A Bibliometric Analysis of Research on Kitchen Operations in Restaurants and Hotels by Using Web of Science Database

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Abstract:

Purpose: The motive of this investigation was to give a bibliometric analysis on kitchen operations. An aggregate of 172 research articles published between 2005 and 2025 January are viewed and utilized by the author. The research attempts to recognize the noteworthy journals in this area, times with the highest number of publications, utmost cited papers, significant authors, countries and institutions. Also, theco-authorship network chart and keywordco-occurrences network charts are handed.

Design/ Methodology/ Approach: The Web of Science database was used for analysing the data about colourful papers included in this study. Also, the VOS viewer software was used for creating aco-authorship network chart and keywords-occurrences network charts.

Findings: The outcomes of this research specified the year 2024 marked the highest numbers of research papers published. The most prominent journal in the research area   is 'International Journal in Hospitality Management' and the research paper viewed several times is 'Greening the hospitality industry: How do green human resource management practices influence organizational citizenship behaviour in hotels? A mixed-methods study'. Furthermore, the most prominent author is Prof Ki-Joon Back, and the most prolific country and organisation are the Peoples R China, United States of America and Sichuan University, China, University of Houston and University of Houston System, city of Texas in USA.

Originality value: This research identified the existing literature on kitchen operations in hotels and restaurants. A significant, broad, and valuable picture of this area is provided by using the bibliometric process. The findings will help in creating future research on this topic by the various authors.

Keywords: Kitchen Operations, Restaurants, Hotels, Bibliometric analysis, VOS viewer.

Introduction:

The hospitality industry is a vast and diverse sector encircle various services and establishments keen to providing experiences and accommodations for travellers and consumers. This multi-layered industry includes hotels, restaurants, cafes, bars, lounges, cruise liners, events etc.In the cutthroathospitality industry, the quality of hotel, restaurants and kitchen operations is of paramount task(Wąsowicz-Zaborek et al., 2024).The development of the hospitality industry has fascinated the interest of many researchers in the past and have analysed the database available on the internet, finding outcomes of their perceptions. Studies focusing on restaurants, in particular kitchen operations, has grown significantly over the last three decades. Indeed, it now constitutes the most noteworthy area of academic work in the hospitality sector, additional to hotelsand restaurants research both in the management literature, in general and marketing, in particular(Rodríguez-López et al., 2020) kitchen and its related operations. The restaurant industry in global viewpoint is still considered as one of the fastest growing industries due to its active characteristic. Development penetrated the industry particularly the kitchen and dining operation. (Mendoza & Carpio, 2016). The food and dishes of the specialised restaurant requires a much more than just plating of food. Their operational efficiency is dependent on kitchen and acknowledged by the number of guests who recognised and accept their restaurant. (Barlan-Espino, 2017).

Food production, the only department of the hospitality industry which is not only increasing in terms of volumes but also becoming more practical towards their approach (Rodgers, 2007). Kitchen is the most important aspect of any successful restaurants and hotel organisation involved in the hospitality. Kitchen not only deals with cooking of food and consuming (Charytonowicz & Latala, 2011) but also absorbsimmense pressure of working environment, planning, ordering, managing food waste with at most accuracy. A kitchen is the most common and bounded region for the selection, mixing, sorting, and cooking of food ingredients by different methods of cooking. Simply, a kitchen is a place where meals are prepared (Nayl et al., n.d.).

This study seeks to provide a comprehensive bibliometric examination of restaurant (Cao et al., 2025) and kitchen operations.As a widely accepted definition in literature, bibliometrics is process of scientific techniques and numerical methods on books and other means of communicating mediums. Bibliometric analysis permits purpose of excellence for the research in anexactstream of working with understanding of the concepts, trends and patternsin the field. Thus, it will benefitmost of the researchers to have an outline of the key research and leading topics in the field (Güzeller & Çeliker, 2018).

By observing and reading the multiple research or studies it was seen that barely any research has touched the bibliometric aspect on Kitchen Operations, which this study tries to showcase with appropriate approach.

The Web of Science database was used for identifying the research articles related to kitchen operations on hotels and restaurants, published between 2005 to 2025. This database was carefully chosenas it was observed that journal have a wider coverage. The keyword "kitchen operations and restaurants" was identifiedfor analysing the research papers.The search filter wasfinalised by using Boolean operatorsand the research paper having the keywords were selected for the studyi.e. either in their title or abstract such as "kitchen operations and restaurants". Additionally, the exploration reflected a whole of 364 papers. Subsequently, it was found that Bibliometric analysis of research paper 172 out of the 364 papers.

This paper aims to answer the following research problems;

RQ1. Which papers have published the greatest number of papers onkitchen operations in restaurants and hotels?

RQ2. In which years, the maximum number of papers have been published?

RQ3. Which are the most referred research papers?

RQ4. Who are the most Leading authors?

RQ5. Which are the most prolific countries and institutes?

RQ6. Which authors have co-authored the maximum, with other authors?

RQ7. Which are the most frequently appearing keywords?

The remnants of this paper are organised as follows: Section 2 explains theoretical background Section 3 provides the details related to the research methodology and procedure of this study, Section 4 defines the results and findings of this analysis, based on the observation, objectives and questions. Finally, Section 5 provides the discussion, conclusions and limitations of this study.

2. Theoretical Background:

The restaurant industry's growth has been accompanied by a significant increase in related research over the past 30 years, establishing itself as a key area within hospitality business studies (Cao et al., 2025b). While historical evidence suggests that restaurant-like establishments have been present for millennia, as exemplified by the discovery of food counters and taverns in ancient Pompeii prior to the 79 AD eruption of Mount Vesuvius, scholarly investigations into the business dimensions of restaurants are a relatively recent phenomenon, emerging only in the 20th century (Cao et al., 2025b).Over the past two decades, research in kitchen operations has transitioned from focusing primarily on service efficiency to exploring customer perceptions, emotions, and satisfaction (Rodríguez-López et al., 2020b). Effective kitchen design is pivotal for enhancing operational efficiency and staff performance. Salama (2020) emphasizes that well-planned layouts with adequate equipment placement facilitate smooth workflows, reduce backtracking, and minimize employee turnover. Ergonomic considerations and proper sequencing of tasks are crucial for safety and productivity (Salama, n.d.). Understanding and optimizing staff behaviour is essential for

improving kitchen operations. Shimmura et al. (2013) conducted observational studies comparing proficient and average kitchen staff, identifying that assigning role based on skill levels rather than physical arrangement enhances both efficiency and dish quality. Further, analysing cooking behaviours and customer order information can aid in process improvements and workload distribution. The collaboration between human agents and artificial systems, such as automated equipment and data analytics, contributes to more efficient and precise kitchen management (Commercial Kitchen Management,2024). Central kitchens performanceis vital in the creation of dishes, especially responding to increased demand for ready-to-eat meals. Innovations in central kitchen engineering aim to improve production efficiency and product quality, addressing consumer preferences for convenience without compromising on taste and safety(Jia et al., 2024). Bibliometric analyses in kitchen operations research commonly employ paraphernalia such as co-citation analysis and keyword co-occurrence (Rejeb et al., 2024).

3. Research Methodology:

This exploration of research bestowing the bibliometric procedure and with a purpose to inspect the research on kitchen operations on hotels and restaurants, from the year 2005 to 2025(Qubbaj & Signes, 2022). The scientometric methods sum up the application of quantitative methods on bibliometric data (e.g., units of publication and citation) (Broadus, 1987, Pritchard, 1969). The origins of bibliometric discussions can be traced back to the 1950s (Wallin, 2005), indicating that bibliometric methodologies have a long-standing history in academic research. (Donthu et al., 2021).Bibliometric study is a type of exploratory approach to comprehend the universally accepted research trends in a specified arena upon the outcomes of the scholarly publications whether the google scholar or Web of Science database. The author employed method bifurcating the review research papers and bibliometrics process which mainly focusses on final results on specific arena (Alsharif et al., 2005). The process of bibliometric publications, boosted the research study and have provide great bibliographic datasets (Passas, 2024). Any bibliometric analysis requires consultation of different bibliographical databases. The primary databases are provided by WoS (Rodríguez-López et al., 2020c)

To defragment the available scientific literature in kitchen operations on hotels and restaurants, three phases were followed: groundwork, information gathering and investigation. The data was constructed using Clarivate Analytics database Web of Science (WoS), which was divided into three stages. The primary focus was to identify the paths, patterns and trends in the scientificarena, by using diverse metrics, on the particular field, specifying on sources, authors, and documents. The secondary concept was to evolve complete image of abstract, social, and intellectual structures from a statistical approach, was absorbed on science mapping.

- Papers with highest publication

- Year wise publishing;
- Most Referred Papers;
- Top Leading authors;
- Topmost countries and institutes.
- co-authorship network analysis; and
- keywords co-occurrences network analysis.

VOS viewer is a programming software tool with 1.6.9 version helps in creating maps or networks among the co-authors their countries and forming a collaborative network for working on a specified filed. Keyword co-occurrence network analysis is also obtained throughVOS viewer.

4. Results of the Bibliometric Analysis:

4.1 Performance Analysis:

In this segment, a bibliometric investigation is carried out on performance indicators.

4.1.1 Journalswith Highest Publications:

All the 172 papers in this study belong to their respective 91 journals. Figure 1 shows the top twenty journals, which published the maximum number of papers on kitchen operations. Among these top journals, two journals which top the table are international journal of hospitality management (13) and international journal of contemporary hospitality management (11) respectively. The three-journal contributors are sustainability (9), tourism management (7) and Current issues in tourism (6). Rest of the journal has published less than 3 paper in journals (Figure 1).

Figure 1. Topmost Journals with highest publications on kitchen operations

4.1.2 Top Ten Publishers:

Figure 2 illustrates the maximum papers on kitchen operation, published by the famous publishing houses. The topmost publisher in the given topic is Elsevier with 56 number of publications on kitchen operations.The second-best publisher is Emerald Group with 23 paper publications. Rest of the publishers such as Taylor & Francis, MDPI, Springer, Willey, Sage etc.
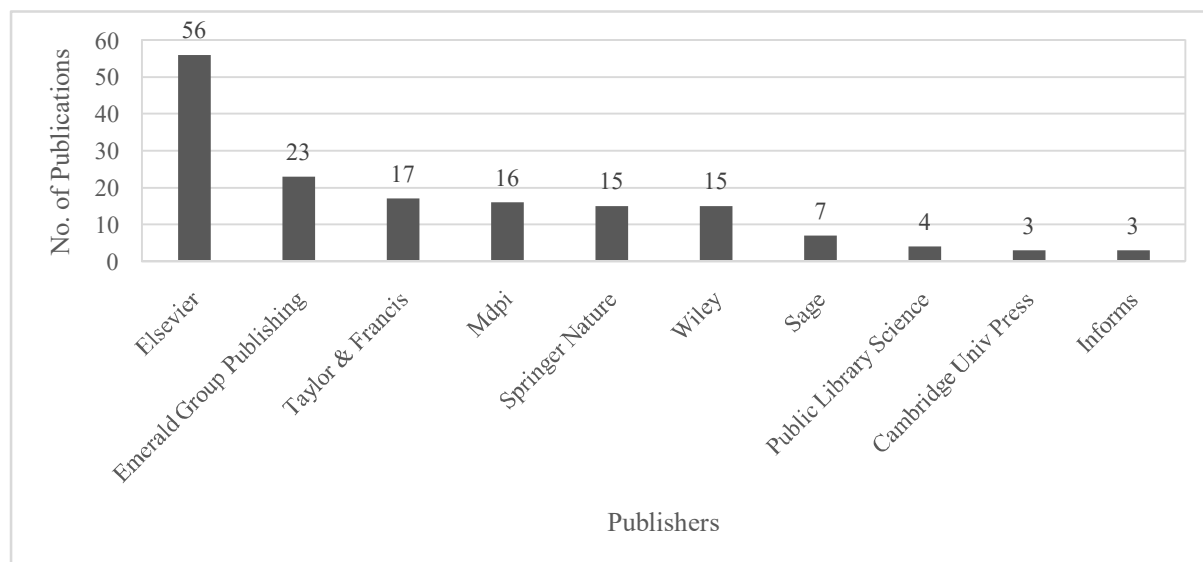

Figure 2. Publishers with greatest number of publications on kitchen operations and Restaurants

4.1.3 Year-wise Publications:

Figure 3 depicts the prominent years of publications since 2005 to 2025. It was observed that the research on kitchen operation and restaurants has been increasing in the resent past. The paperspublished during the years 2005 to 2010 was minimal or almost negligible. The slow and steady growth was observed on the specific field from the year 2011 to 2018, the number of papers rise from 4 to 14. The drastic increase in the paper publications has been witnessed from the 2019 to 2024 with almost 27 publications. The above paragraph clearly marks that the interest of the research towards the following field has increased but still the lack of research is seen in this field.
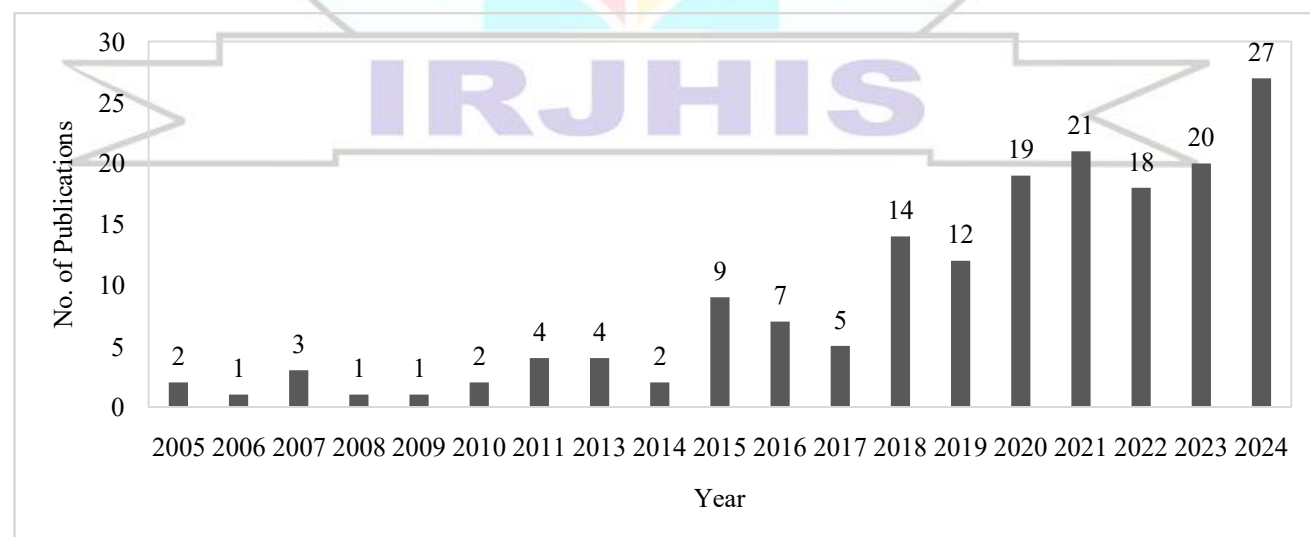

Figure3. Numbers of papers published overs the years

4.1.4 Leading Authors:

Figure 4 illustrates the most leading authors. The overall papers selected for the study i.e. 172 belong to their respective 581authors. After observing and interpretating the results, a summary of leading authors with greatest number of publications were prepared. The primary author with the greatest number of publications on kitchen operations in restaurants and hotels is ProfKi-Joon Back with four papers. The researcher is presently working as a Senior Associate Dean for Research and Graduate Studies & Moores Chair Professor Conrad N. Hilton College of Global Hospitality, University of Houston. Thesecond author is currently working as a Professor and Dean of School of Big Data and Software Engineering, Chongqing University, China. The tertiary author with most papers is Minwoo Lee. The researcher is a Professor in the University of Houston.

Further, the next four important Han H, Nilasha M, Wang JQ, Xu ZS have three papers each.Han H highly Cited Award Recipient from Web of Science belongs to Sejong University. Dr Mehrbakhsh Nilashi is Associate Professor at UCSI GBM in Malaysia.
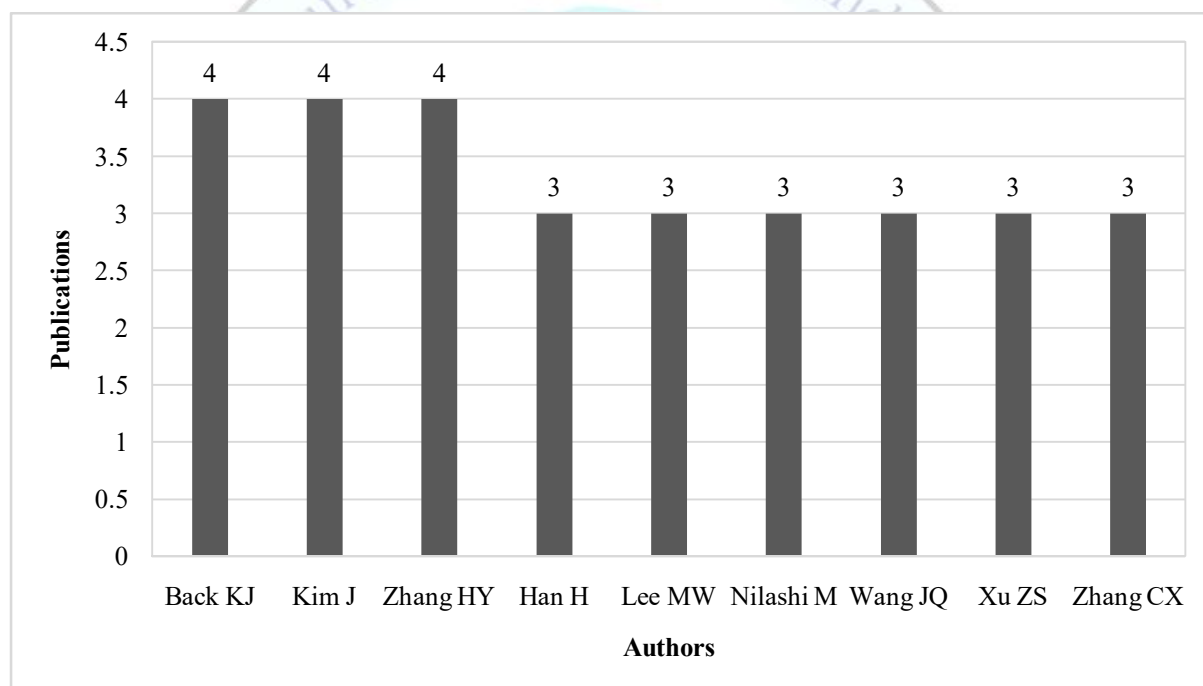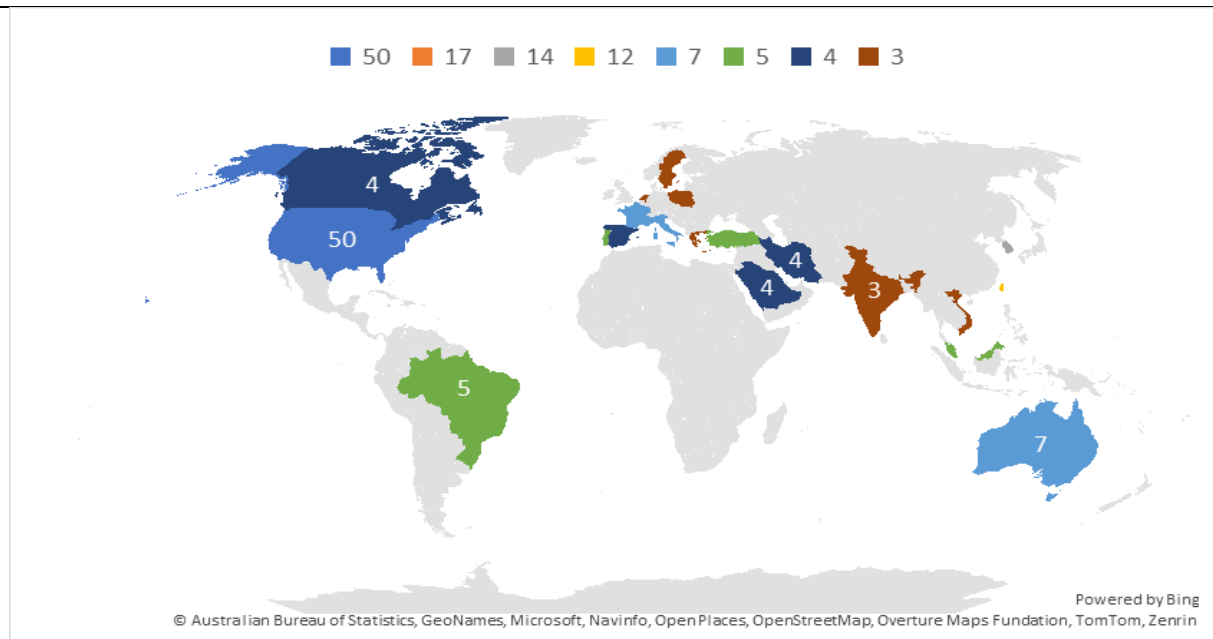

Figure 4. Most Prolific Authors with maximum number of Publications

4.1.5 Publication distribution of countries and institutes:

All the scholarly articles used in the study is the collaborative work of authors belonging 26 diverse nations.Figure 5 visualised the countrieswith greatest number of research papers on kitchen operations. PEOPLES R CHINA and USA tops the list with 50 papers each. ENGLAND, SOUTH KOREA and TAIWAN were the countries with maximum papers.

Source: Map created by using excel utilising the data extracted from Web of Science

Figure 5. Map showing the number of papers contributed by various countries' authors
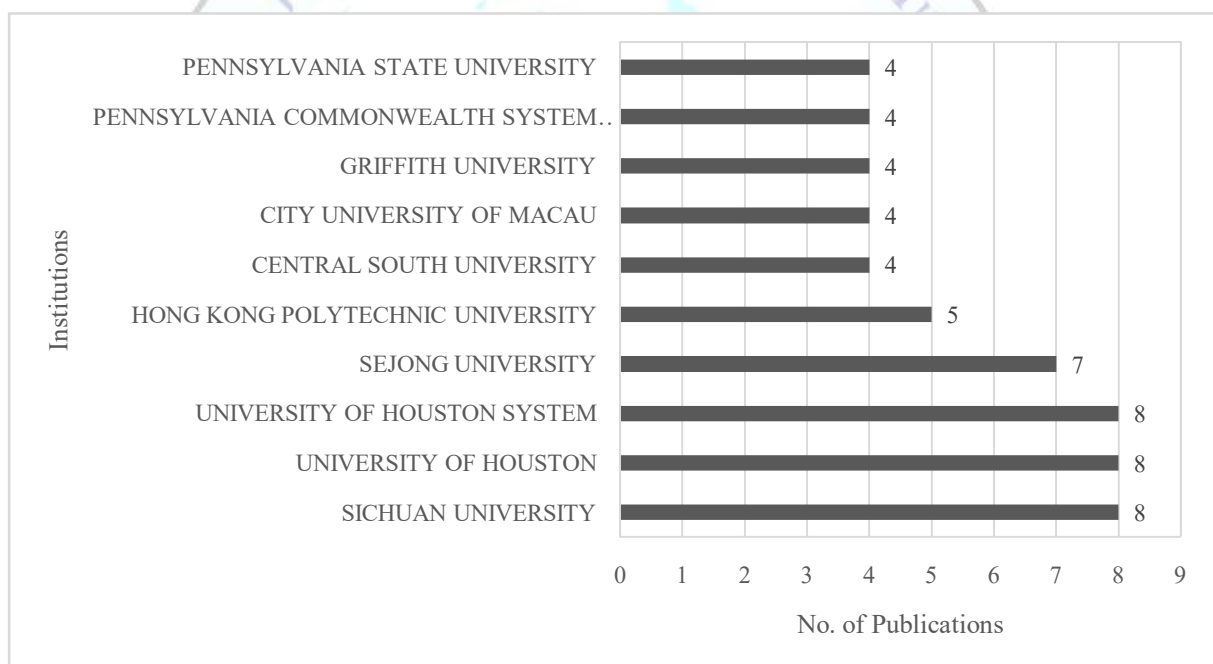

Figure 6. Most Prolific Institutions

Anticipating the number of institutions which have propelled with highest number of papers on kitchen operations in restaurants and hotels, theparamount significance of institute is the Sichuan University, China, University of Houston and University of Houston System, city of Texas in USA with 8 articles. The Figure 6 depicts that the other institutions which have come up with 7 and 5 papers respectively are Sejong University, South Korea and Hong Kong Polytechnic University, Hong Kong. There are some of the institutions to which publications are contributed Central South University, City University of Macau, Griffith University, Pennsylvania Commonwealth System of Higher Education and Pennsylvania State University.

4.1.6 Most Referred Research Publications:

Concentrating on the web of science content, a summary of the top most referred publications are presented in the Table 1. The maximum number publications with 414 citations are Greening the hospitality industry: How do green human resource management practices influence organizational citizenship behaviour in hotels? A mixed-methods study by (Nhat tan Pham 2019). The second most cited paper totalling 188 is the effects of quality and environmental management on competitive advantage: A mixed methods study in the hotel industry by (Molina Azorín 2015).

#	Author(s)	Title	Year	TC*
1	Nhat tan Pham	Greening the hospitality industry: How do green human resource management practices influence organizational citizenship behaviour in hotels? A mixed-methods study	2019	414
2	Molina Azorín	The effects of quality and environmental management on competitive advantage: A mixed methods study in the hotel industry	2015	188
3	Sakaguchi	Tackling the issue of food waste in restaurants: Options for measurement method, reduction and behavioural change	2018	147
4	Filimon au	Reviewing the carbon footprint analysis of hotels: Life Cycle Energy Analysis (LCEA) as a holistic method for carbon impact appraisal of tourist accommodation	2011	145
5	Ivanov	Hotel managers' perceptions towards the use of robots: a mixed-methods approach	2020	124
6	line	The Value of Service Robots from the Hotel Guest's Perspective: A Mixed-Method Approach	2021	122
7	kim	Effects of epidemic disease outbreaks on financial performance of restaurants: Event study method approach	2020	107
8	belarmino	Comparing guests' key attributes of peer-to-peer accommodations and hotels: mixed-methods approach	2019	91
9	zhang	An online reviews-driven method for the prioritization of improvements in hotel services	2021	90

10	cadenas	Analysis and forecasting of wind velocity in chetumal, quintana roo, using the single exponential smoothing method	2010	82
*Note: TC. stands for Web of Science total citations				

Table 1. Most Cited Paper on Restaurants or Hotels

4.2 Science Mapping:

This section presents co-authorship network analysis and keywords co-occurrences network analysis.

4.2.1 Co-authorship Network Analysis Data:

In this investigation of bibliometric analysis, the Co-authorship Network Analysis was analysed and visualised with help of VOS viewer a software tool with updated version 1.6.9. (van Eck et al., 2010). VOS stands for Visualisation of Similarities. For creating a map or network analysis the software applies the VOS mapping technique (van Eck & Waltman, 2007).

The co -authorship network Analysis is the method to find out numbers of authors around the world and within the country have collaborated with each other for publications with core expertise in their filed. In the present study, there were total 581 authors in the data set. To generate a network map, the software programcarefully chosen only those authors who have worked with each other in minimum two publications. It was found that very few authors have who have co-authored among themselves.

Source: Figure extracted using VOS viewer

Figure 7. Illustrates the Co-authorship network map of minimum two authors, who conducted research on Kitchen operations in restaurants and hotels

4.2.2 Keywords co-occurrences network analysis:

This keyword co-occurrence investigation provided a pictured relationship amongst keywords based on their occurrence and proximity in the investigate publications. VOS software programme was carefully chosen to observe significant topics, trends, and gaps in the bibliometric analysis obtained for this study (Cao et al., 2025a). The smaller the distance appears within the two or more terms; the bonds are much stronger and relates each other. To evaluate the relationship between the terms, the co-occurrences in the publications were analysed (Van Eck et al., 2010).

The keyword co-occurrence network in Figure 8 depicts the greatest number of words which have co-occurred with the keyword "kitchens operations and restaurants". This map can provide a brief insight about the various methods, topics and areas, in connection with kitchen operations and restaurants.
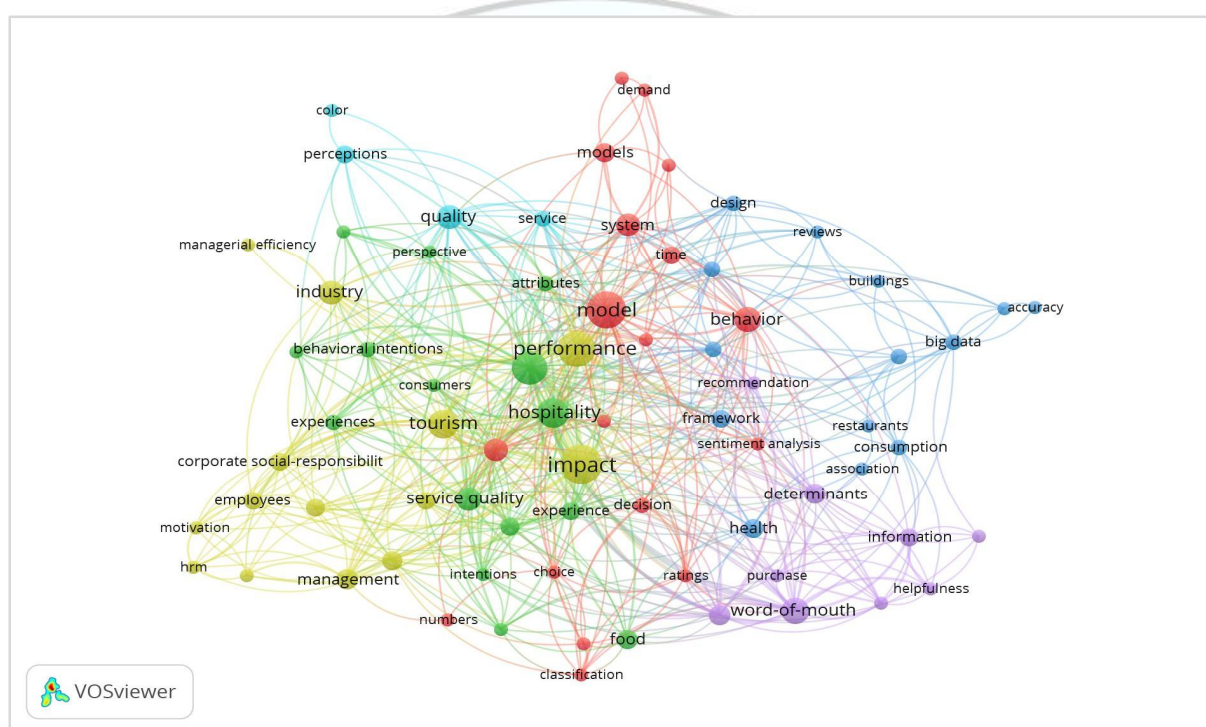

Figure No 4.8: illustrated the Keywords which have appeared greatestnumber of times, in various papers related on Kitchen operation in restaurants

5. Outcomes of the study:

The outcomes of this research work shows that very few researchers are involved in specific topic i.e. kitchen operations in restaurants and hotels in the past decades. The research questions which were framed during the study, it is notices that the research articles which has published the greatest number of papers on kitchen operations in restaurants and hotels is International Journal in Hospitality Management belonging to the Elsevier publishing group. The highest number of journal publichion was during the last six year. The year 2024 is marked with the highest publications. Themost referred paper is about Greening the hospitality industry: How do green human resource management practices influence organizational citizenship behaviour in hotels? A mixed-methods

study by (nhat tan pham 2019). The most prolific author is Prof Ki-Joon Back. Then, as found by the VOS viewer software, the same author has coauthored the maximum times, with the other authors information has been observed in this study. The countries whose authors have bestowed with the greatest publications arePeoples R China and USA.

The similar countries researcher who has contributed highest number of publications together with researcher of the different countries. The organization and their authors work are listed here, Sichuan University, China, University of Houston and University of Houston System, city of Texas in USA.Additionally, the keyword co-occurrences network analysis identified that the least number of keywords appearing are "kitchen operations and restaurants". The research work has been conducted with numerous boundaries, which can act as guide for the researcher to work upon Firstly, the journals published since January 2005 to January 2025 is incorporated in the research work. Secondly, the core collection of data set for the research was selected from Web of Science only, which means that the publications apart from WOS was not a part of the research study. In addition to this, the researcher can opt for some different database, such as Scopus and go through with the same process. Thirdly, the publication which were printed in English languages were selected in the research and any other language was not incorporated for the study. The succeeding restriction was that the search results of WOS served as main source of finding and not the other scholarly articles including master and doctoral studies, unpublished articles and PhD theses on Kitchen operations inRestaurants. However, it is still believed to have an in-depth research activity on particular topic along with multiple papers need to reviewed and analysed for much better results. Finally, it is proclaimed that this research effort illuminates the kitchen operations in Restaurants literature in a new fashion. It is anticipated that this research will motivate researcher to carry research on such keywords and plentiful source of information for the researcher community interested in conducting future studies on this area.

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