse finally exported on May, 30, 2019. As the data of 2019 in JST is incomplete with less statistic implication, the published year defined from 2008 to 2018. As Asia and Europe become the most increasing tourism destination around the world according the data of the World Economic Forum, this paper pay more attention to the development of sustainable tourism products in these two areas.

### 3.2 Methodologies

Bibliometric studies are categorized into three groups: (1) review studies, (2) evaluative studies, and (3) relational studies [14]. Review techniques include structured literature reviews, systematic literature reviews, or meta-analyses/reviews, all of which are called traditional review methods [14]. They generate knowledge by using bibliographic data from published studies via frequency analysis or basic statistics. Evaluative techniques measure the impact of scholarly work when compared to the performance or scientific contributions of two or more individuals or groups [15]. Hall [16] classifies evaluative metrics into three groups. The first group includes productivity measures. The second includes impact measures. The third consists of hybrid metrics. Relational techniques explore relationships among the research fields, the emergence of new research themes and methods, or co-citation and co-authorship patterns [15]. Relational techniques can be divided into four categories: co-citation analysis, co-word analysis, co-authorship analysis, and bibliographic coupling which can be accomplished by downloading cited analysis from WOS and implementing into CiteSpace5.0 software.

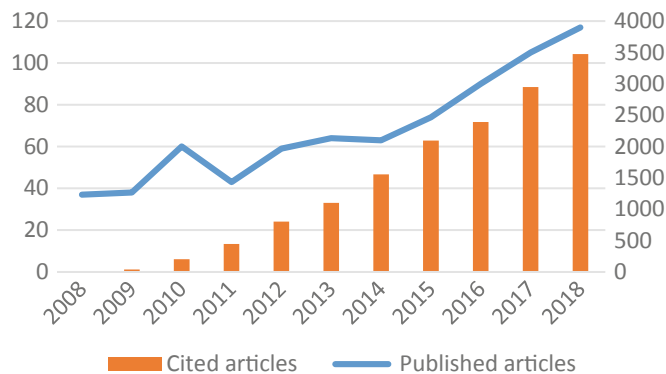
## 4 Results

### 4.1 Search Results

Table 1 shows that the counts of the publications (purple bar) in JST and their cited times (blue bar) during 2008 and 2018 which both increase over the last decade. There were about 40 articles published in JST each year during 2008 and 2009. The number increased about 50% to 60 articles each year during 2010 and 2014, then kept rolling up year by year from 2015, and reached to 110 articles by 2018. According to the features of the growth bars in Fig. 1, the last decade can be identified

**Table 1** Publications and their cited times of JST (2008–2018)

| Year  | Articles (%)  | Cited times (%)  |
|-------|---------------|------------------|
| 2008  | 37 (4.933)    | 3 (0.020)        |
| 2009  | 38 (5.067)    | 38 (0.252)       |
| 2010  | 60 (8.000)    | 203 (1.348)      |
| 2011  | 43 (5.733)    | 446 (2.962)      |
| 2012  | 59 (7.867)    | 803 (5.333)      |
| 2013  | 64 (8.533)    | 1100 (7.306)     |
| 2014  | 63 (8.400)    | 1155 (10.327)    |
| 2015  | 74 (9.867)    | 2095 (13.914)    |
| 2016  | 90 (12.000)   | 2390 (15.873)    |
| 2017  | 105 (14.000)  | 2949 (19.536)    |
| 2018  | 117 (15.600)  | 3475 (23.079)    |
| Total | 750 (100.000) | 15,057 (100.000) |

**Fig. 1** Published articles (Blue) and cited articles (Purple)

as physical publishing era (2008–2014) and digital publishing era (2015–2018). As the digital media are applicable widely and shared easily, the traditional print media are replaced and fading out of our sight. This is the worst time and best time for the journals. It offers an easy way to overview each journal's performance which may lead to Matthew effect. On the contrary, with digital technology, the size of each volume becomes unlimited and is up to the high-quality productive of the research field.

The publication data of JST in WOS Core Collection only begins from the year of 2008. The cited times of the articles in JST before 2008 are not available. The cited times of each year for JST was only 3 in 2008 but increased dramatically to 1186 by 2018, which explains why JST accumulated impressive impact factor of 3.339/4.169 by the end of 2017. Human beings are facing challenges related to poverty and inequality, food and water security, health and well-being, socio-cultural change, clean energy, biodiversity, resource depletion and climate change [6]. It is predictable that the more the issues of sustainable development were concerned, the more articles would be cited from JST.

The strategic naming of this journal needs to be addressed. Sustainable tourism is often now seen as a normative orientation that seeks to redirect societal systems and behaviour on a broad and integrated path toward sustainable development [6]. The name of JST dynamically states out its vision and principle which might help it to attain more motivated research articles and as a competitive advantage of its development.

## 4.2 Collaborative Networks of Authors and Cited Authors

Authors of scientific literature are the subject of scientific research activities. The core authors are leading the research orientation of the discipline. Therefore, the research status of specific discipline can be accurately understood by positioning the core authors. CiteSpace5.0 was used to conduct visualized analysis on the researchers of JST. The node type was set as “author” or “cited author”, and the time slice was set as 1, so as to find out the productive authors. Derek John de Solla Price’s well-known square root law (1964) [17] is used to position and examine the core authors in specific discipline. The formula is as follow:

$$\text{Formula1: } N = 0.749n_{\max}^{1/2}$$

Figures 2 and 3 visualize the social network of the authors. The size of node shows the importance, the circles on the node represent the frequency. The purple external rings mean high centrality of the node which indicates that someone holds authority over collaboration controls between clusters in a network. The more the productive or contributed, the bigger the nodes are. The more the links between the nodes, the more collaborative connect there are.



**Fig. 2** Visualization of Authors network in JST (2008–2018)