Exploring the Nexus of Over-Tourism: Causes, Consequences, and Mitigation Strategies

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Abstract
The concept of "over-tourism" refers to the adverse effects of tourism on the quality of life for residents and visitors' experiences in a destination. Though a relatively new topic in academic research, over-tourism cannot be meaningfully discussed without considering causes, consequences, and mitigation strategies (e.g., sustainability). This review offers a thorough and current synthesis of the causes of over-tourism and its connection to the consequences and mitigation strategies. It aims to provide a clear understanding of the increasingly strong relationship between the causes of over-tourism and the consequences and mitigation strategies. Using the PRISMA framework, the study systematically selected articles and review articles published in the Scopus database from 2004 onwards, providing an objective, quantitative evaluation of the existing literature. Additionally, Vosviewer and Excel were employed for a descriptive and thematic analysis of the 645 articles and review articles chosen. The findings confirm that recent research trends in over-tourism primarily focus on European urban areas. Additionally, the study highlights the key stakeholders (direct and indirect) and policymakers involved in the research and analysis process, and supported by active funding strategies in this field. The practical implications of this study lie in its ability to inform evidence-based policy decisions and strategic planning. By highlighting the interconnectedness of over-tourism's causes, impacts, and solutions, the review offers a roadmap for stakeholders to implement targeted, sustainable strategies, improving residents' quality of life and enhancing visitor experiences while ensuring the long-term viability of tourism destinations. This is the first study to conduct a detailed descriptive and thematic analysis of this scope.

1. Introduction

In recent years, the issue of over-tourism has gained significant attention in the tourism industry due to its adverse effects on destinations worldwide (Peterson, 2023; Xie et al., 2024). The concept of 'over-tourism' has gained attention due to the negative impacts caused by an influx of tourists

exceeding the carrying capacity of popular destinations like Venice, Amsterdam, Barcelona, and Bali (Arefipour et al., 2022). This phenomenon has led to environmental degradation, cultural erosion, and challenges in infrastructure management in these destinations. As tourists increasingly become aware of environmental issues, there is a growing demand for sustainable tourism practices (Castilho et al., 2021; AL-Jawahry et al., 2022). The tourism sector's eco-efficiency plays a crucial role in balancing economic development with environmental preservation, as a decline in environmental quality can lead to a decrease in tourism demand and negative economic consequences (Castilho et al., 2021; Folgado-Fernández et al., 2023).

The tourism industry embraces technological advancements to enhance tourism management in response to these challenges. Smart tourism management, which involves leveraging communication, the Internet, and other technologies to collect and analyze tourist information, is being adopted to promote sustainable tourism development (Feng, 2022; Mohammed Alnasser & Mohammed Alkhozaim, 2024). Additionally, integrating cloud computing, machine learning, and 5G technology is revolutionizing the e-commerce area (Wang, 2021; Wang & Zhang, 2021)and the tourism industry by optimizing tourism products, enhancing visitor experiences, and improving destination management (Liang et al., 2022; Xiong, 2023).

Furthermore, the concept of sustainable tourism is gaining traction, with a focus on ecotourism as a model for the sustainable use of local tourism resources (Stanciu et al., 2022). Youth perception studies on ecotourism reveal a growing interest in sustainable tourism practices among young individuals, emphasizing the importance of responsible travel behavior and digital tools for trip planning (Stanciu et al., 2022). Destination management organizations are also exploring innovative approaches, such as smart governance and lean techniques, to improve destination management and enhance operational efficiency (Foris et al., 2020; Mandić & Kennell, 2021).

Over-tourism, characterized by an excessive influx of tourists beyond a destination's carrying capacity, has become a pressing issue in the tourism industry (Singgalen, 2024). This phenomenon challenges tourism's sustainability and raises concerns about the well-being of local communities and the preservation of cultural and natural heritage (Peterson, 2023). Over-tourism is intricately linked to economic growth, societal changes, and environmental sustainability, making it a multifaceted issue that requires in-depth analysis and strategic interventions (Peterson, 2023).

Research on over-tourism is crucial for understanding public perceptions and responses to this phenomenon. By utilizing sentiment classification techniques, studies can delve into the sentiments expressed in responsible tourism content, shedding light on how over-tourism is perceived and discussed in the public domain (Singgalen, 2024). Such analyses are essential for identifying key concerns, evaluating the effectiveness of current strategies, and informing future policy decisions aimed at mitigating the negative impacts of over-tourism. Moreover, over-tourism is not solely about overcrowding or busy destinations; it signifies a situation where the number of tourists surpasses the available services at a destination (Abbasian et al., 2020). This nuanced definition underscores the importance of studying over-tourism from a holistic perspective that considers not only visitor numbers but also the capacity of destinations to manage tourism activities sustainably. By exploring the experiences and perspectives of local tourism employees in over-touristed destinations, researchers can gain valuable insights into the on-the-ground implications of over-tourism on communities and businesses (Abbasian et al., 2020).

The impact of tourism on cultural identity and heritage is another critical aspect that necessitates examination in the context of over-tourism. For instance, in Balinese society, tourism has been a significant driver of change, influencing social, political, and economic structures (Palar & Hewat, 2024). The influx of tourists has amplified cultural expressions and posed challenges such as over-tourism and urbanization, impacting traditional livelihoods and environmental sustainability (Palar & Hewat, 2024). Understanding how tourism shapes cultural identities and communities is vital for devising strategies that balance tourism development with cultural preservation (Shpak et al., 2023; Uslu et al., 2024). Furthermore, the environmental implications of over-tourism cannot be overlooked. Tourism is a significant contributor to global carbon emissions, with studies indicating a steady increase

in its environmental footprint (Huiyue & Meng, 2019). Tourism's growth and economic development pose challenges in managing carbon emissions and promoting sustainable practices. Addressing the environmental impact of tourism, particularly in the context of over-tourism, requires a comprehensive approach that integrates economic, social, and environmental considerations (Khan et al., 2020).

In the wake of the COVID-19 pandemic, the tourism industry faces unprecedented challenges that have further underscored the importance of sustainable tourism practices (Higgins-Desbiolles, 2020; Lincényi & Bulanda, 2023). The pandemic has halted tourism activities and highlighted structural issues such as loss of competitiveness, unplanned development, and human resource management issues. This crisis catalyzes reevaluating tourism models and promoting resilience in the face of future challenges (Ruppenthal & Rückert-John, 2024), including over-tourism.

While numerous studies have explored various facets of over-tourism, there is a distinct lack of comprehensive, descriptive, and thematic analyses that synthesize these findings across different contexts and time periods (Qian et al., 2018; Veríssimo et al., 2020; Wang et al., 2017; Wickramasinghe & Naranpanawa, 2022). However, none of the studies have specifically focused on a broad descriptive and thematic literature review analysis of over-tourism. In addition, previous research has often focused on specific case studies or limited geographical scopes, which has left a gap in understanding broader academic trends and the evolving discourse on over-tourism (Kureha, 2010; Peterson, 2023; Vourdoubas, 2020). For instance, studies have documented the severe economic, social, and environmental consequences of over-tourism in specific locales, such as Crete, Japan, and the Caribbean, yet these insights have not been systematically integrated into a cohesive framework that addresses the global phenomenon (Kureha, 2010; Peterson, 2023; Vourdoubas, 2020). This narrow focus has resulted in a fragmented body of knowledge that does not adequately address the complexities of over-tourism as a global phenomenon (Hägglund et al., 2019). Additionally, there has been limited integration of stakeholder perspectives in the existing literature, which is crucial for understanding the multifaceted nature of over-tourism (Rasoolimanesh & Seyfi, 2021).

Recent studies highlight that the absence of comprehensive frameworks to assess the multifaceted impacts of over-tourism restricts the ability to holistically develop effective management strategies that address these issues (Punzo et al., 2022). Specifically, the lack of integrative research that encompasses various dimensions of tourism impacts—economic, social, and environmental—has been identified as a significant barrier to understanding and mitigating the adverse effects of over-tourism (Amore et al., 2020; Khan et al., 2021). Thus, there is an urgent need for more integrative research that encompasses diverse perspectives and methodologies to better comprehend the implications of over-tourism (Damnjanović, 2021; Milano et al., 2019; Perkumienė & Pranskūnienė, 2019). Scholars advocate for a collaborative approach that involves stakeholders from various sectors, including local communities, government entities, and tourism businesses, to effectively address the multifaceted implications of over-tourism (Gowreesunkar & Seraphin, 2019; Sharia & Sitchinava, 2023).

The primary purpose of this research is to provide a comprehensive analysis of over-tourism by conducting an extensive descriptive and thematic literature review, focusing on global academic trends from 2004 to mid-2024. Furthermore, this study aims to bridge a critical gap in existing research by offering an in-depth synthesis of over-tourism's causes, consequences, and mitigation strategies. By utilizing data from the Scopus (SC) database, the research aims to identify global patterns, key stakeholders, and thematic trends, thereby contributing to a holistic understanding of the over-tourism phenomenon. The objectives/contributions of this study are systematically outlined as follows:

- Descriptive analysis
1) To identify how many scientific papers are published each year, especially in different journals.
2) To identify the performance of the most prominent (a) countries and their cited publications, (b) institutions and their cited publications, and (c) authors' keywords and co-word analysis in this area.
- Thematic analysis
3) To identify causes of over-tourism.

4) To identify the consequences of over-tourism.
5) To provide suggestions for policymakers and stakeholders.

The layout of this research paper is organized in the following format: Section 2 provides the theoretical background of this study. In Section 3, the methodology adopted for this research is elaborated. Section 4 is dedicated to the results and discussions of a descriptive (bibliometric analysis) and thematic literature review analysis. Section 5 provides recommendations for stakeholders and policymakers, while implications of the study have been discussed in Section 6. Finally, Section 7 offers a concise summary of the conclusions, addresses the study's limitations, and proposes directions for future research agendas.

2. Theoretical background

2.1 Over-tourism

Over-tourism has become a pressing issue in the global tourism industry, posing significant challenges to popular destinations worldwide (Pektaş, 2023). The unsustainable influx of tourists to these locations can lead to irreversible damage if not managed effectively(Pektaş, 2023). One potential solution to address over-tourism is by implementing temporal distribution strategies, as demonstrated in the case of Suwon Hwaseong in South Korea, where managing the flow of visitors during night tourism helped preserve the quietness and appeal of the experience (Song et al., 2020). However, the complexity of managing over-tourism requires a multifaceted approach that considers residents' perceptions, destination attractiveness, and sustainable development (Kurniawan, 2024; Stefko et al., 2021).

The COVID-19 pandemic brought unexpected benefits, such as ecological restoration and a heightened demand for sustainable travel (Kurniawan, 2024). Nevertheless, the looming threat of over-tourism continues to challenge tourism destinations' sustainability and responsible development (Kurniawan, 2024). Beyond the immediate impacts of the pandemic, the broader issue of climate change and the future of tourism, particularly concerning over-tourism, remains a critical concern (Scherf, 2023). The stress induced by over-tourism not only affects the environment but also takes a toll on the mental and physical well-being of tourism professionals at these destinations (Tiwari et al., 2022).

As the tourism industry navigates the post-pandemic period, rethinking strategies to combat over-tourism becomes essential (Zengin et al., 2023). Demarketing practices have been proposed as a potential solution to address the challenges posed by over-tourism in the new normal of tourism operations (Zengin et al., 2023). Embracing smart tourism city concepts and sustainable approaches tailored to local contexts are crucial steps in mitigating the impacts of over-tourism in the long term (Lee et al., 2020). Innovations such as using drones for live virtual tours of open-space tourist locations offer eco-friendly solutions to manage over-tourism, especially during pandemics (Elkhwesky et al., 2024).

The interplay between anxiety levels, destination visit intentions, and travel behaviors in the context of COVID-19 underscores the importance of addressing over-tourism through strategic interventions (Şengel et al., 2023). Leveraging open data repositories and sustainable tourism practices can provide practical solutions to the challenges posed by over-tourism (Partarakis et al., 2023). Responsible tourism practices play a pivotal role in fostering sustainable development and mitigating the adverse effects of mass tourism on economic, cultural, social, and environmental aspects (Samaddar & Mondal, 2024).

The evolution of sustainable tourism concepts reflects the industry's ongoing efforts to address over-tourism and promote responsible travel practices (Roblek et al., 2021). Balancing the right to a clean environment with the challenges of climate change through green logistics and sustainable tourism initiatives is crucial for mitigating the impacts of over-tourism (Perkumienė et al., 2020;

Streimikiene & Kyriakopoulos, 2024). By empowering residents through community participation and environmentally responsible behavior, destinations can effectively work towards sustainable tourism practices that combat over-tourism (Xu & Hu, 2021).

2.2 Theories and models related to tourism and over-tourism

The concept of over-tourism has prompted researchers to explore various theoretical frameworks to understand and address this issue. One such framework is the "tourisation theory," as proposed by Weaver (2023). This theory highlights the increasing embeddedness of tourism in places and outlines six key effects, including impulse, amplification, ubiquity, ascendancy, concentration, and endorsement. By examining how tourism becomes deeply intertwined with localities, this theory provides insights into the mechanisms through which over-tourism may manifest (Tham & Sigala, 2020).

Moreover, the study by Rasoolimanesh & Seyfi (2021) emphasizes the importance of addressing emerging issues like over-tourism in popular destinations. The rapid growth of tourism and technological advancements within the tourism and hospitality industry have exacerbated concerns related to over-tourism (Liu & Li, 2018). Understanding residents' perceptions and attitudes towards tourism development is crucial in mitigating the negative impacts of over-tourism (Martín et al., 2018; Orgaz-Agüera et al., 2022). By incorporating the perspectives of local residents, policymakers can gain valuable insights into the social implications of excessive tourism and work towards sustainable solutions (Candia & Pirlone, 2021; Guo et al., 2019; Oduro et al., 2022).

In addition to theoretical frameworks, empirical studies have also shed light on the economic dimensions of over-tourism. For instance, research by Tran & Vu (2020); Van Hoa et al. (2018) delves into the economic impact of tourism, including the contributions of specific tourist segments such as Chinese and Indian tourists. These studies highlight the need to consider economic factors when analyzing over-tourism, as the influx of tourists can strain local resources and infrastructure, leading to environmental degradation and social disruptions.

Furthermore, the role of stakeholders in managing over-tourism is a critical aspect explored in the literature. Zvaigzne et al. (2023) discuss the importance of collaboration between internal and external stakeholders in designing tourism strategies, coordinating promotional activities, and standardizing facilities to address over-tourism's challenges. By engaging various stakeholders, including local communities, businesses, and government agencies, destination managers can develop holistic approaches to manage tourism growth sustainably. Moreover, the study by Lanzara & Minerva (2019) underscores the impact of tourism on urban economies, emphasizing how tourism can influence the number of firms, employment opportunities, and prices in non-tradable sectors. As urban areas attract increasing numbers of tourists, the strain on local resources and amenities can contribute to over-tourism. Understanding the economic dynamics of tourism in urban settings is essential for implementing policies that balance economic benefits with environmental and social considerations.

In the context of sustainable tourism development, the study by Su et al. (2022) highlights the influence of seasonality on rural households' livelihoods in tourism destinations. According to Senbeto & Hon (2021), seasonal variations in tourism activities can impact the sustainability of rural livelihoods, with households adopting diverse strategies to cope with fluctuations in tourist arrivals. By recognizing the seasonal nature of tourism and its implications for local communities, policymakers can devise interventions to support livelihood resilience and reduce dependency on tourism as the sole source of income.

Overall, exploring key theories and models related to over-tourism provides valuable insights into the multifaceted nature of this phenomenon. By integrating theoretical frameworks, empirical research, economic analyses, stakeholder perspectives, and sustainability considerations, scholars and practitioners can develop comprehensive strategies to address the challenges of over-tourism and promote responsible tourism practices. Graph 1 shows the conceptual framework of this study.

Graph 1. **Conceptual framework of the study**
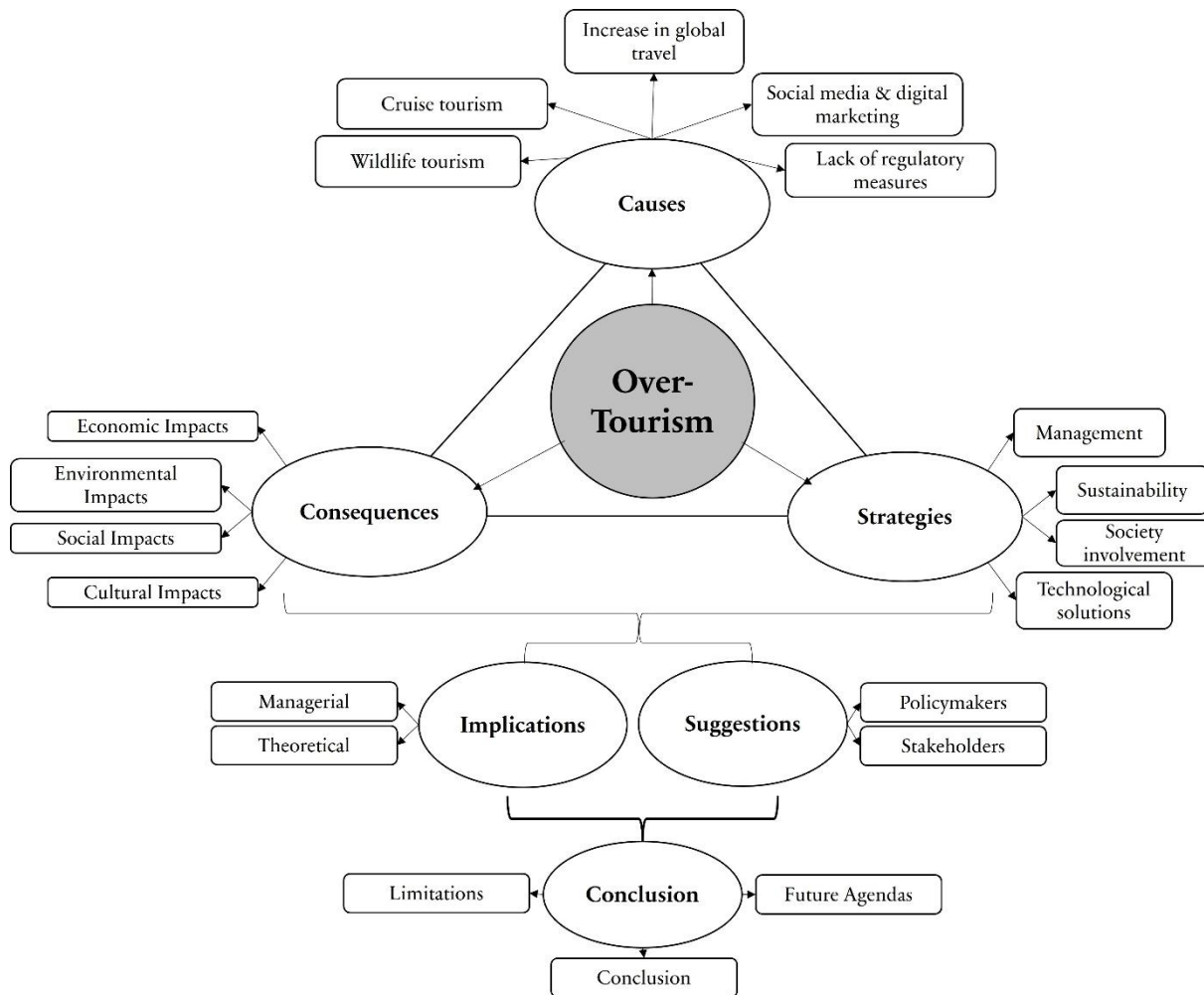
Source: own illustration

3. Methods

There are various types of review articles (e.g., theory-based reviews, theme-based reviews, framework-based reviews, hybrid reviews (quantitative and qualitative approach), bibliometric reviews (quantitative approach), literature reviews, systematic literature reviews (SLRs), meta-analysis reviews, etc.) and methodologies (e.g., SPAR-4-SLR, PRISMA, etc.). Qualitative approaches, such as thematic analysis, allow researchers to identify, analyze, and report patterns or themes within qualitative data, providing a rich and detailed understanding of the subject matter (Ahmed, 2023; Ahmed et al., 2023c; Khaire & Muniappa, 2022). This approach is particularly valuable in tourism and hospitality research, where complex social phenomena, such as consumer behavior and experiences, require nuanced interpretation beyond mere quantitative metrics (Mehraliyev et al., 2022). For instance, Mody et al. (2021) highlight that thematic content analysis can uncover underexplored topics like sustainability and consumption authenticity, which are critical in the context of the sharing economy in hospitality. Furthermore, qualitative methodologies, including thematic analysis, have been recognized for complementing quantitative approaches and enriching the overall research landscape by integrating diverse perspectives and insights (Ataman & Tuncer, 2022). Quantitative approaches, such as descriptive analysis, within tourism and hospitality have increasingly used bibliometric methods to map the intellectual landscape of the field. For instance, El Archi et al. (2023) conducted a bibliometric analysis that underscored the intersection of sustainability and digitalization in tourism, revealing that

these areas are pivotal for enhancing tourist experiences and promoting sustainable practices in the industry. This quantitative approach allows researchers to discern patterns and shifts in research focus over time, thereby informing future research agendas.

This study conducted a hybrid approach (descriptive and thematic analysis) and followed the PRISMA frameworks. The PRISMA framework has been widely used in academic fields, for instance, Tourism and neuro-tourism (Ahmed et al., 2023a), halal tourism (Mohsin et al., 2023), sustainability and innovation in tourism (Santos et al., 2021), volunteer tourism (Avolio et al., 2024), and facial emotion recognition in hospitality and tourism industry (Kement et al., 2024).

3.1 Research design

The study is designed to conduct a hybrid approach (e.g., descriptive and thematic analysis) to provide a global academic trend in the over-tourism market from January-2004 to July-2024. This research utilized the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, as recommended by Page et al. (2021), to ensure the selection of pertinent studies from the Scopus (SC) database between January 2004 and July 2024. The PRISMA framework has been widely used in several fields (Ahmed et al., 2023b; Ahmed et al., 2022b; Alsharif et al., 2022b; Anup Singh et al., 2023; Avolio et al., 2024). The reason for selecting the SC database is that it is the largest database of abstracts and citations, which covers a broad range of themes and themes that might not be available on the Web of Science (WoS) (Ahmed et al., 2022a). This research aligned with the methods proposed by Alsharif et al. (2023a), focusing on identifying key countries, institutions, authors' keywords, and co-words analysis involved in this field, followed by a detailed analysis of these elements.

In order to meet the goals of this research, five specific research questions were developed. These questions are intended to steer the analytical framework and facilitate an in-depth exploration of the current scientific knowledge within the studied field. Each question has been carefully crafted to illuminate important aspects and contribute significantly to the enhancement of understanding in the pertinent subject areas, as detailed below:

- Descriptive analysis
1) What is the current annual growth rate in scientific publications and citations within this field, and how has this rate changed over the past decade?
2) Can we identify the following questions:
(a) The countries and most cited publications belong to these countries.
(b) The academic institutions and most cited publications belong to these institutions.
(c) What are the most prevalent authors' keywords and co-words in this field?
- Thematic analysis
3) What are the causes of over-tourism?
4) What are the consequences of over-tourism?
5) What are the suggestions for policymakers and stakeholders?

3.2 Search criteria

Data gathering was completed in July 2024 from the SC database, with the search criteria encompassing titles, abstracts, and keywords using the query: "TITLE-ABS-KEY ((overtourism OR over-tourism OR over AND tourism) AND (tourism AND impacts OR sustainable AND tourism OR tourism AND management)) AND (LIMIT-TO (PUBYEAR , 2004) OR LIMIT-TO (PUBYEAR , 2005) OR LIMIT-TO (PUBYEAR , 2006) OR LIMIT-TO (PUBYEAR , 2007) OR LIMIT-TO (PUBYEAR , 2008) OR LIMIT-TO (PUBYEAR , 2009) OR LIMIT-TO (PUBYEAR , 2010) OR LIMIT-TO (PUBYEAR , 2011) OR LIMIT-TO (PUBYEAR , 2012) OR LIMIT-TO (PUBYEAR , 2013) OR LIMIT-TO (PUBYEAR , 2014) OR LIMIT-TO (PUBYEAR , 2015) OR LIMIT-TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2017) OR LIMIT-TO (PUBYEAR ,

2018) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2023) OR LIMIT-TO (PUBYEAR , 2024)) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (OA , "all")) AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re"))". Table 1 summarizes the inclusion and exclusion criteria for selecting papers from the SC database to address the study questions.

Table 1. **Criteria for inclusion and exclusion articles**

Criteria	Inclusion	Exclusion	Rationale
Type of publication	Articles & review articles	Other types of publications	To guarantee that the research acquires data from scholarly sources
Peer-reviewed	Peer-reviewed	None-reviewed: abstracts, magazines, and dissertations	To ensure the articles' quality
Publications Year	2004-July 2024	Any articles and review articles published other than the specific period	These years enable academics to document the most recent inventions and advancements
Language	English	Other languages	English serves as the official language for scholarly writing

Source: authors

3.3 Data collection

This study concentrated on articles and reviews in English published in scholarly journals from January 2004 to July 2024, a period chosen due to the observed publication growth. The aim was to compile an extensive set of publications to investigate and thoroughly showcase the global trends in the field. The study identified 851 publications (797 articles and 54 review articles) from this timeframe, indicating a significant rise in over-tourism publications. The selection methodology and criteria for including documents in the study are depicted in Graph 2.

3.4 Data analysis tools

The use of VOSviewer software facilitated the creation of visual maps, aiding in the simplification of research in diverse areas, including neuromarketing (Ahmed et al., 2021; Alsharif et al., 2022a; Cardoso et al., 2022; Pilelienė et al., 2022). VoSviewer provides valuable visual maps and is easy to use because the authors do not need to have a background in coding as another program, such as R-package software (Ahmed & Salmi, 2024; Alsharif et al., 2023b). In addition, this study used Excel software to conduct the thematic analysis. Thus, the integration of Excel for thematic analysis complements the descriptive approach by allowing for systematic data organization and categorization. This combination of tools streamlines the analytical process and ensures that researchers can derive meaningful insights from their data (Cardoso et al., 2022).

Graph 2. **PRISMA process for extracting documents**
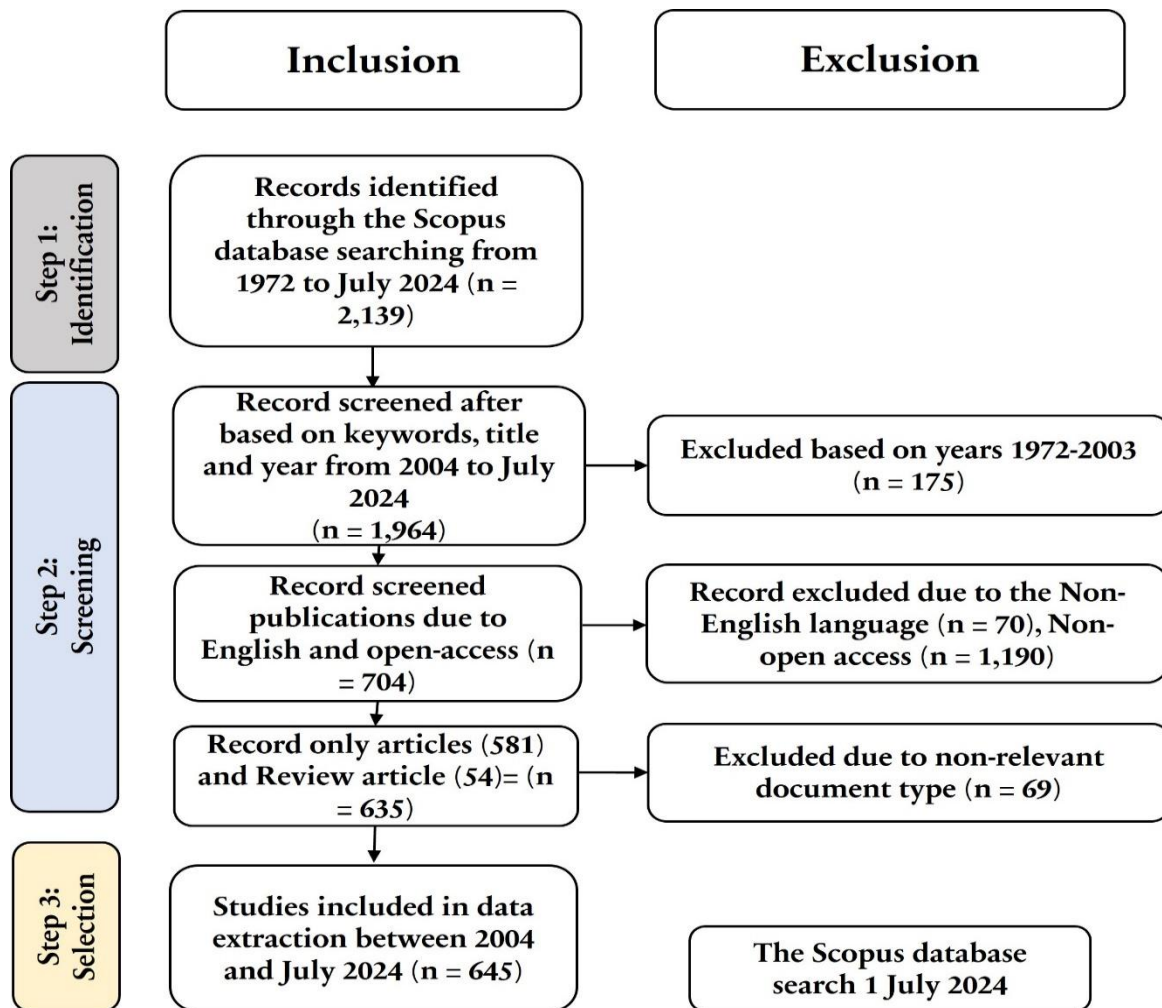
Source: own illustration

4. Results and discussions

To answer the RQ1, 581 articles and 54 review articles were found following the identification process. Notably, a significant growth in publication activity was observed, with more than 62% (403/645 publications) published from 2020 to July 2024, as depicted in Graph 3. The annual publication trend, tabulated in Figure 2, illustrates the rise in publications from 2004 to July 2024. For instance, two publications were published in 2004, which increased nearly 41 times to 82 in 2023. This surge in publications reflects the growing interest of researchers and practitioners in over-tourism and the expanding community of researchers dedicated to exploring this field.

Graph 3. **The annual publications and citations from 2004 to July 2024**
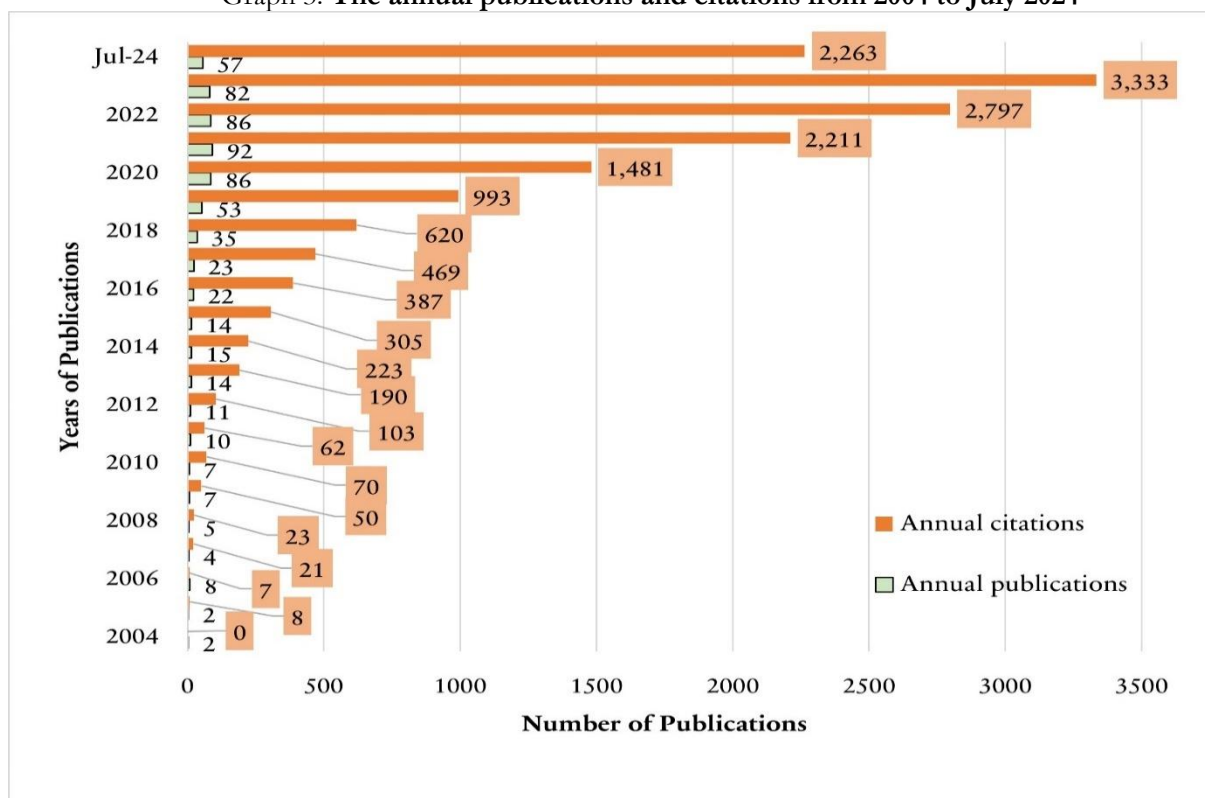
Source: own illustration

4.1 A descriptive analysis

4.1.1 The most influential countries and their institutions

To answer RQ2(a) & (b), the study identified the leading countries and their institutions in research output, as shown in Table 2. Based on the table, the United Kingdom (UK) is the most productive and influential country in terms of tourism research, with a total of 88 publications (TPs). The most prominent academic institution in the UK is the "University of Manchester," which has produced 6 publications. This high productivity is reflected in the total citations (TCs) of 4041 for the UK, and the University of Manchester's TCs of 146. China is also highly productive, with 70 publications. The "Chinese Academy of Sciences" stands out as the most productive institution in China, contributing 15 publications. While China's total citations (TCs) are 1006, which is lower than that of the UK, the high number of publications indicates substantial research activity in the field of tourism.

The most influential publication by the USA, evidenced by its high total citations per country (TCs/P/Cou) of 823. This indicates that the publications from the USA have a significant impact on the field. The "National Oceanic and Atmospheric Administration" is the most prominent institution in the USA, contributing 5 publications with a total citation count of 78. The most-cited publication from the USA is "Progress in understanding harmful algal blooms: Paradigm shifts and new technologies for research monitoring and management," highlighting the influence of the country's research. In terms of academic institutions, the "Alma Mater Studiorum Università di Bologna" in Italy is notably influential with a significant total citation count (TCs/Ins) of 490 from its 5 publications. The most-cited publication from this institution is "An ecological perspective on the deployment and design of low-crested and other hard coastal defence structures," which has garnered 328 citations, underscoring the institution's impactful contributions to tourism research.

Table 2. **The most influential countries and their institutions with (>= 20) publications**

Country	A	B	The most-cited publication by country	C	The Prominent Affiliation	D	E	The most-cited publication by instituion	F
UK	88	4,041	"My city - my brand: The different roles of residents in place branding"	416	The University of Manchester	6	146	"New Dimensions of Vulnerability to Energy and Transport Poverty"	68
USA	81	3,256	"Progress in understanding harmful algal blooms: Paradigm shifts and new technologies for research, monitoring, and management"	823	National Oceanic and Atmospheric Administration	5	78	"Evaluating management strategies to optimise coral reef ecosystem services"	38
China	70	1,006	"The analysis of the relationships of Korean outbound tourism demand: Jeju Island and three international destinations"	69	Chinese Academy of Sciences	15	211	"Research on the spatial differentiation and driving forces of eco-efficiency of regional tourism in China"	34
Spain	65	2,260	"Ecosystem-based marine spatial management: Review of concepts, policies, tools, and critical issues"	334	Universidad de Extremadura	6	125	"Safety and health measures for COVID-19 transition period in the hotel industry in Spain"	33
Italy	57	2,025	"Mapping the global value and distribution of coral reef tourism"	381	Alma Mater Studiorum Università di Bologna	5	490	"An ecological perspective on the deployment and design of low-crested and other hard coastal defence structures"	328
Australia	53	1,917	"Progress in understanding harmful algal blooms: Paradigm shifts and new technologies for research, monitoring, and management"	823	Griffith University	13	366	"The impacts of trail infrastructure on vegetation and soils: Current literature and future directions"	106
South Africa	35	1,066	"Is overtourism overused? Understanding the impact of tourism in a city context"	498	University of Johannesburg	8	704	"Is overtourism overused? Understanding the impact of tourism in a city context"	498
Canad	26	429	"Costs of group-	90	The	6	65	"National parks	26

a			living for a normally solitary forager: Effects of provisioning tourism on southern stingrays Dasyatis americana"		University of British Columbia			best practices: Lessons from a century's worth of national parks management"	
Nethe rlands	26	2,350	"Is overtourism overused? Understanding the impact of tourism in a city context"	498	Wageningen University & Research	7	628	"Ecosystem-based marine spatial management: Review of concepts, policies, tools, and critical issues"	334
Germ any	24	2,077	"Progress in understanding harmful algal blooms: Paradigm shifts and new technologies for research, monitoring, and management"	823	Julius-Maximilians-Universität Würzburg	2	20	"Park–people relationships: The socioeconomic monitoring of national parks in bavaria, germany"	20
Portu gal	24	181	"Analyzing Transportation Sustainability in the Canary Islands Archipelago"	24	Universidad e de Lisboa	4	22	"Challenges for European tourist-city-ports: Strategies for a sustainable coexistence in the cruise post-COVID context"	10
Greec e	23	750	"Ecosystem-based marine spatial management: Review of concepts, policies, tools, and critical issues"	334	University of Piraeus	6	29	"Carrying capacity assessment for the Greek islands of Kalymnos, Kos and Rhodes"	9
Franc e	21	630	"Climate Impacts in Europe Under +1.5°C Global Warming"	148	CNRS Centre National de la Recherche Scientifique	8	237	"Climate Impacts in Europe Under +1.5°C Global Warming"	148
India	21	617	"Indirect impact of COVID-19 on environment: A brief study in Indian context"	220	Maharshi Dayanand University	2	6	"Current clinical status of new COVID-19 vaccines and immunotherapy"	5
Indon esia	21	200	"The post COVID-19 tourism dilemma for geoparks in Indonesia"	60	Universitas Udayana	3	15	"The efficiency of cooperation between the participants in the supply chain in the	12

	A	B			D	E		F
							"tourism-related branch of industry in relation to client satisfaction"	
Malaysia	21	545	"The impact of the dimensions of environmental performance on firm performance in travel and tourism industry"	96	Universiti Malaya	4	57	"Medical tourism in Malaysia: How can we better identify and manage its advantages and disadvantages?"	43
Poland	21	423	"The TikTok effect on destination development: Famous overnight, now what?" and "Reasons and consequences of overtourism in contemporary cities-Knowledge gaps and future research"	53	Uniwersytet Pedagogiczny im. Komisji Edukacji Narodowej	3	117	"The TikTok effect on destination development: Famous overnight, now what?" and "Reasons and consequences of overtourism in contemporary cities-Knowledge gaps and future research"	53

A: total publications, B: total citations, C: total citations of the most cited publication by country, D: total publications by institution, E: total citations of institutions publications, F: total citations of the most cited publication by institutions, 2013-July 2024: period of total publications and citations
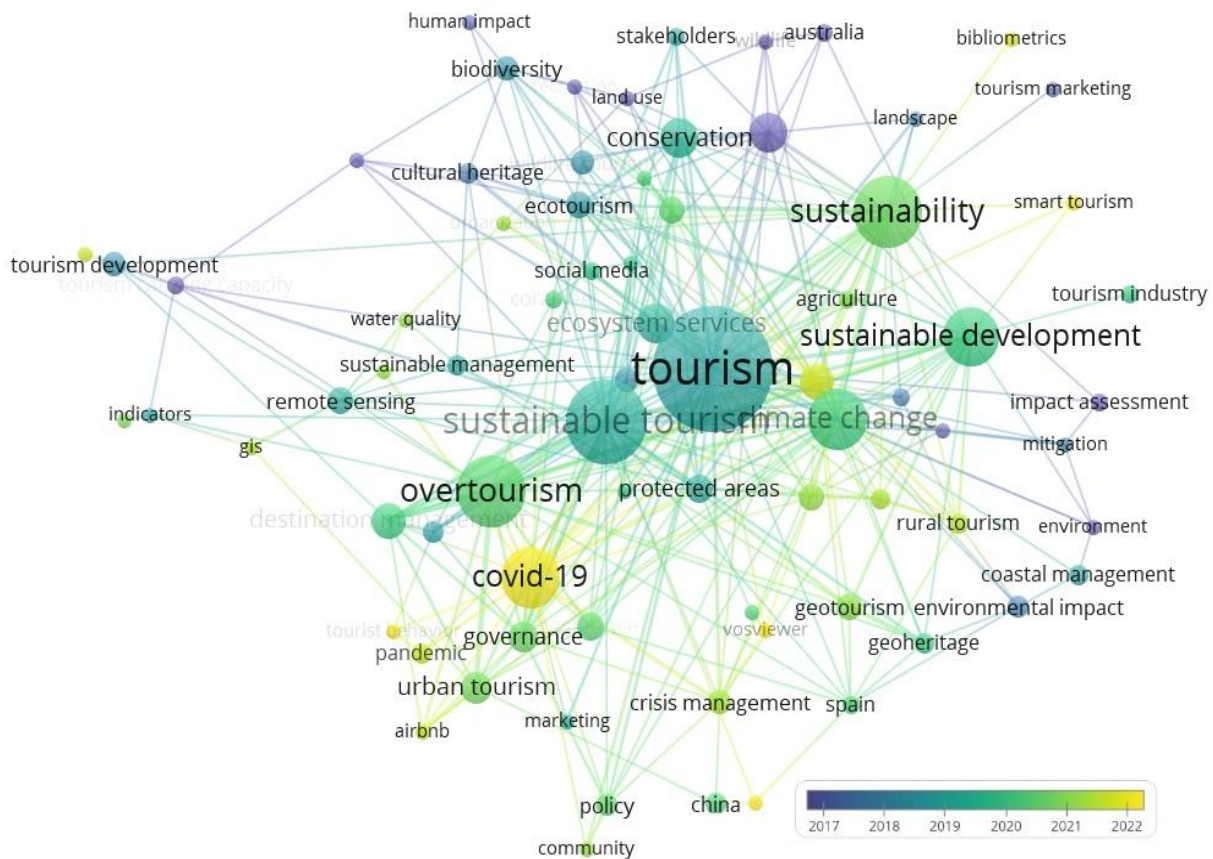
Source: own illustration

4.1.2 Keywords and co-words analysis

In bibliometric research, the frequency of keyword appearances is employed as a quantitative indicator to assess the strength of associations between keyword pairs. A greater frequency suggests a stronger connection, as outlined by Ahmed et al. (2023a); Halsharif & Pilelienė (2023); Pilelienė & Jucevičius (2023); Said et al. (2024). This method provides an in-depth insight into an article's subject matter (Abuhassna et al., 2022; Abuhassna et al., 2023; Ahmed & Salmi, 2024; Alsharif et al., 2024). The strength of the connection between keywords is indicative of how often they appear together in the article, and the total count of these links reflects the cumulative occurrences of all keywords across the article.

To answer RQ2(c), The bibliometric network map visualizes research trends in tourism, highlighting key components through nodes, edges, and colors as depicted in Graph 4. Nodes represent frequently used keywords, with larger nodes indicating more prominent topics, while edges show the co-occurrence of terms in research papers. The central node "tourism" is surrounded by terms like "sustainable tourism" and "tourism development," indicating diverse subfields within tourism research. Significant themes include sustainability and sustainable development, with terms like "sustainable development" and "sustainable tourism" underscoring the focus on environmental and socio-economic impacts. The term "overtourism" reflects concerns about excessive tourism, connected to "urban tourism" and "tourist behavior," while "COVID-19" highlights the pandemic's impact, linked to "crisis management" and "governance."

Environmental and conservation concerns are evident with terms like "conservation" and "ecosystem services," emphasizing the relationship between tourism and environmental preservation. Technological approaches, represented by "GIS" and "remote sensing," reflect the use of advanced methodologies in tourism research. Specific geographical focuses such as "China," "Spain," and

"Australia" indicate region-specific studies, while emerging topics like "smart tourism" and "geotourism" suggest new trends. The color coding shows the evolution of research, with recent topics in yellow and older ones in blue. Overall, the map provides a comprehensive view of the interconnectedness and evolution of tourism research, highlighting sustainability, recent global events like COVID-19, and ongoing environmental concerns.

Graph 4. **Map of authors' keywords with frequencies >= 4 times**

Source: own illustration

Table 3 provides the top authors' keywords in tourism research and highlights the field's predominant themes and focal areas. "Tourism" is the most frequently occurring keyword, reflecting its central role. Significant attention is given to "sustainable tourism" and "sustainability," indicating a strong focus on managing tourism to minimize environmental impact and promote long-term ecological balance. Other prominent keywords include "overtourism," which addresses the negative impacts of excessive tourism, and "climate change," which emphasizes the industry's role in and vulnerability to global climate issues. The impact of the COVID-19 pandemic is also a significant area of research, focusing on crisis management and long-term changes in tourism.

Management and conservation practices are central themes, with keywords like "management," "conservation," and "ecosystem services" highlighting the need to balance tourism growth with resource protection. Destination and tourism management are strategic approaches discussed frequently, along with urban tourism and governance, emphasizing city tourism dynamics and regulatory frameworks. Emerging topics include geotourism and geoheritage, promoting education and conservation of geological sites, and the role of social media in shaping tourist behavior and marketing. This analysis shows a multidisciplinary approach to addressing current challenges in tourism and adapting to new trends and technological advancements.

Table 3. **Top authors' keywords with occurrences >= 4 times**

#	Keyword	Occu	TLS	#	Keyword	Occu	TLS
1	Tourism	85	82	38	Spain	5	10
2	Sustainable tourism	48	71	39	Tourism carrying capacity	5	8
3	Overtourism	38	54	40	Community-based tourism	5	7
4	Sustainability	38	46	41	Stakeholders	5	7
5	Climate change	30	41	42	Agriculture	5	6
6	Covid-19	30	37	43	Coral reef	5	6
7	Sustainable development	28	36	44	Social media	5	5
8	Management	16	24	45	Australia	5	4
9	Conservation	16	23	46	Impact assessment	5	3
10	Ecosystem services	16	14	47	Tourism industry	5	1
11	Destination management	14	28	48	Airbnb	4	8
12	Tourism management	14	27	49	Eco-tourism	4	8
13	Urban tourism	12	17	50	Environmental management	4	7
14	Governance	11	24	51	Mitigation	4	7
15	Protected areas	10	16	52	Land use	4	6
16	Resilience	10	12	53	Recreation	4	6
17	Ecotourism	9	17	54	Wildlife	4	6
18	Nature-based tourism	9	16	55	Adaptive management	4	5
19	Bibliometric analysis	9	15	56	Community	4	5
20	Geotourism	9	14	57	Environment	4	5
21	Remote sensing	9	8	58	Indicators	4	5
22	Tourism impacts	8	17	59	Landscape	4	5
23	Crisis management	8	15	60	Sars-co-2	4	5
24	Biodiversity	8	11	61	Urbanization	4	5
25	Tourism development	8	6	62	Barcelona	4	4
26	Wildlife tourism	8	5	63	GIS	4	4
27	Policy	7	11	64	Tourism policy	4	4
28	Carrying capacity	7	10	65	Vosviewer	4	4
29	Environmental impact	7	6	66	Water quality	4	4
30	China	7	3	67	Marketing		3
31	Geoheritage	6	13	68	Smart tourism	4	3
32	Cultural heritage	6	12	69	Tourism demand	4	3
33	Rural tourism	6	11	70	Tourist behavior	4	3
34	National parks	6	8	71	Climate change adaption	4	2
35	Sustainable management	6	8	72	Human impact	4	2
36	Pandemic	6	5	73	Bibliometrics	4	1
37	Coastal management	6	3	74	Deforestation	4	1

TLS: total-link-strength, Occu: occurrences
Source: own illustration

At the same time, Table 4 shows the number of co-word related to each searching word. For example, "Tourism" is connected with 19 co-words (e.g., eco-tourism, over-tourism, urban tourism, geotourism, and so forth), while "Management" has been found with 8 co-words (e.g., destination management, sustainable management, coastal management, etc.).

Table 4. **The co-word analysis with (>= 4) occurrences**

Word	Co-word analysis	No. of co-word
Tourism	Eco-tourism or ecotourism, nature-based tourism, sustainable tourism, tourism impacts, wildlife tourism, overtourism, urban tourism, tourism,	19

	geotourism, tourism demand, tourism policy, tourism carrying capacity, tourism development, community-based tourism, rural tourism, tourism management, tourism marketing, smart tourism, tourism industry	
Management	Destination management, sustainable management, management, adaptive management, coastal management, crisis management, environmental management, tourism management	8

Source: own illustration

4.2 Causes of over-tourism

4.2.1 Increase in global travel

The increase in global travel has been a significant trend over the past few decades, leading to both positive and negative impacts on the tourism industry, particularly in the context of over-tourism. The COVID-19 pandemic further exacerbated this situation by imposing travel restrictions and increasing travel anxiety due to health risks (Bratić et al., 2021). The pandemic led to a substantial decline in global tourism, with estimates suggesting a 74% drop in the number of global tourists and a significant threat to millions of jobs in the tourism sector (Kuo, 2021). The sudden halt in global travel due to the pandemic highlighted the vulnerability of the tourism industry to external shocks, emphasizing the need for sustainable development practices (Gałaś et al., 2022).

The global travel industry has experienced significant growth over the years. The United Nations World Tourism Organization (UNWTO) reported a continuous increase in global tourism for ten consecutive years up to 2019, with the number of tourists reaching 1.5 billion, representing a 4% year-on-year increase (Chen, 2022). This growth is further emphasized by the fact that despite a nearly 5-fold rise in the global population, travel has increased approximately 240-fold from 1900 to 2018, a phenomenon termed "hypermobility" (Moriarty, 2021). Moreover, it is noted that over 150 million travelers visit developing countries annually, with specific regions like South Asia, Oceania, and Africa attracting millions of visitors (Damme-Ostapowicz et al., 2014).

The rise in global travel is also influenced by specific demographic groups. For instance, Millennials now constitute 40% of Europe's outbound travel, making them the largest age group for international travel (Ketter, 2020). Additionally, senior leisure travel has become a significant part of the global tourism market, with developing countries, including Southeast European nations, also experiencing an increase in senior tourists (Spasojević & Božić, 2016). Furthermore, the segment of Halal travel was valued at $238 billion in 2019, representing 13% of global spending (Izza, 2021).

The increase in global travel has implications beyond tourism, affecting areas such as public health. International travel has been identified as a major independent risk factor for disease acquisition, highlighting the interconnectedness between travel and the spread of diseases (Bandara et al., 2014). Studies have shown that more than half of international travelers to developing countries fall ill during their trips, with a significant percentage seeking medical care for travel-related illnesses (Leder et al., 2013). This underscores the importance of understanding and addressing health risks associated with global travel.

In conclusion, the statistics from reputable sources indicate a substantial increase in global travel over the years, with billions of tourists traveling annually. Various factors, including demographic trends and specific travel segments, drive this growth. However, alongside the benefits of increased travel, there are also challenges related to public health and disease transmission that need to be addressed to ensure safe and sustainable travel practices.

4.2.2 Social media and digital marketing

Social media and digital marketing have become integral components of modern marketing strategies. According to (Merrynda & Andriani, 2023), as of 2021, there were 4.66 billion internet users worldwide, with 4.20 billion social media users, indicating social media's vast reach and influence in

digital marketing. Digital marketing has become crucial in promoting tourism and addressing challenges such as over-tourism. Studies have emphasized the significance of digital marketing strategies in the tourism sector (Haedar, 2023; Mallick, 2023). Research has shown that factors like perceived usefulness, ease of use, social media marketing, and tourism business performance are critical for the adoption of digital marketing in tourism (Deb et al., 2024). Additionally, digital marketing has significantly impacted tourists' intentions to use social media for travel planning (Alnajim & Fakieh, 2023).

Social media plays a vital role in tourism marketing, with different platforms offering various performance outcomes (Lin et al., 2020). The use of social media platforms for marketing in the tourism and hospitality industry requires a clear understanding of task-technology fit and the digital divide in social media usage (Lin et al., 2020). Moreover, the use of digital marketing in tourism has transformed industry paradigms, communication methods, and customer interactions (Meirinaldi, 2023). Destination marketing organizations are utilizing digital technologies to enhance sustainable traveler behavior and mitigate the impacts of over-tourism (Sultan et al., 2020). In addition, it can use neuromarketing tools to study the consumer/customer unconscious behavior (e.g., emotional and cognitive responses) and satisfaction toward the marketing stimuli (e.g., destinations) (Alsharif & Khraiwish, 2024; Alsharif et al., 2024; Halsharif et al., 2021a; 2021b). Neuromarketing is a multidisciplinary field, including psychology, marketing and neuroscience, to study, explore, understand, and predict the consumer behaviour towards marketing stimuli such as but not limited to advertising campaigns (Alsharif et al., 2021; Halsharif et al., 2020a; 2020b; Halsharif et al., 2022).

Furthermore, the potential for tourism development through digital marketing approaches, such as utilizing natural resources and showcasing them on social media platforms, has been explored (Wijayani & Rakhmawati, 2023). The value of cluster associations in digital marketing for regional tourism development has been emphasized, indicating the essential role of digital tools in enhancing tourism performance (Tarazona-Montoya et al., 2020). The role of social media influencers in shaping tourism destination images and influencing purchase intentions has also been recognized (Jaya & Prianthara, 2020). Integrating digital marketing strategies in tourism is essential for sustainable tourism development and effective destination promotion (El Archi et al., 2023).

Overall, the research underscores the importance of leveraging social media and digital marketing in promoting tourism destinations and managing tourist behavior. By utilizing these tools effectively, destinations can attract visitors, enhance engagement, and mitigate the negative impacts of over-tourism.

4.2.3 Cruise tourism

Cruise tourism has indeed become a significant segment of the tourism industry, experiencing substantial growth over the past few decades (Ćorluka et al., 2020). The industry's expansion is attributed to cruise lines responding to the desires of their customers, leading to uninterrupted growth and a global increase in cruise tourism (Ćorluka et al., 2020). However, the development of cruise tourism is not without its challenges, particularly in the context of over-tourism. Cruise tourism can lead to over-tourism due to various factors such as the competition for port space with cargo shipping, lower economic benefits per tourist compared to other forms of tourism, and significant environmental impacts including pollution and health hazards (Seidl et al., 2006). These negative consequences can exacerbate the issue of over-tourism in destinations that are already struggling to manage large influxes of tourists. Moreover, the economic benefits derived from cruise tourism may not be evenly distributed among local communities, as highlighted by concerns that cruise tourism does not equally benefit all sectors within established tourism destinations (Wilson et al., 2015). Cruise tourism's economic impact on port cities largely depends on the spending patterns of cruise passengers and crews in the visited destinations (Castillo-Manzano et al., 2015). While cruise tourism can bring economic gains, the investment required in port infrastructure to accommodate cruise ships can be substantial, necessitating effective marketing strategies to attract cruise lines and passengers to maximize the economic benefits (Ngamvichaikit et al., 2018).

Cruise tourism has experienced significant growth over the years. According to Brida et al. (2014), cruise tourism accounted for about 2% of total worldwide tourism leisure, with the number of people taking cruise vacations increasing from around four million in 1990 to over 16 million in 2011. Khodadadi (2018) further supports this by stating that cruise tourism substantially rose from nearly 4 million passengers in 1990 to 26 million in 2017. Logunova et al. (2021) also noted a significant increase in cruise passenger traffic over the past decade, with revenues from cruise tourism growing by about 150%. However, the rapid growth of cruise tourism has raised concerns about over-tourism. Seidl et al. (2006) highlighted various negative impacts of cruise tourism, such as competition for port space, lower economic benefits compared to other forms of tourism, limited local supply purchases, and environmental pollution. These issues are crucial in over-tourism, where the influx of cruise tourists can strain local resources and infrastructure. Cruise tourism plays a vital role in the global economy despite the challenges. Jugović et al. (2023) emphasized the industry's importance, with approximately 26.9 million international tourists engaging in cruise travel in 2018. This growth underscores the need for sustainable management practices in cruise tourism to mitigate the negative impacts associated with over-tourism (Devkota et al., 2023; Devkota et al., 2022).

In addressing the challenges of cruise tourism in the context of over-tourism, it is essential to consider sustainable development practices (Asero & Skonieczny, 2018). Sustainable development principles can guide the management of cruise tourism to mitigate its negative impacts on the environment and local communities. By associating sustainable development with cruise tourism practices, it may be possible to find solutions to the issues faced by the industry and the destinations it visits (Asero & Skonieczny, 2018). Additionally, stakeholders, including policymakers, need to engage in collaborative planning to effectively manage the development of cruise tourism, balancing the opportunities presented by the industry with the need for sustainable and responsible tourism practices (Lester & Weeden, 2004).

4.2.4 Wildlife tourism

Wildlife tourism, which involves observing and interacting with wildlife in their natural habitats, has become increasingly popular in recent years. However, the surge in wildlife tourism has contributed to the issue of over-tourism in many destinations. Over-tourism, characterized by excessive tourists in a particular area, can have detrimental effects on wildlife and their habitats. The concentration of tourism activities in wildlife-protected areas often leads to severe environmental degradation (Odunga & Folmer, 2004). Additionally, establishing tourism cartels and policy failures, such as an over-reliance on Command and Control approaches without effective enforcement mechanisms, can divert benefits away from conservation efforts and local communities (Norton-Griffiths, 2000).

While wildlife tourism can positively impact conservation and local economies when managed sustainably, there are concerns about the negative consequences associated with certain practices. For instance, some wildlife tourism attractions involving close-contact interactions with animals, like photo-prop tourism, can negatively impact individual animals and species due to illegal sourcing, improper care, and habituation (Kredens & Vogt, 2023). Moreover, the escalation of wildlife tourism can exacerbate human-wildlife conflicts, leading to challenges in maintaining the delicate balance between conservation and tourism development (Cui et al., 2021). Efforts to address the challenges posed by wildlife tourism in the context of over-tourism include promoting sustainable practices and engaging tourists as conservation partners. Effective wildlife tourism management practices involve enlisting tourists in conservation efforts, communicating the reasons behind any restrictions, and ensuring a consistent message regarding interactions with wildlife (Cong et al., 2014). Furthermore, the sustainability of the tourism industry heavily relies on maintaining wildlife populations and ensuring access to protected areas (Newsome, 2021).

Wildlife tourism is a significant sector within the global tourism industry. Visits to wildlife tourist attractions (WTAs) may account for 20–40% of global tourism (Moorhouse et al., 2015). In the new millennium's first decade, approximately 12 million wildlife tourism trips were taken annually, with

a growth rate of 10% per annum (Guo & Fennell, 2023). It is estimated that 40-60% of international tourists are nature tourists, of which 20-40% are wildlife-related tourists (Rallan, 2023). Wildlife tourism has experienced substantial growth worldwide, aligning closely with the principles of eco-tourism and sustainable tourism (Bhattarai, 2015). The economic impact of wildlife tourism is noteworthy. Revenue generated from national parks has significantly contributed to the growth of economies, such as in Sri Lanka (Pathiraja et al., 2022). Wildlife tourism can also be vital to the local economy, accelerating sustainable regional and rural development (Jacob & Nelson, 2022; Ngonidzashe Mutanga et al., 2015). However, challenges exist, such as the equitable distribution of financial benefits to local communities adjacent to wildlife reserves despite the substantial revenue generated by wildlife tourism (Osano et al., 2013).

The COVID-19 pandemic has adversely affected wildlife tourism, leading to a collapse in tourism that compromises conservation efforts, increases threats to wildlife populations, and jeopardizes wildlife tourism programs (Newsome, 2021). Sustainable management practices are crucial to ensure the resilience of wildlife habitats in the face of increasing socioeconomic activities and tourism infrastructure construction that can stress ecological systems (Choi et al., 2017).

In conclusion, wildlife tourism is a significant sector within the global tourism industry, contributing to economies, conservation efforts, and local communities. However, it is essential to address challenges such as equitable distribution of benefits, conservation in the face of external pressures like pandemics, and the sustainable management of wildlife habitats to ensure the long-term viability of wildlife tourism.

4.2.5 Lack of regulatory measures

The issue of over-tourism has been a growing concern in many destinations worldwide, with one of the contributing factors being the lack of regulatory measures in place to manage tourism activities effectively. Several studies highlight the detrimental effects of insufficient regulatory measures on sustainable tourism development and the well-being of local communities. For instance, Lambulira & Bello (2022) emphasize that centralized regulatory structures, poor collaboration among stakeholders, and an unfavorable business environment contribute to challenges in the tourism sector. Kariminia et al. (2018) further support this by pointing out that the lack of supervision and enforcement of existing laws hinders sustainable tourism practices. Moreover, Boustead & Bhatta (2021) note that technological advancements and evolving tourism activities often outpace the capabilities of current regulatory systems, leading to gaps in managing tourism impacts effectively.

Furthermore, the study by Buitrago Esquinas & Yñíguez Ovando (2021) discussed how the absence of proper regulatory measures contributes to issues like over-tourism and tourismphobia, emphasizing the importance of implementing effective measures for sustainable tourism planning and management. Additionally, Santos (2023) highlighted that prioritizing financial gain over the well-being of workers in the tourism sector can undermine social sustainability, indicating the need for regulations that ensure decent work practices.

The consequences of inadequate regulatory measures extend beyond environmental concerns. Boustead & Bhatta (2021) highlight social impacts such as a lack of community control, increased time burdens on residents, and pollution issues arising from tourism activities. Furthermore, the study by Malik et al. (2017) underscores that residents often feel excluded from decision-making processes due to the absence of regulatory frameworks that involve local communities in tourism development planning.

In addressing the challenges posed by over-tourism, it is crucial for policymakers to recognize the importance of robust regulatory frameworks (Boustead & Bhatta, 2021). Effective regulations can help mitigate environmental degradation, social disruptions, and economic imbalances associated with excessive tourism. By implementing and enforcing appropriate regulatory measures, destinations can strive towards achieving sustainable tourism practices that benefit both visitors and local communities while preserving the integrity of the environment (Kaikara, 2020).

4.3 Consequences of over-tourism

4.3.1 Environmental impacts

The environmental impacts of tourism are well-documented, particularly in terms of carbon emissions and global warming (Grofelnik et al., 2020). Research has shown that tourism consistently exerts a negative influence on environmental performance, leading to environmental degradation regardless of the level of tourism development (Lv & Xu, 2023). This degradation includes issues such as environmental damage to marine biodiversity and clashes with local norms and values due to unsuitable tourist behavior (Wijaya et al., 2021). Furthermore, the rapid growth of tourism has resulted in pronounced economic, social, and environmental effects, emphasizing the need for sustainable practices and destination management to address over-tourism (Inocencio, 2023).

Efforts to mitigate the environmental impacts of tourism include promoting sustainable tourism practices, stakeholder engagement, and investing in education and capacity building (Raveendran, 2024). Sustainable tourism, as defined by the World Tourism Organization (WTO), involves considering current and future financial, social, and environmental impacts while meeting the needs of visitors, the industry, the environment, and local communities (Suyono & Nugraha, 2024). However, poorly managed tourism activities can significantly harm heritage sites and make cultural tourism unsustainable (Al-Khaled, 2023).

In light of these challenges, the tourism industry must adopt responsible practices and manage tourism development in a way that does not compromise the environment or socioeconomic viability (Altarez et al., 2020). By strictly implementing energy conservation measures and upgrading tourism development methods, there is potential to reduce carbon emissions and lessen the environmental impact of tourism (Ma et al., 2021). Overall, the intersection between sustainable and community-based tourism is essential to address the negative environmental impacts of tourism and promote responsible and sustainable practices (Giampiccoli et al., 2020).

4.3.2 Social impacts

Sustainable tourism has been identified as a crucial approach to mitigating the negative consequences of over-tourism on cultural heritage (Stanikzai et al., 2023). Tourism's social and cultural impacts are multifaceted, ranging from local identity and culture changes to economic factors influencing traditional livelihoods and environmental sustainability (Palar & Hewat, 2024). Studies have shown that tourism can positively and negatively affect local communities, affecting social relationships, work patterns, and migration, among other aspects (Prasiasa et al., 2023). Tourism's impact on society and culture extends beyond economic benefits, with implications for community pride, cultural exchange, and preserving traditional practices (Nikolić & Bura, 2023). The socio-cultural impacts of tourism are reflected in the interactions between local populations, tourists, and the cultural heritage of a destination (Kusumawati et al., 2022). The relationship between tourism and culture is complex, catalyzing cultural change and economic development (Bhatt et al., 2022).

The social impacts of over-tourism are evident in various contexts. For instance, in Balinese culture, tourism has triggered significant changes in identity and culture, leading to challenges like over-tourism and urbanization, affecting traditional livelihoods and environmental sustainability (Palar & Hewat, 2024). In Pakistan, the social impact of mountain tourism on residents' attitudes and perceptions has been studied, emphasizing tourism's economic, environmental, and social dimensions (Ali, 2022). Additionally, the perceived impacts of rural tourism development on social and cultural aspects have been explored, shedding light on the importance of understanding local inhabitants' perspectives (Nurlena et al., 2021).

Efforts to address the negative social impacts of over-tourism include promoting inclusive tourism practices. Studies have shown that inclusive tourism can mitigate environmental pollution, income inequality, and loss of quality of life associated with tourism growth (Peterson et al., 2020).

Furthermore, sustainable tourism practices, focusing on environmental preservation, indigenous culture protection, and community welfare enhancement, have been identified as promising to tackle social challenges in tourism destinations (Wurarah et al., 2023).

The COVID-19 pandemic has brought to light the vulnerabilities of the tourism industry and its interconnectedness with social, psychological, and economic well-being (Pálinkás et al., 2024). As destinations grapple with the challenges of over-tourism, there is a growing recognition of the need for sustainable tourism practices to balance environmental, social, and economic concerns (Perić et al., 2021). UNESCO cultural heritage sites play a vital role in tourism development, contributing to the cultural sector's economic performance and enhancing destinations' cultural identity (Perić et al., 2021).

4.3.3 Cultural impacts

Over-tourism poses significant challenges to cultural heritage sites and local cultures by threatening their integrity and authenticity (Son, 2023). The economic and cultural impacts of tourism marketing on cultural attractions are crucial to evaluate, as they can influence the preservation and presentation of cultural heritage (Wang, 2017). Studies have shown that rapid tourism development can positively and negatively affect the appreciation and protection of cultural heritage (Bi et al., 2016). Excessive visitor numbers due to over-tourism can seriously impact heritage properties, affecting their value and sustainability (Fyall & Garrod, 1998).

Preserving cultural heritage under tourism pressure requires a delicate balance to prevent inauthenticity and damage to local communities (Diarta, 2017). Sustainable tourism plays a vital role in preserving cultural heritage by ensuring economic, social, and environmental dimensions are considered in tourism development (Stanikzai et al., 2023). Additionally, sustainable tourism development can effectively contribute to the inheritance and development of intangible cultural heritage (Zhang et al., 2020). However, challenges such as excessive commercial activities and the influence of foreign capital can harm local residents' interests and damage cultural heritage communities' publicity (Luo, 2024).

4.3.4 Economic impacts

Over-tourism has been recognized as a multifaceted issue with severe economic repercussions (Vourdoubas, 2020). The economic impacts of tourism development policies are multifaceted and can be assessed through various indicators such as tourist visits, hotel occupancy rates, tourism sector contribution to GDP, and total tourist expenditure (Wulandari, 2021). Research has shown that tourism development can lead to the creation of new jobs, reduced unemployment rates, increased income and purchasing power within communities, and the facilitation of local infrastructure development (Sofia, 2021). However, it is crucial to note that tourism's economic benefits must be balanced with environmental considerations to ensure sustainable development (Guo et al., 2022).

Studies have highlighted the positive economic effects of tourism, such as generating income for communities, creating job opportunities, and improving overall economic structures (Sumardani & Wiramatika, 2023). Sustainable tourism practices aim to minimize negative impacts on the environment, society, and the economy while promoting a balance between environmental conservation, cultural preservation, and economic growth (Pálinkás et al., 2024). Community participation in tourism activities has significantly impacted the local economy, emphasizing the importance of involving local residents in tourism development initiatives (Wardani & Suarthana, 2020).

Moreover, the economic benefits of tourism extend to poverty alleviation, economic diversification, and stability in many regions, showcasing the potential of the tourism industry to contribute to local economic regeneration and prosperity (Rwigema, 2024). Sustainable tourism, as advocated by organizations like the World Tourism Organization, emphasizes the need to consider economic, social, and environmental impacts to ensure the long-term viability of tourism activities (Octaviani et al., 2023).

4.4 Mitigation Strategies

4.4.1 Over-tourism management

In the context of managing over-tourism and implementing mitigation strategies, several key themes emerge from recent academic research between 2020 and 2024. Lindberg & Seeler (2021) highlight the need for nuanced approaches in utilizing demarketing strategies to address over-tourism, especially in remote areas. This suggests that tailored demarketing efforts can play a crucial role in managing tourist flows and reducing the negative impacts of over-tourism. Adaptation and mitigation strategies are crucial for sustainable tourism development, particularly in the face of disasters and climate change. Santoso et al. (2023) emphasize the importance of prevention, preparation, response, and recovery phases in managing tourism destinations prone to natural disasters. This underscores the significance of proactive measures to mitigate risks and ensure the resilience of tourism destinations. Resilience strategies are essential for mitigating extreme disruptions in sustainable tourism supply chains. Chowdhury et al. (2024) suggest that experimenting with various risk conditions and resilience strategies can enhance the sustainability and performance of tourism supply chains during crises. This highlights the need for adaptive and flexible approaches to effectively address disruptions in the tourism sector.

Furthermore, strategic approaches for crisis mitigation in tourist destinations are crucial for recovery and long-term sustainability. Krisnawati (2021) emphasizes identifying and implementing suitable mitigation steps to facilitate the recovery of tourism destinations post-crisis (e.g., COVID-19). This indicates the importance of strategic planning and preparedness to successfully navigate crises in the tourism sector. In response to the COVID-19 pandemic, strategies for crisis management and resilience building have become paramount in the tourism industry. Sobhani et al. (2022) stress the significance of tracing impact pathways, controlling threats, and leveraging opportunities to enhance resilience and adaptation in the tourism sector. This suggests that a comprehensive approach is needed to address the multifaceted challenges posed by global crises.

4.4.2 Sustainability

Sustainable practices are essential in addressing the challenges of over-tourism in various destinations worldwide. The evolution of tourism dynamics has led to a necessary shift towards sustainable tourism practices to tackle issues such as over-tourism (Raveendran, 2024). Recommendations to combat over-tourism include promoting sustainable tourism practices, effective destination management, stakeholder engagement, and investing in capacity building and education. Sustainable tourism aims to minimize negative impacts on the environment and local communities while maximizing conservation, economic development, and cultural preservation (Swati, 2020). This holistic approach underscores the importance of balancing the benefits of tourism with environmental and social considerations.

Research highlights the importance of sustainable tourism strategies in preserving cultural heritage, enhancing community well-being, and ensuring environmental integrity (Li et al., 2020; Stanikzai et al., 2023). By identifying successful strategies and areas for improvement, studies aim to guide policymakers, entrepreneurs, and stakeholders towards more sustainable tourism practices (Aryaningtyas et al., 2023). Additionally, sustainable tourism plays a crucial role in economic diversification and stability, particularly in regions heavily dependent on tourism (Hasayotin et al., 2023). Implementing sustainable practices not only aids in environmental protection but also reduces costs and waste, contributing to overall sustainable development (Yousaf et al., 2021).

In the face of challenges like the COVID-19 pandemic, resilience strategies are vital for tourism firms and supply chains to mitigate sustainability risks and improve performance (Chowdhury et al., 2024). Post-pandemic recovery efforts in the tourism sector necessitate a comprehensive approach involving industry revitalization, diversification, infrastructure investments, and sustainable practices

(Hasayotin et al., 2023). Moreover, it is crucial to implement strategies to address pandemic consequences, focusing on crisis management, recovery incentives, and long-term preparation (Shvets, 2021).

4.4.3 Society involvement

In the context of over-tourism mitigation strategies, community involvement plays a crucial role in implementing sustainable solutions. Various studies have highlighted the significance of engaging local communities in tourism development to address the adverse impacts of over-tourism (Kartimin et al., 2023; Nzomo & Muriuki). Community-based tourism projects and sustainable policies have been identified as effective measures to mitigate the negative effects of tourism on local areas. Moreover, involving communities in rural tourism planning contributes to sustainable development and enhances living standards for local residents (Nzomo & Muriuki).

Empowering local communities has been shown to enhance tourist attractions, create memorable experiences, and increase visitor satisfaction, ultimately leading to the sustainable development of tourism destinations (Risfandini et al., 2023). Studies have emphasized the importance of community participation in the planning and implementation of tourism activities, considering the diverse cultural, socio-economic, and environmental aspects of different societies (Rusli et al., 2022). Furthermore, community-based tourism has been recognized as a strategy to increase women's participation and social inclusion in receiving tourism benefits, promoting a more inclusive and equitable tourism sector (Lindberg & Seeler, 2021).

To effectively mitigate the impacts of over-tourism, it is essential to implement demarketing strategies tailored to high tourism intensity areas, considering the nuanced approaches required for successful implementation (Herdiyanti, 2023). Additionally, the utilization of social capital has been identified as a significant factor in resolving conflicts between different sectors, such as tourism and mining, emphasizing the importance of community relationships in mitigating conflicts.

4.4.4 Technological solutions

Technological solutions have emerged as crucial tools in addressing the challenges of over-tourism and promoting sustainable tourism practices. Various studies have highlighted the significant role of technological innovations in mitigating the negative impacts of tourism and supporting sustainable management across ecological, sociocultural, and economic dimensions (Ilieva & Todorova, 2023). For instance, integrating information and communication technologies in the tourism sector has been identified as a key strategy for fostering sustainable independent tourism, reducing mass tourism, and alleviating the issues associated with over-tourism in popular destinations (Sutyrina et al., 2021).

Moreover, adopting advanced technologies such as AI, IoT, and blockchain in the tourism industry has shown promise in enhancing environmental, social, and economic sustainability, particularly in regions like the Middle East and North Africa (Kashem et al., 2022). These technologies contribute to maintaining consistent tourism growth and facilitate the development of smart tourism destinations, where stakeholders play a crucial role in ensuring sustainable tourism practices (Gravitiani et al., 2022).

Furthermore, the potential of blockchain technology has been explored to address sustainability challenges in tourism, offering opportunities to enhance transparency, traceability, and accountability in the industry (Tyan et al., 2020). Additionally, digital marketing tools have been recognized for their role in driving sustainable tourism development by identifying existing and future strategies that can support the progress of sustainability initiatives within the tourism sector (Aman & Papp-Váry, 2022).

4.5 Over-tourism and European cities

The focus on European urban centers is driven by several unique and context-specific factors that exacerbate the impacts of over-tourism in these regions. Firstly, Europe's rich cultural heritage and historical sites make it a prime destination for global travelers seeking iconic experiences (Amore et al., 2020). Cities like Venice, Berlin, Paris, London, Florence, Rome, and Amsterdam possess a dense concentration of cultural landmarks, architectural wonders, and unique local traditions, making them magnets for mass tourism (Martín Martín et al., 2018). This high demand, combined with the relatively small size of many European urban centers, leads to severe overcrowding, putting immense pressure on local infrastructure, public spaces, and resources (Garcia-Ayllon, 2018; Milano et al., 2019).

Additionally, many European cities' urban design and historical layouts were not intended to accommodate modern tourism volumes. Narrow streets, ancient buildings, and limited open spaces, while attractive to visitors, contribute to significant congestion and strain on local infrastructure and communities (García-Hernández et al., 2017; Żemła, 2024). This is particularly evident in heritage cities where the influx of tourists can disrupt daily life for residents, alter the character of neighborhoods, and accelerate the degradation of historical sites (Rasoolimanesh et al., 2019). "Touristification" refers to transforming urban spaces to cater primarily to tourists at the expense of local residents and their needs (Jover & Díaz-Parra, 2020).

The challenges posed by over-tourism are compounded by the historical significance of these urban areas, which were not designed for the high volumes of visitors they now attract. For instance, the narrow pathways and limited public spaces can lead to overcrowding, which diminishes the quality of life for residents and the overall visitor experience (Żemła, 2024). Additionally, the commodification of tourism often results in the loss of local identity and traditional practices, as neighborhoods adapt to meet the demands of tourists rather than the needs of their residents (Salim & Rahman, 2022). The resulting gentrification can further exacerbate social tensions, as long-standing residents find themselves priced out of their communities, leading to a homogenization of urban spaces that prioritizes tourist consumption over local culture (e.g., Madrid, Brussels, and Copenhagen) (Hidalgo-Giralt et al., 2021). Moreover, the concept of "touristification" encapsulates the broader implications of tourism on urban environments, where the focus shifts from sustainable community development to maximizing tourist revenue (Camatti et al., 2020). This shift can lead to a decline in the quality of life for residents, as essential services and local businesses are replaced by tourist-oriented establishments (García-Hernández et al., 2017). In cities like Seville and Lisbon, the pressures of rising property values and the influx of tourists have been documented to displace long-term residents, fundamentally altering the social fabric and character of these neighborhoods (Rasoolimanesh et al., 2019; Salim & Rahman, 2022). Furthermore, the rise of digital platforms like Airbnb has intensified the effects of over-tourism in Europe, leading to "touristification" (Franco & Santos, 2021). Short-term rentals have driven up housing prices (Lestegás et al., 2019), displaced local residents, and transformed residential neighborhoods into tourist hotspots (Cocola-Gant & Lopez-Gay, 2020; Yrigoy, 2019). This shift has sparked considerable social tension, with local communities often protesting against the commercialization of their neighborhoods and the influx of tourists, which affect their quality of life (Zmyślony et al., 2020). These protests highlight the broader implications of over-tourism, as they reveal the weaknesses in local tourism management and urban policy, necessitating a more nuanced understanding of the impacts of tourism on urban life (Kuščer & Mihalič, 2019). Consequently, European cities have become focal points for studying over-tourism due to the complex interplay between cultural, social, economic, and spatial dynamics, which differ significantly from other global regions (Koens et al., 2018).

Finally, European cities are at the forefront of addressing over-tourism because they are pioneering innovative management strategies and regulatory responses. This assertion is supported by the observation that European cities have been implementing various measures to manage the impacts of high tourist numbers, including visitor caps, tourist taxes, and restrictions on short-term rentals, which are critical strategies in mitigating over-tourism (Amore et al., 2020; Eckert et al., 2019). The effectiveness of these measures is underscored by the need for city authorities and policymakers to engage with local stakeholders to ensure that the solutions are context-specific and address the unique

challenges posed by over-tourism in urban settings (Koens et al., 2018; Martín Martín et al., 2018). This makes European cities valuable case studies for researchers seeking to understand both the challenges and potential solutions to managing high visitor numbers. By examining these urban contexts, scholars can gain deeper insights into the specific factors that amplify over-tourism in heritage-rich, densely populated cities and explore strategies that may be adapted to other destinations facing similar pressures (García-Hernández et al., 2017). Furthermore, the analysis of visitor behavior and satisfaction can inform better management practices that enhance the tourist experience and protect the integrity of cultural heritage sites (Jimber del Rio et al., 2020). The lessons learned from European cities can provide a framework for other urban destinations grappling with over-tourism, particularly in terms of developing sustainable tourism practices that balance economic benefits with the preservation of local culture and community well-being (Amore et al., 2020; Koens et al., 2019). As over-tourism continues to pose significant challenges globally, the experiences of European cities can serve as a guide for implementing effective and sustainable tourism management strategies in diverse urban environments (De Luca et al., 2020; Eckert et al., 2019).

5. Recommendations for stakeholders and policymakers

This study provides policymakers and stakeholders with useful insights and suggests some practical information about addressing over-tourism. To effectively address over-tourism, policymakers and stakeholders should adopt a multifaceted strategy that includes demarketing efforts, cross-sectoral collaboration, and active community engagement. Demarketing strategies can help manage visitor numbers in overburdened areas by redirecting tourists to less-visited destinations, limiting access to popular sites, and promoting off-peak travel. Additionally, fostering cross-sectoral collaboration is essential to tackling over-tourism holistically. This involves partnerships between the tourism sector, local governance, environmental agencies, and resident communities to align tourism development with broader socio-economic and environmental objectives. Community engagement is equally critical, ensuring tourism initiatives reflect local values and priorities. By involving residents in the planning and execution of sustainable tourism practices, policymakers can create more resilient and inclusive tourism models that benefit both the local population and the environment.

Furthermore, enhancing disaster preparedness and promoting sustainable environmental practices are vital in ensuring the long-term viability of tourism destinations, especially in areas prone to natural disasters. Policymakers should invest in disaster risk reduction infrastructure, train local communities in emergency response, and incorporate resilience measures into tourism development plans. The tourism industry must also work to minimize its environmental impact by adopting sustainable practices such as increasing energy efficiency, using renewable energy, and implementing carbon offset programs, which can be incentivized through government regulations and subsidies. Additionally, integrating marginalized stakeholders, like immigrants, into tourism planning can lead to more inclusive and sustainable tourism outcomes. Strengthening stakeholder coordination and developing robust climate adaptation strategies are also essential. These measures will help ensure that tourism continues to thrive sustainably, despite environmental challenges such as sea-level rise.

6. Implications

6.1 Theoretical implications

This study elucidates several critical implications for research on over-tourism. Firstly, it underscores the importance of integrating residents' perceptions into tourism planning and management processes. A thorough understanding of how local communities assess the costs and benefits of tourism is vital for devising strategies that ensure tourism development contributes

positively to community well-being. Secondly, the study highlights the significance of employing theoretical frameworks (e.g., tourisation theory) to systematically analyze the impacts of over-tourism, thereby deepening our understanding of the underlying social dynamics. Finally, it stresses the necessity of considering both economic and non-economic factors that shape residents' attitudes, as these elements are pivotal in promoting sustainable tourism practices.

This study also suggests that sustainable tourism policies must be designed with a nuanced understanding of local contexts, taking into account residents' economic, environmental, and social concerns. This approach can help mitigate the negative effects of over-tourism and foster greater community support for tourism initiatives. Moreover, the paper should advocate for ongoing research and the adaptation of existing theoretical models to capture the evolving nature of residents' attitudes in the face of growing tourism pressures. This will contribute to more resilient and sustainable tourism practices in popular destinations.

Finally, the paper discusses how empowering local communities by ensuring that tourism development aligns with their cultural and social values can lead to more sustainable and harmonious tourism growth. Furthermore, the link between tourism expansion and firm performance suggests that economic benefits from tourism are not limited to direct tourism-related businesses but extend to broader corporate and economic development. In addition, the paper explores how these economic impacts can be leveraged to support sustainable tourism while also addressing the potential risks of prioritizing economic gains over social and environmental well-being. This holistic approach will provide a balanced perspective on the challenges and opportunities presented by over-tourism.

6.2 Managerial implications

This study highlights several key managerial implications for addressing over-tourism. First, destination managers need to prioritize the mental and physical well-being of tourism professionals by creating a supportive and secure work environment that reflects the destination's image. Managers must also understand and leverage destination competitiveness to effectively tailor marketing and management strategies. This involves being proactive in understanding the diverse needs of visitors and ensuring that the destination's image is consistent with these expectations.

Second, a comprehensive management approach is critical, emphasizing the importance of sustainability, crisis management, and strategic planning. Destination managers must integrate these aspects into their planning processes to maintain the destination's long-term viability. This approach should include the active engagement of all stakeholders to align efforts towards common goals, particularly in sustaining the hospitality industry in the face of increasing pressures from over-tourism.

Finally, preserving cultural heritage and managing visitor flows require innovative strategies and frameworks developed by DMOs. Destination managers must focus on sustainable branding practices that protect cultural authenticity while promoting tourism growth. By adopting these strategies, managers can effectively mitigate the negative impacts of over-tourism, ensuring that tourism destinations remain attractive, sustainable, and competitive in the long term.

7. Conclusion, limitations, and future research agendas

7.1 Conclusion

Over-tourism has emerged as a significant global challenge, characterized by an overwhelming influx of tourists to certain destinations, leading to environmental degradation, cultural erosion, and strain on local infrastructure. This phenomenon is driven by various factors, including the rise of low-cost travel, the proliferation of social media, and the growing accessibility of global tourism. Popular destinations, often highlighted as "must-see" locations, can experience severe overcrowding, which diminishes the quality of the visitor experience and negatively impacts the local community. The

environmental consequences of over-tourism are particularly alarming, as natural landscapes and ecosystems are often degraded due to excessive human activity. Additionally, the overuse of resources such as water and energy can lead to shortages and environmental stress in affected regions.

Cultural heritage sites are also at significant risk due to over-tourism. The commodification of culture to cater to tourist demands often leads to the loss of authenticity, as traditional practices and local customs are altered or commercialized. This can result in the erosion of cultural identity and a diminished sense of place for local residents. Furthermore, the influx of tourists can disrupt the daily lives of communities, leading to increased living costs, housing shortages, and social tensions between visitors and locals. The pressure to maintain a thriving tourism industry can sometimes compel destinations to prioritize short-term economic gains over the long-term preservation of their cultural and historical assets, further exacerbating the problem.

The economic impacts of over-tourism are complex. While tourism is a vital source of revenue for many destinations, the unchecked growth of the industry can lead to unsustainable practices that ultimately harm the local economy. Small businesses and local artisans may struggle to compete with large, tourist-focused enterprises, leading to economic disparity and loss of local entrepreneurship. Additionally, the seasonal nature of tourism in many over-touristed destinations can create economic instability, as regions become overly dependent on tourism dollars, leaving them vulnerable to fluctuations in tourist numbers. This dependency can also divert attention and resources from other economic sectors, leading to an imbalanced economy that may not be resilient in the face of global economic changes or shifts in tourism trends.

Addressing over-tourism requires a multifaceted approach that involves collaboration between governments, local communities, and the private sector. Policymakers must implement sustainable tourism practices that balance the needs of tourists with those of the local population and environment. This includes regulating the number of visitors, promoting off-peak travel, and encouraging tourists to explore lesser-known destinations to reduce pressure on popular sites. Additionally, there must be a concerted effort to engage local communities in tourism planning and decision-making processes, ensuring that their voices are heard and their needs are met. Education and awareness campaigns aimed at tourists can also play a critical role in fostering responsible travel behaviors that minimize the negative impacts of tourism. By adopting a holistic approach, destinations can mitigate the effects of over-tourism and ensure that tourism contributes positively to the well-being of local communities and the preservation of cultural and natural heritage.

7.2 Limitations

The paper aims to minimize methodological constraints in the study, but despite that, some limitations were found, which led to recommendations for future research. The study was limited to articles and reviews articles published in English-language journals between 2004 and July 2024, specifically those indexed in the Scopus database. This narrow scope excluded other documents like books, chapter books, conference papers, and editorials, which could have introduced bias. Despite these limitations, the study is a valuable resource for understanding the landscape of relevant research during that exact period.

7.3 Future research agendas

The future of addressing over-tourism is increasingly focused on sustainable tourism development, emphasizing preserving the environment, cultural heritage, and ensuring that local communities benefit economically. Future agendas will likely include strategies to manage visitor flow through technological innovations like real-time monitoring, smart city solutions, and promoting lesser-known destinations to distribute tourist traffic more evenly. Regulatory measures, such as stricter controls on short-term rentals and cruise ships, will also be crucial in mitigating the negative impacts of

over-tourism. Education and awareness campaigns aimed at fostering responsible travel behaviors among tourists will be vital in ensuring long-term sustainability.

Redirecting tourism towards depopulated, peripheral areas with limited technological access should be a key objective in future tourism agendas, yet it remains an underexplored strategy. Despite the growing focus on sustainable tourism, many current policies prioritize technological development and infrastructure upgrades, often in popular destinations. This approach can exacerbate environmental degradation, contribute to resource overuse, and fail to address over-tourism issues. Peripheral areas, typically less affected by mass tourism and industrial development, offer a unique opportunity for promoting low-impact, eco-friendly travel experiences. By shifting tourist flows to these regions, we can alleviate pressure on overburdened destinations, reduce the negative environmental effects of tourism, and foster the socio-economic revitalization of rural and depopulated communities. Additionally, the lack of intensive technological infrastructure in these areas can be a strength rather than a limitation, aligning with the principles of slow tourism, which emphasize a deeper connection with nature and culture.

For this shift to be effective, however, it requires a strategic rethinking of tourism development policies. Policymakers need to adopt a broader perspective that includes peripheral areas in their planning and invest in sustainable infrastructure that respects these regions' natural and cultural heritage. The absence of such objectives in current agendas may be due to the perceived challenges of accessibility and limited existing facilities, but these barriers can be addressed through careful, community-led planning and the promotion of small-scale, sustainable tourism ventures. In doing so, the tourism industry can contribute to more balanced regional development, enhanced environmental protection, and a diversification of tourist experiences beyond the typical, high-tech destinations.

Research in this field will likely explore the complex relationship between over-tourism and local communities, focusing on the socio-economic impacts and long-term consequences on residents' quality of life, particularly in tourism-dependent regions. The effectiveness of sustainable tourism practices, including how to promote responsible behavior among tourists, will be a key area of investigation. Additionally, the role of technology, such as data analytics and social media, in both exacerbating and mitigating over-tourism will be an important focus, alongside the governance models that best manage tourist flows while protecting cultural and environmental resources.

Furthermore, the intersection of over-tourism with global challenges like climate change and pandemics will drive future research, particularly in understanding how these factors influence tourist behavior and destination resilience. The need for economic diversification in tourism-dependent areas will also be crucial as destinations seek to reduce vulnerability to external shocks and over-reliance on tourism. These research agendas aim to develop innovative solutions that balance the benefits of tourism with the need for sustainable, community-centered practices that protect both people and places for the long term. This study also suggests five future research questions, as follows:

1. How can AI-driven systems dynamically manage tourist numbers to minimize over-tourism's impacts?
2. What are the benefits and challenges of using blockchain for decentralized tourism platforms that empower local communities?
3. How does over-tourism impact the mental well-being and community cohesion of local residents?
4. How does over-tourism accelerate gentrification and cultural erosion, and how can these effects be mitigated?
5. How can lesser-known destinations build resilience to avoid over-tourism as they gain popularity?

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