



## Food and gastronomy research in tourism and hospitality: A bibliometric analysis



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### ABSTRACT

This study examines the evolution of food and gastronomy research in hospitality and tourism (H&T) in the 40 years between 1976 and 2016, highlighting emerging research themes; methods; possible national, international, and interdisciplinary or multidisciplinary collaborations; and prolific food and gastronomy researchers and institutes in the H&T field. For this purpose, 16 leading H&T journals from 1976 to 2016 were analyzed using advanced bibliometric analysis, and a total of 5333 food-related published documents, including management, organization, and finance were identified. After further re-analysis and elimination, 462 articles were identified as food and gastronomy research articles. The research findings reveal that popularization of this theme increased after 2000; however, the total number of published articles in H&T journals are still behind the other disciplines. Most studies were empirical and conducted via quantitative methods, but scarcity in the advanced methodological approach still exists. Although international and national collaboration of food-related management, finance, and marketing topics have been growing among different institutions in the H&T field, only a limited number of articles seem to address food and gastronomy themes. This is the first study to offer a bibliometric analysis of food and gastronomy research in the H&T field with specific theoretical and practical implications.

### 1. Introduction

Eating is perhaps one of the most fundamental human activities (Capaldi, 1996) therefore, research on food has globally increased in many disciplines and recognized as an important tourism attraction (Long 2004; Tsai and Wang, 2017). Since tourists spend nearly half their budget on food and beverage while traveling (Boyne et al., 2002; National Restaurant Association, 2017), food is accepted as an essential tourism product (Lee et al., 2015; McKercher et al., 2008; Okumus et al., 2007; Sims, 2009) and recognized as an important attraction (Long, 2004; Tsai and Wang, 2017). However, despite a growing number of food and gastronomy studies in H&T as seen in many disciplines, there is a need of analysis demonstrating how food and gastronomy research has evolved and become an emerging research area (Björk and Kauppinen-Räsänen, 2016). Therefore, the main purpose of this study is to examine the progress on food and gastronomy research in the hospitality and tourism (H&T) industry, and offer a research agenda.

Although many bibliometric studies have been conducted in H&T to determine the academic-intellectual structure and knowledge domain

(Benckendorff and Zehrer, 2013; Koseoglu et al., 2016; Ye et al., 2013), and to classify the most productive institutions, scholars, and publications (Mckercher et al., 2006; Park et al., 2011; Page, 2005; Pechlaner et al., 2002; Pechlaner et al., 2004) based on the authors' knowledge, this is the first bibliometric study related to food and gastronomy research in this field. From perspective of bibliometric study literature in H&T, there is a need for a systematic study evaluating the progress, sorting data, research themes, methodologies, and statistical techniques utilized in food and gastronomy in H&T context. With this mind, the main objectives of this study are to:

- Identify the progress on food and gastronomy research in H&T by focusing on leading contributors – authors, institutions, and countries.
- Determine development of research topics and methodologies over the time in articles on food and gastronomy in H&T.
- Suggest a research agenda for scholars and practitioners for food and gastronomy research.

To address these issues, bibliometric analysis as a quantitative

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approach of systematic review procedure was conducted to investigate the volume of research and the knowledge domain of food and gastronomy topics in leading H&T journals. Using this method, evolution in each discipline was measured (Bouyssou and Marchant, 2011), including includes years, predominant themes, specific university contributions to the field, the number of authors of published articles, and the methods used in published scientific work (Koseoglu et al., 2016; De Bakker et al., 2005).

The study organized as follows. First, a literature review is provided on bibliometric methods and research activity on food and gastronomy in general, and in the H&T field in particular. Second, the research methods employed by this study are explained. Next, the findings are presented and discussed. Finally, emerging conclusions are stated and suggestions for future research are provided.

## 2. Literature review

### 2.1. Bibliometric analysis on food and gastronomy in different disciplines

Food studies have been on the rise over the past years (Counihan & van Esterik, 2012, p.1) and the reviewed advanced bibliometric research studies show that scholars from different disciplines create diverse agendas and multidisciplinary collaborations on food-related topics. Food and food-related research has appeared in a variety of science and social-science journals, books, conference proceedings, and other publications, and many libraries and web sources archive this scholarly literature. Since food is a multidisciplinary research topic, systematic and chronological studies have been undertaken mostly in science, medical, and engineering disciplines using bibliometric analyses, which assessed the evaluation of food research in the academic literature (Vijay and Raghavan, 2007; Suebsombut et al., 2017). For example, some research has located scientific literature dealing with food-related topics to illustrate the pattern of publications, leading journals, research trends, and clusters in science. Their findings show that the number of food publications is increasing, except regarding specific food and agriculture related topics, along with trend of citations per journals and number of publications over time (Chen, 2012; Monasterolo et al., 2015; Tao et al., 2015; Kasemodel et al., 2016). Several other bibliometric studies provide analysis regarding manuscripts, content, authorship, citations within the journal, and comments on the journals' noted special editions. These research findings reveal that many bibliometric studies emphasize author keywords to examine the latest trends, and provide greater accuracy and details about both the concepts discussed and the methods of research employed (Fu and Ho, 2017; Tan et al., 2014). Bibliometric analyses in science-related research was also employed to characterize the research activity of institutions worldwide by production during certain, specific periods. Results show that interdisciplinary and international collaborations between institutes and researchers have increased (van Raan and van Leeuwen, 2002; Dabirian et al., 2016), and that the greatest numbers of those institutions are in the United States, South Korea, Spain, and China. Many developing and food-exporting countries have produced no significant research on food (Guerrero-Bote et al., 2016). Developed countries, especially the USA and the United Kingdom, appear to be more proactive in global food and food-related research topics (Chen et al., 2017; Vanga et al., 2015; Monasterolo et al., 2016; Tan et al., 2014). Since bibliometric studies have a high research impact on publication outlets (Alfaraz and Calviño, 2004; Sweileh et al., 2014a, 2014b), by revealing the most prevalent themes, scholars can evaluate the contributions of the various disciplines, foundations of science (Koseoglu et al., 2016; Glanzel, 2003), and major clusters and trends on food and food-related topics. Based on the authors' research, no bibliometric study on gastronomy has been found in any discipline.

### 2.2. Bibliometric analysis on food and gastronomy in the H&T field

Ever since food and dining out have become crucial parts of people's lifestyles, scientists and creative chefs have applied scientific methods using gastronomy to explore tastes in both new and traditional dishes. They use the physical sciences to characterize foodstuffs, cooking, and flavor (Mouritsen, 2015). Although the field of gastronomy is relatively new, researchers have discovered the importance of science in describing characteristics of eating behavior. In this section, several published studies on food, nutrition, food and restaurant selection, and gastronomy in the H&T field have been analyzed, and characteristics of the studies have been shared.

Food and gastronomy are considered a new academic approach (Maberly and Reid, 2014) and a marker of social distinction (Kim et al., 2009); however, this theme is still not equally valued related to other tourism products in many countries, and is criticized as a current issue in tourism (Henderson, 2009). Other studies looked at halal foods, food choices in different religions, new food tendencies, the impact of healthy eating on the restaurant industry, vegetarianism, and local food trends as positive concepts in the tourism industry (Cohen and Avieli, 2004; Hall and Sharples, 2004; Wan Hassan and Awang, 2009; Jayawardena et al., 2013; Jones and Jenkins, 2002; Josiam and Monteiro, 2004; Long, 2010; Sims, 2009; Son and Xu, 2013). Although no bibliometric study has been undertaken on food and gastronomy in the H&T field, DiPietro (2017) reviewed the extant food literature, including *management, operations, and finance* in the foodservice business, and stated that the number and quality of foodservice and restaurant management research articles has increased the past 10 years. However, when looking at food and gastronomy research in the H&T literature, neither the progress nor volume have been systematically investigated.

## 3. Methodology

### 3.1. Publication outlets

To consolidate the state of the art of food and gastronomy research in the H&T field, only H&T journals with a double-blind review process were selected. Based on the Social Science Citation Index (SSCI) published in the Journal of Citation Reports (2017), leading H&T academic journals were determined. Several H&T journals with high reputations, but which were not included in the SSCI, such as the Journal of Hospitality Marketing & Management (JHMM) and the Journal of Foodservice Business Research (JFBR), were also included the sample. Food and gastronomy articles and research notes in all issues published by the end of December 2016 in these selected journals were scanned from their websites as a sample of the study, since these journals have a peer review process generating "certified knowledge" (Ramos-Rodríguez and Ruíz-Navarro, 2004). All selected H&T journals for this study are listed in Table 1.

### 3.2. Data retrieved

Two steps were employed to systematically extract the data. First, a total of 5333 food-related documents were published from January 1st, 1976 to December 31st, 2016 were obtained from the databases of 16 leading H&T journals by searching for food- and food and gastronomy-related keywords including: *food, food science, food availability, food and culture, food safety, food and culinary operations, nutrition, gastronomy/culinary tourism, healthy eating, food and education and food choice*. All selected H&T journals and the number of their food-related documents published by December 2016 are presented in Table 1. The retrieved 5333 articles were systematically analyzed by the authors. Articles focusing directly on food-related management themes, such as *restaurant management, hotel and foodservice management, employee turnovers, marketing, finance and/or other management, and operational concepts*

**Table 1**  
Journals selected as a sample of the present study.

Journal name and total number of “FOOD” documents published by 2017
<b>Leading Hospitality and Tourism Journals indexed by SSCI</b>
<i>Hospitality Journals</i>
Cornell Hospitality Quarterly (CORNELL) 2027
International Journal of Contemporary Hospitality Management (IJCHM) 1693
International Journal of Hospitality Management (IJHM) 1405
Journal of Hospitality and Tourism Management (JHTM) 144
Journal of Hospitality & Tourism Research (JHTR) 666
Scandinavian Journal of Hospitality and Tourism (SJHT) 214
<i>Tourism Journals</i>
Asia Pacific Journal of Tourism Research (APJTR) 402
Annals of Tourism Research (ATR) 1246
Current Issues in Tourism (CIT) 423
International Journal of Tourism Research (IJTR) 360
Journal of Sustainable Tourism (JST) 545
Journal of Travel Research (JTR) 1514
Journal of Travel & Tourism Marketing (JTTM) 532
Tourism Management (TM) 1453
<b>H&amp;T journals with a high reputation but not indexed on the SSCI</b>
Journal of Foodservice Business Research (JFBR) 599
Journal of Hospitality Marketing & Management (JHMM) 405

were not considered for this study. After the initial scan of the selected period from the H&T journals, the first two authors of this study individually re-scanned the selected theme (food and gastronomy in H&T) and keywords to ensure data validity and reliability by agreeing on the articles extracted. As a result, further analysis was made on 462 re-scanned, published documents, including full-length articles and research notes. Sub-field databases such as WoS, SCI-EXPANDED, SSCI, CPCI-S, CPCI-SSH were not considered as a data sources, since they included food and gastronomy publications from many other disciplines. Analysis of the origin language was also evaluated. All articles in the 16 leading H&T journals were published in English. Fig. 5 presents the annual number of published papers from the journals' databases starting from January 1st, 1976 to December 31, 2016. The data for 2017 was not included, as it was still incomplete at the time of analysis. Collecting and coding the data procedures began in September 2016 and was finalized by mid-April 2017.

### 3.3. Analysis

The data collected from the leading 16 H&T journals were analyzed by creating a spreadsheet, using a content analysis technique for each article. This bibliometric study classified the published articles by journal title, themes of the articles, publication year, author names, institutions and countries, author numbers, collaboration type, and the nature of the articles based on the methodology used (Vanga et al., 2015; Rey-Martí et al., 2016). To examine the changes within the food and gastronomy literature, the authors used descriptive analysis and documented the highlights of the food and gastronomy research in H&T.

## 4. Results

### 4.1. Food and gastronomy publication output

The number of publications devoted to food and gastronomy research in 16 leading H&T journals published from 1976 to 2016 is presented Fig. 1. Study results indicate that the number of publications related to food and gastronomy has increased considerably over the years. To illustrate the progression in the number of articles from 1976 to 2016, a polynomial trend line was assessed using different regression models (linear, logarithmic, exponential, and power law approaches) with dependent (published articles) and independent (articles'

published years) variables to identify the model best suitable for the data (Barrios et al., 2008). The polynomial model ( $R^2 = 0.9016$ ) best fits the data, as it shows a greater proportion of variance explained than other models, including the exponential model ( $R^2 = 0.8812$ ), the power law model ( $R^2 = 0.72727$ ), linear ( $R^2 = 0.7116$ ), and logarithmic ( $R^2 = 0.4246$ ), as all four models' significant correlations were observed.

### 4.2. Most productive H&T journals

Approximately 462 food- and gastronomy-related articles were published in the 16 core H&T journals in 10 subject categories indicated with keywords. Fig. 2 lists the most productive journals with the distribution and period of the publications. IJHM produced the highest number of food and gastronomy articles (108), demonstrating a significant influence on food and gastronomy research, followed by JFBR (76), IJCHM (65), JHTR (47), JTTM (34), and SJHT (20). Journal category analysis shows that the number of articles published in hospitality-oriented journals increased last ten years. However, food and gastronomy themes are still limited in tourism-focused journals (Fig. 3).

### 4.3. Distribution of authors

Fig. 4 presents a list of the authors who have at least four articles related to food and gastronomy in the H&T field. Of the published articles, 798 authors contributed 462 articles. Of that 798, 31 authors published over four articles, followed by 44 authors publishing three articles, 83 authors publishing two articles, and 638 authors publishing only one article. SooCheong (Shawn) Jang published 20 articles, followed by Anita Eves (15), Robert J. Harrington (12), Barbara A. Almanza (9), Michael Kipps (8), and Woo Gon Kim (8). On the other hand, collaboration was limited to two or three authors per paper. Papers with five or more authors collaborating were rare (Fig. 5).

In Fig. 6, the pattern of collaboration in publication is presented in four groups, including a single author from single institution and country (80); two or more authors from one institution and from one country (146); two or more authors from two or more institutions and two or more countries (115). Analysis of the author and institution origins of the published materials shows that collaboration between authors has been increasing. However, authors from the same institution and the same country (total 146) played a predominant role, indicating that international and multidisciplinary collaboration still needs to produce more research related to food and gastronomy in H&T.

### 4.4. Analysis of institutions and countries

The food and gastronomy research from various universities and institutions around the world is presented in Fig. 7. Several authors from some universities and H&T programs and schools have continually published articles during the researched period and increased the pattern of domination in publication of the universities as indicated by published research. A total of 364 institutions from 45 countries contributed to the 462 reviewed articles. The most prolific institution was Purdue University, which published 74 articles, followed by the University of Surrey (47), the Hong Kong Polytechnic University (31), Florida State University (21), the University of Nevada (21), Kansas State University (20), and the University of Queensland (20).

Fig. 8 presents the most prolific countries by the number of publications related to food and gastronomy as appearing in the 16 leading H&T journals. Being one of the major industrialized nations globally, the US took the first place with 514 appearances, followed by the UK (142), Korea (78), Australia (67), Taiwan (49), and Hong Kong (38). Although the publication pattern of Asian universities is high, the United States of America (USA) and United Kingdom (UK) have the highest number of food and gastronomy publications in H&T field accounted to 656 from 1976 to 2016.

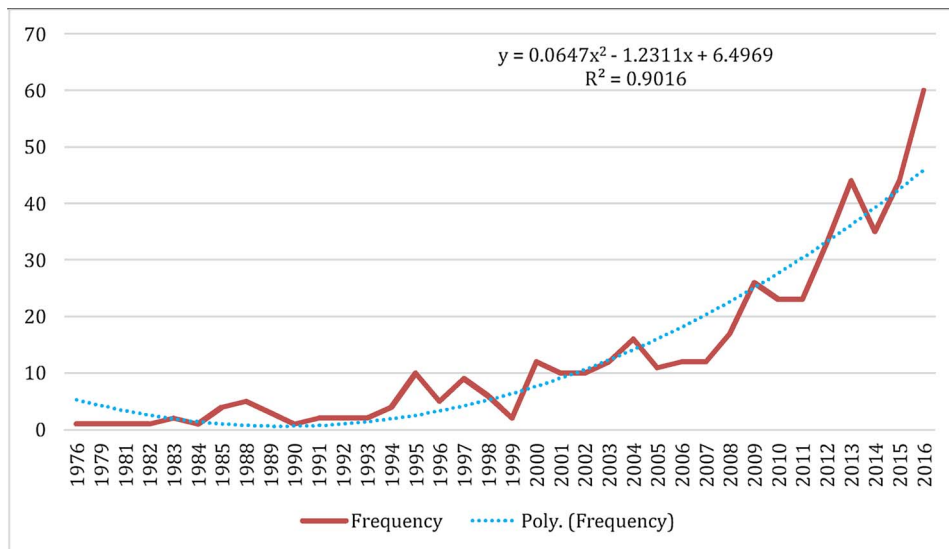


Fig 1. Number of articles by year.

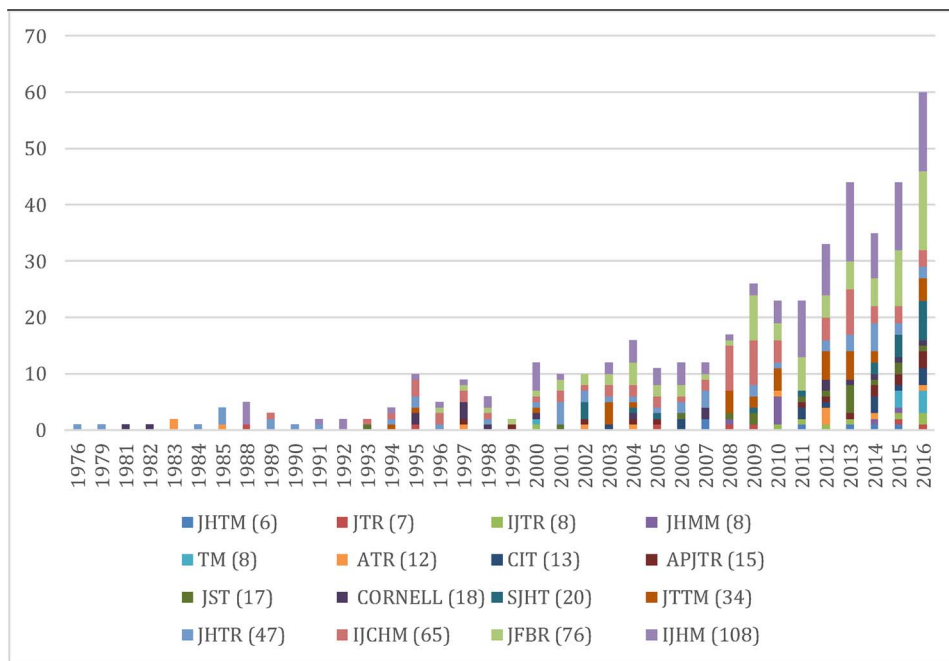


Fig. 2. Most productive journals.

#### 4.5. Main research subjects of articles

The number of articles based on the research subjects in the present study is outlined in Fig. 9. Based on the research findings, eight food and gastronomy subfields were elaborated on in the published materials. These subfields were listed as: food safety, food and health, food availability, food, and culinary operations (e.g., cooking, serving, food selection, safety, and sanitation), food tourism, food and culture, and food and education. The articles focusing on food and culinary operations were dominant (169 out of 462). It is worth restating here that those articles and keywords focusing on management themes such as restaurant management, foodservice management, employee turnovers, marketing, finance, or other related concepts were not considered.

Since keyword analysis is crucial and offers actual information about research trends and topics (Wen and Huang, 2012); the most active keywords included at least one of the following: *food*; *food choice*; *food and social media*; *food tourism*; *local/authentic food and restaurants*;

*cooking and serving employees*; *airline food*; *street food*; *kids menu*; *chef*; *culinary operations*; *equipment*; *sustainability*; *menu design*; *food quality*; and *food sanitation*. Except for the keywords listed above; the most frequently used keywords about food tourism included: *gastronomic/culinary tourism*; *agriculture tourism*; *food offering and destination choices*; *food festivals*; and *food and sustainability tourism*. Keyword analysis shows that only a scarce number of articles addressed issues like *food science*; *food availability*; *food and culture*; and *food and education in H&T*.

#### 4.6. Nature of articles based on methodology

##### 4.6.1. Article type

The 462 documents related to food and gastronomy were vetted under empirical and conceptual articles. The examination of articles in this study indicates that 96% of related articles (445) were empirical studies, followed distantly by conceptual papers (17; 4%) (Fig. 10).

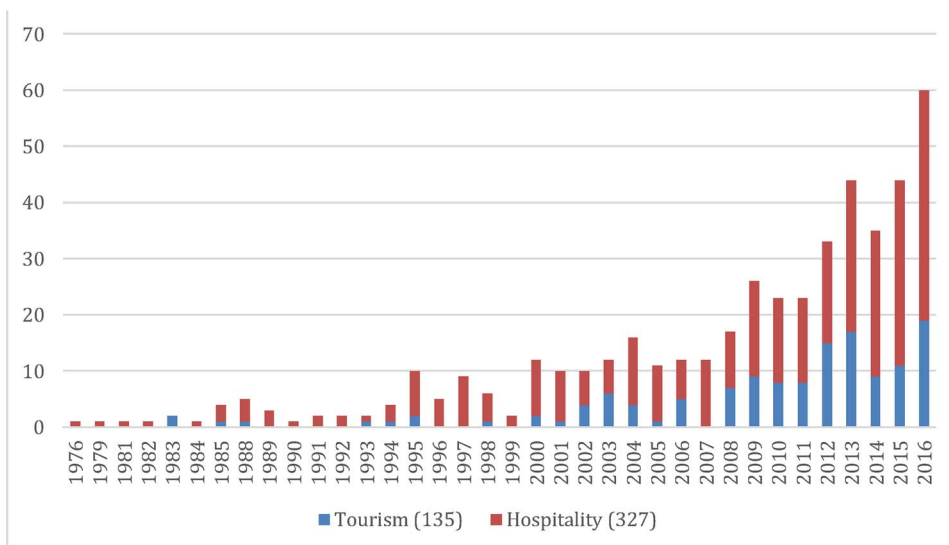


Fig. 3. Area of articles.

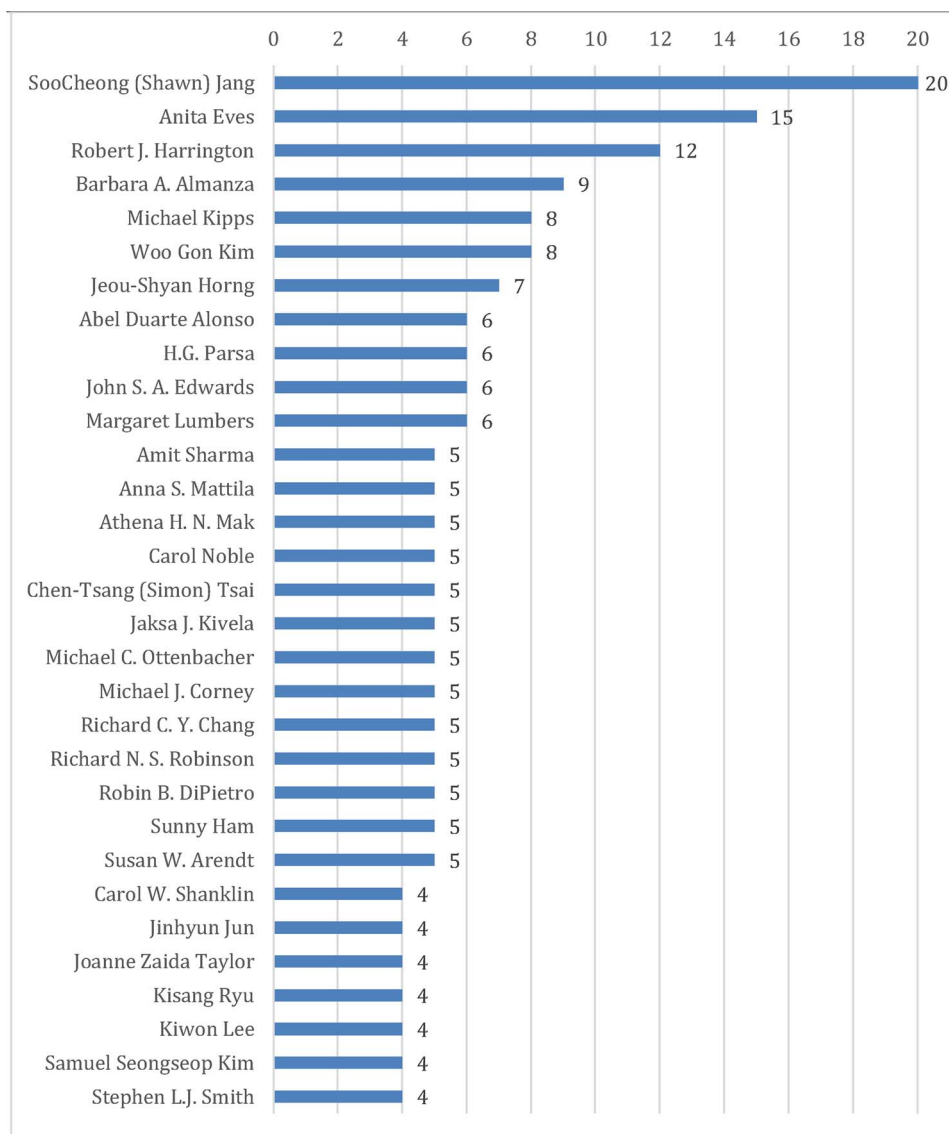


Fig. 4. Authors with the greatest production.

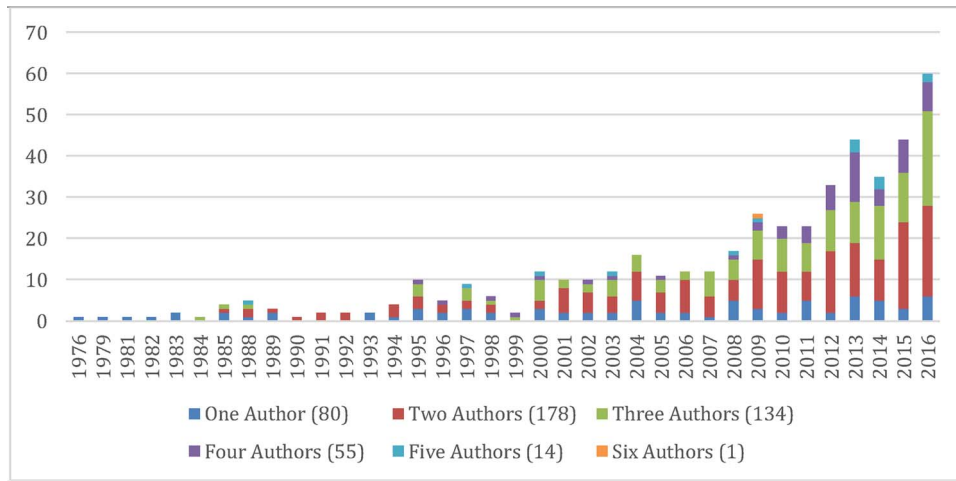


Fig. 5. Author numbers per paper by year.

4.6.2. Methodological approach

The progression of the methodological approach in the extracted articles was further studied and plotted in Fig. 11. Reviewing the publications indicates that a significant percentage (64.7%; 299) of studies were conducted via quantitative methods, followed by qualitative methods (25.1%; 116), with hybrid approaches including both qualitative and quantitative approaches (10.2%; 47) a distant third. Although many peers were attracted to quantitative research methods, a notably increasing trend in using qualitative and hybrid methods has accelerated the development of the food and gastronomy in the H&T field.

4.6.3. Data collection methods

As presented in Fig. 12, the data collection methods in the retrieved documents consisted of 282 questionnaires (61%), 65 secondary data sources (14.1%), 39 interviews (8.4%), 23 multiple methods (5%), 23 simulations (5%), 18 case studies (3.8%), and 12 observations (2.7%).

Interestingly, no study utilized laboratory experiments related to food research, despite many H&T schools having culinary laboratories.

4.6.4. Statistical methods used

Table 2 presents the most and least frequently used statistical methods based on the 462 food and gastronomy related publications appearing in 16 leading H&T journals. A high number of articles (70.30%) used descriptive analysis as a statistical method, followed by factor analysis (24.36%), analysis of variance (20.78%), and regression analysis (15.21%). Study results indicate that all data outputs were concentrated in several statistical methods, like descriptive analysis, factor analysis, analysis of variance, and regression analysis. Overall the use of advanced statistical methods was rare.

5. Discussion and conclusions

This bibliometric study aimed to provide a critical overview of how

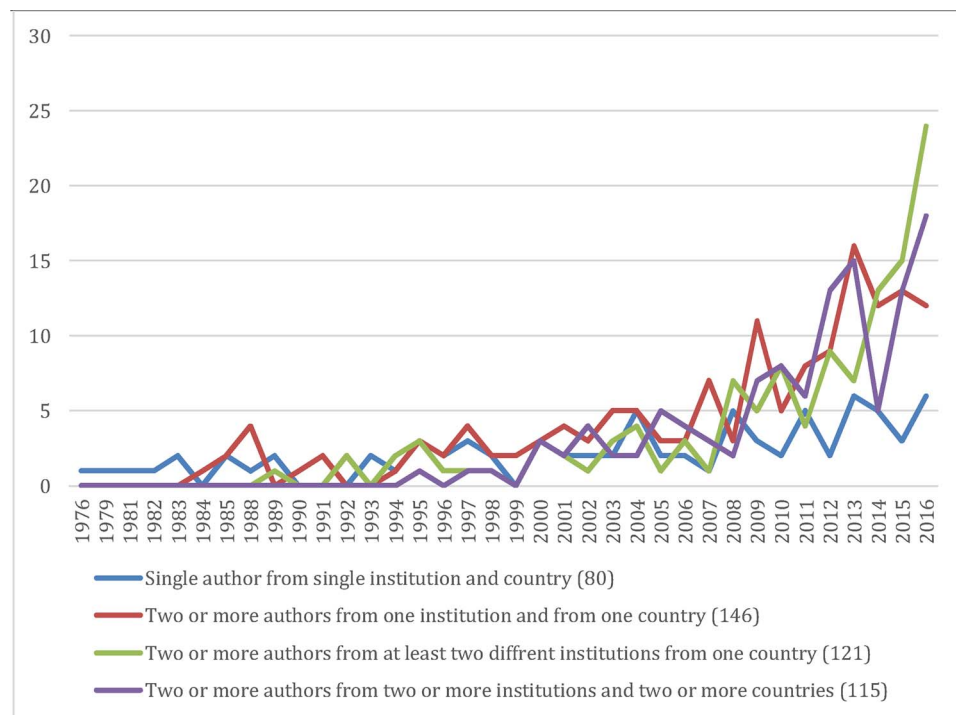


Fig. 6. National and international collaboration by year.

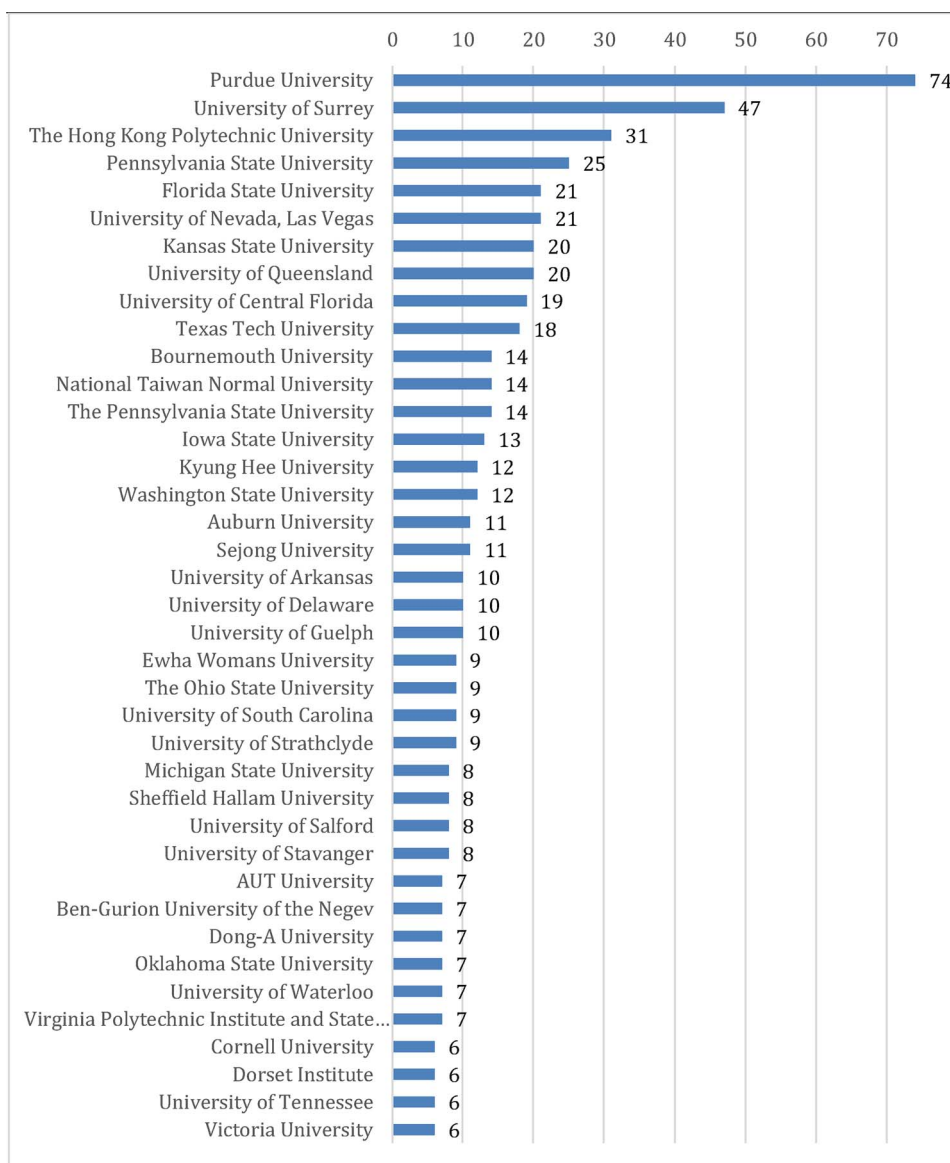


Fig. 7. Institutions with the greatest production.

food and gastronomy research has evolved in the H&T field. This study analyzed 462 scientific publications from a total of 5333 food-related published documents published in 16 leading H&T journals from 1976 to 2016. The critical analysis of food and gastronomy research in the H&T field has addressed the trends in the number of publications from year to year according to journal; the most prolific authors, institutions, and countries; the type of establishments and sub-disciplines/fields. Fourteen of the journals selected for this study were within the SSCI category. Two other journals were included because of their prominence within the field. As one of the first studies in this field, the research findings offer specific implications, which are discussed below.

According to the findings of this study, the number of articles on food, gastronomy, culinary, nutrition, and food safety has increased yearly from 1976 to 2016, but not considerably (Fig. 1). Among the analyzed, IJHM (108), JFBR (76), and IJCHM (65) were the top three journals publishing food- and gastronomy-related articles in the H&T field (Fig. 2). Although research activities on food have greatly increased in other science disciplines (Fu and Ho, 2017; Guerrero-Bote et al., 2016; Kasemodel et al., 2016; Suebsombut et al., 2017), the number of research papers on nutrition, food safety, sanitation, culinary- and gastronomy-related topics is inadequate, with only 462

articles published related to the H&T field over 40 years. Food management, marketing, and operation studies have been popular in the field, however (DiPietro, 2017). It is important to ask what the possible reason(s) for this limited research activity in H&T field are, and to determine how necessary work on food- and gastronomy-related themes is for researchers and the industry. Depending on the food, health, gastronomy, and food safety data and research findings of other disciplines, while focusing only on one-sided business perspective research, may be a deficiency and seen as a lack of interest among H&T scholars. Many undergraduate and graduate-level H&T programs focus on hospitality and tourism management (Cornell University, 2007), rather than food production, culinary, gastronomy, and food safety. These topics may mostly be under the umbrella of culinary schools and chefs; however, these groups have few opportunities for research, and have been training to work in the industry. Additionally, food and gastronomy research may typically have required a scientific background (e.g., chemistry, nutrition, food science, biology, and public health), with a deep knowledge of laboratory facilities. Therefore, to retrieve scientific data, cross-collaboration opportunities between institutes and researchers (H&T-science, H&T medical/public health) should limit selecting similar research topics and methodology routines,

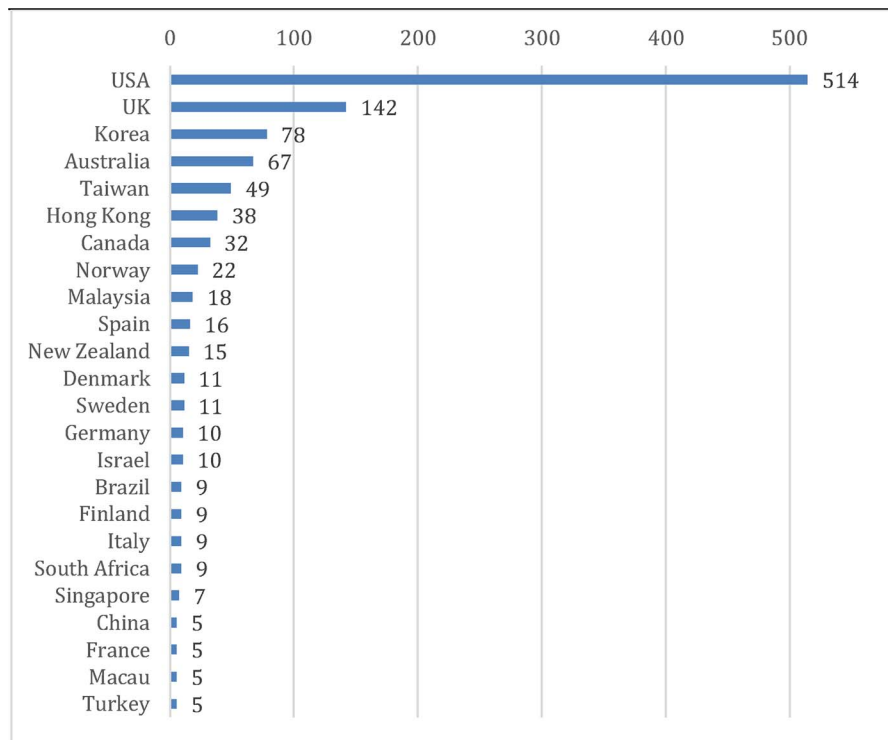


Fig. 8. Countries with the greatest production.

and address the actual food and safety issues in the H&T field.

Within the frame of collaboration, this study shows that 146 researchers from the same country and same institutions preferred collaborations on their research topics. Although interdisciplinary and international collaborations in food research is high in science disciplines (van Raan and van Leeuwen, 2002; Dabirian et al., 2016), this result may indicate limited institutional collaborations and creativity relating to research. Predominantly selected all food related keywords pointed out food articles focusing on management and operational concepts, consumer behavior, consumer satisfaction, marketing and finance which is not including in this study have undoubtedly played a dominant role in the current food field and probably were more

representative to the H&T scholars. Collaborations between different disciplines can increase research productivity, offer a slightly broader perspective on traditional research questions than single-discipline-based research, yield better research results, and provide greater prestige (Abramo et al., 2009; Lee and Bozeman, 2005) and research outputs.

The prolific authors in food and gastronomy research in H&T were evaluated primarily in the context of the articles and productivity level (see Fig. 4). Some of these prolific authors also appeared in other research output ranking publications in H&T research (McKercher, 2007; Ye et al., 2013). For example, the leading scholars in food and gastronomy research, SooCheong (Shawn) Jang, Anita Eves, Robert J.

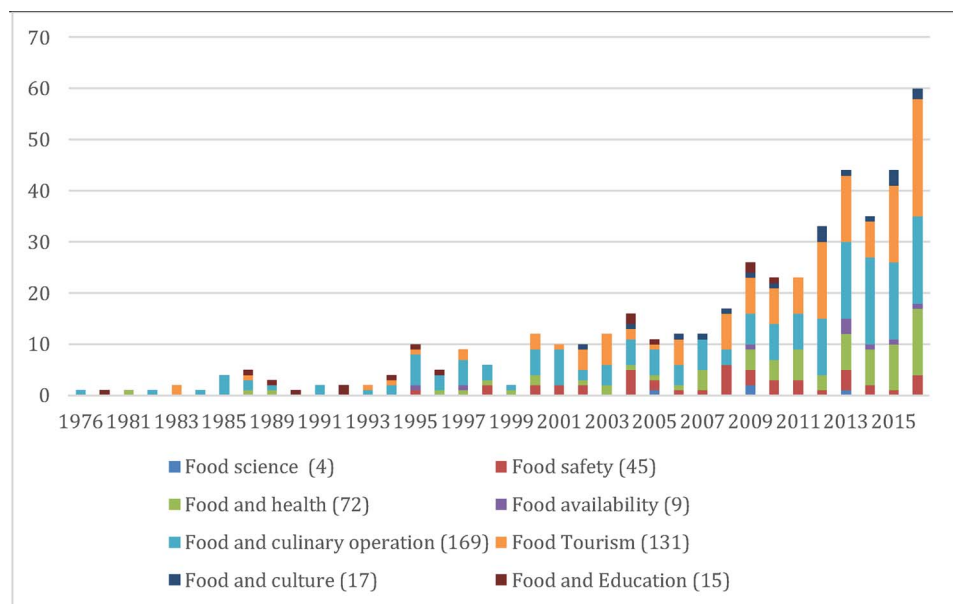


Fig. 9. Main topics of articles.



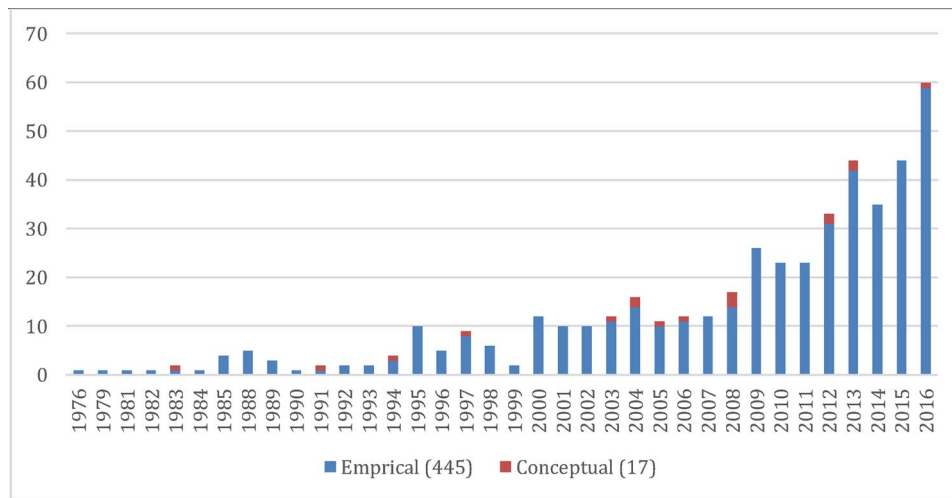


Fig. 10. Article Type by year.

Harrington, Barbara A. Almanza, Michael Kipps, and Woo Gon Kim, also appeared as the most prolific hospitality and tourism scholars in [McKercher \(2007\)](#); [Park et al. \(2011\)](#) [Strandberg et al. \(2016\)](#); [Ye et al. \(2013\)](#). In other words, in addition to food research, these scholars have other areas of research expertise. This shows that there are very few authors who focus on only food and gastronomy research in H&T.

In terms of the most productive institutions on food and gastronomy ([Fig. 7](#)), Purdue University had the leading position, followed by the University of Surrey, the Hong Kong Polytechnic University, and Pennsylvania State University. These were also found among the most prolific universities in other research output ranking publications in H&T ([Park et al., 2011](#)). For example, [Ye et al.’s 2012](#) study focusing on cross-institutional collaboration research ranked Purdue University, the Hong Kong Polytechnic University, the University of Surrey, and Pennsylvania State University among the top research universities in H&T.

The publication indicators for the most productive countries in food and gastronomy research are presented in [Fig. 8](#). The US showed major research influence followed by UK, Korea, Australia, Taiwan, and Hong Kong. These countries were also found among the most prolific countries in other research output rankings studies in H&T ([Park et al., 2011](#)). For example, [Ruhanen et al.’s 2015](#) study focusing on sustainable tourism research ranked the US, UK, Korea, Australia, Taiwan, and Hong Kong among the top-producing countries in H&T research.

The growing food and gastronomy research interest in the H&T field

in the US and UK could be due to the increased national interest in food and health topics, and funding opportunities and research interest of the scholars ([Chen et al., 2017](#); [Vanga et al., 2015](#); [Miró et al., 2009](#); [Sweileh et al., 2014a, 2014b](#)). However, research interest on food related topics has also been growing in Asia, specifically in Taiwan, Korea, and Hong Kong, which brings researchers new research avenues and provides data about the nature of the Asian food and foodservice industries.

Study results provide an overview of research on food and gastronomy in the H&T field for the last 40 years. Overall, publications related to food significantly increased in science and medical disciplines ([van Raan and van Leeuwen, 2002](#)). However, research output related to food and gastronomy in the H&T field is still limited with 462 articles out of 5333 total published documents in 16 leading journals in H&T field from 1976 to 2016. To improve the publication quality and the volume of food- and gastronomy-related research topics, leading H&T journals may encourage research in these areas by assigning special issues and reducing “context rejection” of the papers. The “Food and Culinary Tourism” theme has been included in more conferences and workshops in recent years. These activities can also improve the publication volume and quality in food and gastronomy research.

Study results suggest that most of the published studies were conducted as empirical studies using predominantly quantitative methods. However, advanced statistical methods were noticeably less attractive. The distribution of the methodological procedures (surveys, interviews,

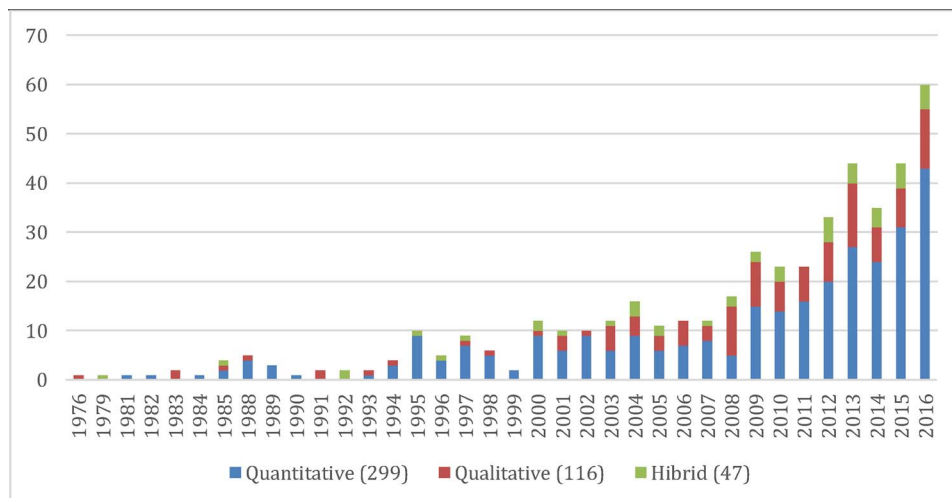


Fig. 11. Methodological approach of articles by year.

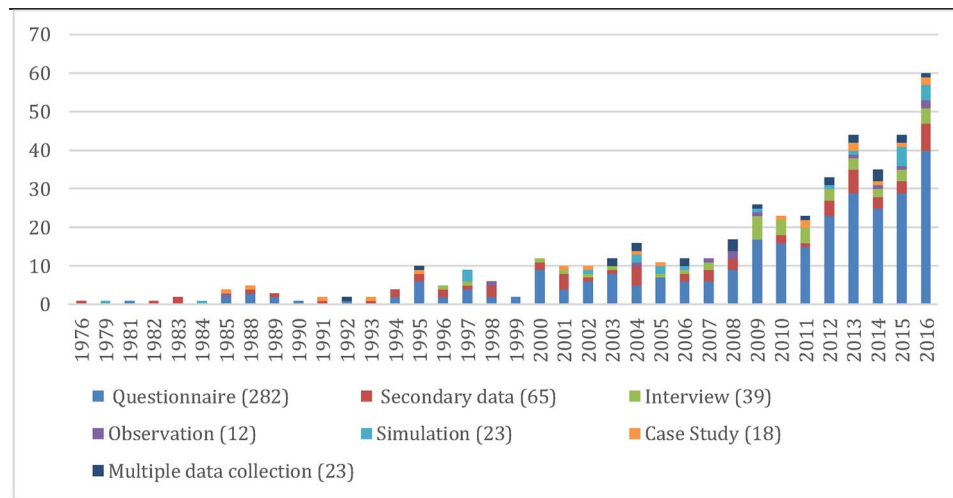


Fig. 12. Data collection methods by year.

Table 2  
Statistical Methods.

Methods	Percentage of articles
Descriptive analysis	70.30
Factor analysis	24.36
Analysis of variance (ANOVA, ANCOVA, MANOVA)	20.78
Regression analysis	15.21
T-test	12.16
Reliability analysis	10.99
Structural equation modeling (SEM)	9.56
Chi-square	8.41
Correlation analysis	6.59
Cluster analysis	3.58
Discriminant analysis	2.56
<i>Other methods used less frequently</i>	
Path analysis	
Bonferroni's multiple comparison	
CAQDAS	
Mann-Whitney U test	
conjoint analysis	
partial least squares(PLS)	
analytic network process(ANP)	
data envelopment analysis	
event study method(ESM)	
Logit Models	
Thematic data analysis	
generalized estimating equations	
hierarchical Bayes analysis	
Tobit modeling	

sample cases, secondary data sources, and observations) used in food and gastronomy articles show similarity with other bibliometric studies (Koseoglu et al., 2015) in the H&T field. On the other hand, other scientific and medical disciplines usually focus on laboratory and exploratory studies as a primary research method, stimulating the more research potential of the field.

In this current study, the findings of the bibliometric analysis in food and gastronomy research highlights past and current research activities; guides researchers in these emerging areas; and provides potential challenges, availability of the resources, barriers, and gaps in both the literature and practice related to research in the H&T field. Practical implications may be observed from the results since “it is important for managers to understand the scope and quality of scholarship surrounding an issue before attempting to make an informed decision” (Koseoglu et al., 2016, p. 1615). Addition to this, the study results help practitioners develop curricula for both academe and training programs and establishment of sufficient scholarship to

support the field’s inclusion with other disciplines or fields.

### 5.1. Limitations and future studies

Similar to other research studies, this study has several limitations. First, the data for the study were collected from only 16H&T journals. In future studies, some well-known databases could be included to collect data from other H&T journals and publications. Second, future studies can include additional keywords related to the management and operation of food businesses, consumer behavior, consumer satisfaction, marketing, and finance of food and gastronomy articles and research notes. Third, future studies can also analyze food-related books, conference papers, and other publications. Further, researchers can apply advanced bibliometric analysis, including co-citation, co-authorship, co-word analysis, author keyword word-cluster analysis, and global and local citation score analysis to better understand the evolution of food and gastronomy research in the H&T field or other relevant disciplines.

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