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Tourism and Smart Cities: Business Strategies for Sustainable Urban Development

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Abstract
The convergence of tourism and smart cities is gaining prominence as a crucial element in sustainable urban development. With rapid urbanization, cities must efficiently manage resources, infrastructure, and environmental impacts while addressing the needs of growing populations and mobile societies. Tourism can significantly contribute to urban development by enhancing economies, infrastructure, culture preservation, and community growth. However, unchecked tourism growth can strain urban resources and damage the environment. Smart tourism, which leverages advanced technology and data, aims to improve visitor experiences, optimize resource use, and mitigate tourism's adverse effects.
Purpose: This study investigates the synergy between tourism and smart cities, presenting case studies and best practices to guide businesses, policymakers, and urban stakeholders toward sustainable urban growth through innovative strategies.
Design/methodology/approach: Utilizing an advanced searching technique on the Scopus database with keywords "smart cities," "tourism," and "business," 14 relevant articles were identified. The integrative analysis of these articles revealed three main themes: Smart Tourism and Technology Integration, Urban Mobility and Sustainability in Smart Cities, and Stakeholder Engagement and Innovative Approaches in Tourism.
Findings: The findings highlight the importance of smart tourism as a component of smart city initiatives, showcasing technological advancements and their impact on urban systems' efficiency and sustainability.
Research limitations: The methodology's focus on publications from 2014 to 2024 potentially excludes foundational or emerging studies that could provide critical context or future directions. Furthermore, the integrative analysis, while robust, may not fully capture the nuanced impacts of smart tourism technologies across diverse urban settings.

Research implications: The necessity for interdisciplinary collaboration among urban planners, technologists, and tourism professionals to harness advanced technologies for sustainable urban development. Policymakers and businesses are encouraged to adopt innovative strategies, leveraging IoT, data analytics, and AI to enhance urban efficiency and sustainability.
Practical implications: The study concludes that integrating tourism into smart city planning can significantly enhance urban development, emphasizing the need for collaborative efforts among stakeholders to achieve these goals.

Keywords: Smart Cities, Tourism, Business

Introduction

The convergence of tourism and smart cities has become a crucial area of focus and a recent trend in the current discussion on sustainable urban development. With the rapid increase of urbanization worldwide, every city has the task of effectively handling resources, infrastructure, and environmental consequences, all while catering to the demands of a larger population and a more mobile society (Javed et al., 2022). Furthermore, Lee et al., (2020) In their study, plotting the potential collaboration between tourism and smart city efforts offers the optimal chance to tackle these difficulties while promoting economic development and enhancing urban living standards. The tourist industry, as a dynamic economic force, has significant potential to promote sustainable development in metropolitan areas. In a study of A. Khan et al., (2020)Tourists' arrival not only boosts the national economy by providing income, but also encourages investment in infrastructure, cultural preservation, and community development. Nevertheless, if not adequately managed, the fast expansion of tourism can have detrimental effects on urban resources, exacerbate the environmental crisis, and upset local populations. Strategic planning and creative business techniques should be employed to maximize the use of the tourist sector as a driver for sustainable urban development (Abdou et al., 2020; Dwikat et al., 2022; Streimikiene et al., 2021).

The concept of smart tourism is the foundation of this synergy between tourism and smart cities. Refer to the study of Lu et al., (2021) and Alsahafi et al., (2023), the objective of smart tourism initiatives is to improve the quality of visitor experiences, optimize resource utilization, and mitigate the adverse effects of tourism on the urban environment through the integration of advanced technology and data-driven solutions. It endorse by Allam and Jones, (2021) stated that cities are increasingly adopting innovative strategies to create seamless, immersive, and sustainable tourism experiences, ranging from smart mobility solutions and digital signage to sustainable tourism practices and population management systems. Furthermore, the development of smart cities offers a distinctive opportunity to integrate sustainability principles into the planning and development of urban areas. Belli et al., (2020) figures that real-time monitoring, optimization, and administration of urban systems, including energy and water infrastructure, transport networks, and refuse management, are facilitated by smart city technologies, including IoT sensors, data analytics, and AI-driven decision-making tools. Stakeholders can develop and execute solutions that not only improve the visitor experience but also foster environmental stewardship, social equity, and economic resilience by incorporating tourism considerations into smart city planning (Cornejo Ortega & Malcolm, 2020; Errichiello & Micera, 2021).

This study will delve into the multifaceted relationship between tourism and smart cities, exploring the key drivers, challenges and opportunities for businesses looking to capitalize on this convergence. Through case studies, best practices and actionable insights, it will explain innovative business strategies that harness the power of tourism and smart city initiatives to

foster sustainable urban development. By synthesizing theory with practical application, this study aims to empower businesses, policy makers and urban stakeholders to navigate the complexities of this dynamic landscape and unlock the full potential of tourism as a driver of inclusive, resilient and sustainable cities.

Scope of Study

The scope of this study includes a comprehensive examination of the complex relationship between tourism and smart cities, with a particular focus on illustrating effective business strategies to foster sustainable urban development. It involves analyzing the evolving trends, patterns and drivers of tourism, in addition to assessing the basic elements of a smart city, including advanced technology and data-based decision-making processes related to tourism development. In addition, the study critically assesses the sustainability implications of tourism activities in the urban environment, addressing challenges such as congestion, pollution, and cultural commodification. It explores the various business strategies used by stakeholders, showcases exemplary case studies and best practices, and discusses the policy framework needed to support tourism integration and smart city initiatives. Furthermore, the study predicts emerging trends and opportunities, providing a structured framework for stakeholders to navigate this complex landscape and drive inclusive, resilient and sustainable urban development.

This paper will discuss systematic literature review trends and bibliometric indicators for tourism and smart cities with business strategies for sustainable urban development**.** Thus, it will proceed with a systematic and network analysis to define the most important sub-area in this topic. To define the trends of tourism and smart cities with urban development, the following questions are proposed:

RQ-1: What are the impacts of technology integration on the sustainability and competitiveness of tourism businesses in smart cities?

RQ-2: How can smart city initiatives improve urban mobility to promote sustainable tourism?

RQ-3: How do stakeholder engagement and collaborative innovation contribute to the development of sustainable tourism strategies in smart cities?

RQ-4: What trends can be identified in the types of academic and industry documents produced in the field of smart tourism and urban development?

RQ-5: What patterns emerge in the types of publications on smart tourism and sustainable urban development over recent years?

RQ-6: What is the pattern in co-authorship relations over the publication?

Literature Review

Previous studies on smart cities have highlighted their transformative potential in urban development, emphasizing the integration of advanced technologies and data analytics to enhance quality of life, infrastructure efficiency, and economic growth (Gracias et al., 2023). These studies have identified key aspects such as the role of innovation in sustainable development, the importance of knowledge in designing efficient services, and the need for strategic approaches to address urban challenges(dos Santos Camata et al., 2022; Skripnikova et al., 2023). Additionally, research has emphasized the significance of smart city initiatives in promoting better lifestyles, sustainable economic growth, and democratic administration through the utilization of physical, human, and telecommunications resources (Sadeq & Cevik, 2022; Vardopoulos et al., 2023). By analyzing these previous studies, it becomes evident that smart cities offer a promising avenue for urban development by leveraging technology, data-driven solutions, and strategic sustainable development methodologies to create more sustainable and efficient urban environments.

Urban development strategies encompass a multifaceted approach involving various stakeholders and factors. Key business strategies for urban development include attracting high-growth firms to stimulate job creation post-recession (Neuts, 2020), creating an inclusive process to address externalities and ensure sustainable growth (Anene, 2019)and focusing on cities as competitive units to attract international investors (Blums et al., 2022). Additionally, the involvement of actors such as the state, local administration, corporations, banks, and syndicates is crucial in urban management (Sonn et al., 2017). It is essential to prioritize expertise, understanding of financing processes, competitive economic environments, and attractive conditions for foreign investors to foster urban growth (Ažman Momirski et al., 2021). By considering these aspects and emphasizing the importance of a legal framework and institutional processes, cities can effectively drive economic growth while addressing environmental and social challenges (Onyusheva et al., 2020).

Businesses play a crucial role in contributing to sustainable urban tourism by adopting sustainable practices and engaging with local communities. Research emphasizes the importance of businesses in cities embracing sustainable tourism activities to achieve overall sustainability (Elmo et al., 2020). Sustainable urban tourism involves leveraging benefits from the implementation of sustainable policies and practices to enhance destination competitiveness, requiring a deeper commitment to all stakeholder groups, especially residents (Candrea et al., 2017). Additionally, businesses in urban areas rich in cultural heritage, like Algeria, can play a significant role in preserving and exploiting historical sites for tourism development, contributing to economic growth and heritage conservation (Panse et al., 2021). By aligning their operations with sustainable tourism principles, businesses can help create a fair and desirable ecosystem for achieving the UN Sustainable Development Goals in urban destinations, ultimately fostering long-term sustainability and positive community engagement (Botlíková et al., 2020).

Using technology and intelligent tourism is crucial to enhancing visitor experiences, maximizing destination management, and promoting sustainable urban development. According to Gretzel et al. (2015), smart tourism leverages cutting-edge digital technologies such as cloud computing, virtual reality, and the Internet of Things (IoT) to provide travelers personalized and captivating experiences. By using smart technology, destinations may become more competitive, provide unique experiences, and increase visitor loyalty (Lv, 2022). The concept of "smart tourist cities" emphasizes how technology is used in urban tourism, leading to creative destination management techniques (Azis et al., 2020).

In pursuance of addressing the challenges of urbanization and encouraging efficient resource planning and management, smart cities may make use of smart technologies like blockchain, IoT, artificial intelligence, and big data (Chang, 2022). This will increase urban mobility and sustainability. By fusing technological advancements with strategic sustainability goals, sustainable mobility initiatives in smart cities are essential to achieving long-term urban development goals (Rady and khalf, 2019). Communities may enhance connectivity, reduce environmental impact, and elevate the standard of urban life by giving priority to intelligent mobility solutions (Lee et al., 2020).

Conducive to fostering collaboration between governmental organizations, business leaders, academic institutions, and local communities, it is imperative that stakeholders in the tourism sector be engaged and that innovative tactics be used (Novianti et al., 2022). The long-term profitability of tourism projects is improved, and the interests of all parties involved are ensured when a diverse range of stakeholder groups are included in the planning phase (Ye et al., 2020). To counterbalance and strengthen local economies, promote socioeconomic development, and increase the overall effectiveness of tourism initiatives, new leadership strategies and community involvement practices must be implemented effectively (Hamid et al., 2023).

Materials and Method

Identification

The systematic review procedure for this investigation employed a few fundamental stages to select a large number of relevant publications. The first initial stage involved choosing keywords and using similar terms from thesaurus, dictionaries, encyclopedias, and previous research to create search strings from the Scopus database. All applicable keywords were selected, resulting in 113 publications obtained during the initial phase of the systematic review procedure from the database.

Table 1: The search strings

Index	Keywords
Scopus	TITLE-ABS-KEY ("smart city" AND tourism AND business) AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "SOCI")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (EXACTKEYWORD , "Smart City") OR LIMIT-TO (EXACTKEYWORD , "Tourism") OR LIMIT-TO (EXACTKEYWORD , "Smart Cities") OR LIMIT-TO (EXACTKEYWORD , "Smart Tourism") OR LIMIT-TO (EXACTKEYWORD , "Big Data")) AND (LIMIT-TO (LANGUAGE , "English"))

Screening

A careful selection of potentially relevant research items was made as part of the screening process to determine whether or not the content of these items connected with the research issue(s) that were in question. In light of these features, the object that was chosen for the investigation was chosen. On the other hand, a comprehensive analysis was carried out on a total of fourteen publications, and very specific criteria were utilized to evaluate whether or not these articles should be included in the study. Because of its significance as the major source of practical training, the significance of the literature, which mostly consisted of research papers, was the key criterion for selection. To add insult to injury, the most recent research did not take into account assessments, complete analyses, statistical analyses, literary works, collections of literary works, specific sections within literary works, or records of conference disputes! Additionally, the review was restricted to those publications that were written in the English language. The time frame from 2014 to 2024 was the only focus of the strategy's attention. The requirements were not met by any of the 99 papers that were submitted, hence they were all rejected.

Table 2: The selection for the searching criterion

Criterion	Inclusion	Exclusion
Language	English	Non-English
Time line	2014-2024	< 2013
Literature type	Journal (Article)	Conference, Book, Review
Publication Stage	Final	In Press
Keywords	Smart city, tourism, business	Others

Data Abstractions and Analysis

An integrative analysis was one of the evaluation strategies that was applied in this study to analyze and combine several different research designs, including qualitative, quantitative, and mixed approaches. In the course of their research, experts concentrated on developing pertinent issues and subtopics. In the process of developing the topic, the first phase consisted of the phase of gathering data. For the purpose of responding to questions raised by the current investigation, the authors have carefully read through a collection of fourteen articles in search of comments or descriptions. Following this, the authors and specialists will investigate the current trends in tourism and smart city development in the second stage, combining commercial concepts for environmentally responsible urban development. The study findings and methodology that were utilized in each of the studies are now being investigated as part of the ongoing investigations. After that, the author worked along with additional co-authors to construct thematic categories that were drawn from the data that was obtained for this study. The essential observations, opinions, puzzles, and other ideas that were necessary for understanding the data were noted in a log while the process of data analysis was being carried out. After all was said and done, the writers compared the outcomes to determine whether or not there were any discrepancies in the process of designing the theme. Each of the authors participates in debates to discuss any contrasting viewpoints about the topics. As a last step, the concepts that were developed were altered to guarantee uniformity.

VOSviewer Analysis

VOSviewer is a user-friendly bibliometric software developed by Nees Jan van Eck and Ludo Waltman at Leiden University, Netherlands (2017) widely utilized for visualizing and analyzing scientific literature, the tool specializes in creating intuitive network visualizations, clustering related items, and generating density maps. Its versatility allows for the examination of co-authorship, co-citation, and keyword co-occurrence networks, providing researchers with a comprehensive understanding of research landscapes. The interactive interface, coupled with continuous updates, ensures efficient and dynamic exploration of large datasets. VOSviewer's ability to compute metrics, customize visualizations, and its compatibility with various bibliometric data sources make it a valuable resource for scholars seeking insights into complex research domains.

Data sets in plain text format were retrieved from the Scopus database. These data sets included the publication year, title, author name, journal, citation, and keywords. The years 2014 through 2024 are included in the statistics. The VOSviewer program, namely version 1.6.19, was then utilized to do the evaluation of the records. Through the utilization of VOS clustering and mapping methods, this application made it possible to conduct analysis and create maps. Through the process of arranging things in low-dimensional regions, VOSViewer offers an

alternative to the Multidimensional Scaling (MDS) technique. It guarantees that the proximity between two things accurately reflects the degree to which they are connected and similar to one another (van Eck & Waltman, 2010). VOSViewer and the MDS method (Appio et al., 2014) have a commonality in this regard. Unlike MDS, which focuses on calculating similarity metrics such as cosine and Jaccard indices, VOS uses a more appropriate technique for normalizing co-occurrence frequencies called association strength (ASij). The calculation for association strength is based on the work of (van Eck & Waltman, 2010).

$$ASij \text{ ¼ } \frac{Cij}{Wiwj}$$

Result and Finding

Theme 1: Smart Tourism and Technology Integration

The infusion of technology into tourism, which may be summed up by the concept of smart tourism, is one of the most significant parts of the wider smart city initiative for the city. In order to better the quality of life for both locals and tourists alike, the purpose of this program is to improve the quality of life. Smart tourism leverages advanced technological infrastructure to offer tailored solutions for tourists, thereby fostering competitive advantages for destinations. Dubai exemplifies this trend through its Smart Tourism Dynamic Responsive System (STDRS), which enhances user engagement and overall experience (M. S. Khan et al., 2017). Empirical analyses, such as those utilizing patent data, indicate that innovations in smart tourism are predominantly emerging from Asian countries, positioning them as future leaders in this domain (Cavalheiro et al., 2021). The ecosystem of smart tourism is further elucidated through scientific mapping methods, revealing its evolution and the interconnectedness of smart tourists, technologies, and businesses (Özköse et al., 2023). Mobile technology plays a crucial role in advancing sustainable smart tourism by offering innovative consumer experiences and fostering competitive advantages (Kim and Kim, 2017). Additionally, big data analytics, as demonstrated in the analysis of Barcelona's online image, underscores the importance of user-generated content in refining marketing strategies and enhancing destination management, thereby reinforcing the smart city and tourism strategy (Marine-Roig & Anton Clavé, 2015).

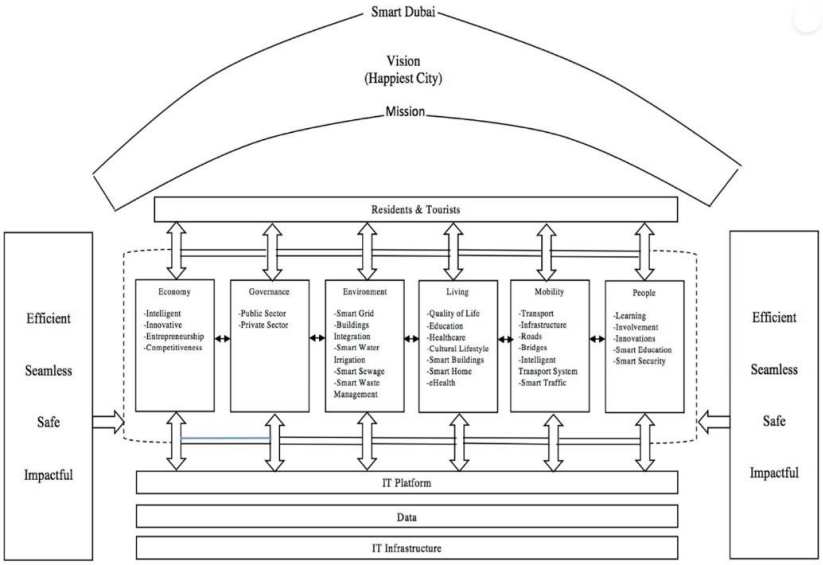

Figure 1: Smart Tourism Dynamic Responsive System (STDRS): Dubai (M. S. Khan et al., 2017)

Theme 2: Urban Mobility and Sustainability in Smart Cities

The concept of smart cities involves the application of ICT technologies to enhance urban efficiencies, focusing on areas like accessibility and sustainability. For instance, Melbourne's smart city initiative utilizes data from sensors to manage pedestrian traffic and other urban activities, aiding in the development of infrastructure that is more pedestrian-friendly and sustainable (Carter et al., 2020). Urban mobility in smart cities encompasses new propulsion methods, vehicle control systems, and changing business models, emphasizing connectivity that is affordable, effective, attractive, and sustainable. However, the influence of large corporations on these developments raises concerns about aligning with urban planners' goals of social and environmental sustainability (Lyons, 2018). The COVID-19 pandemic challenged traditional urban planning principles, prompting cities to adapt quickly with policies that could inform future urban development for greater environmental sustainability and readiness against crises (Kakderi et al., 2021). In Portugal, the pandemic accelerated the adoption of digital technologies and IoT in smart cities, enhancing public service access and fostering innovation, although there is still a need for better public-private collaboration and alignment with digitization goals (Fernandes, 2021).

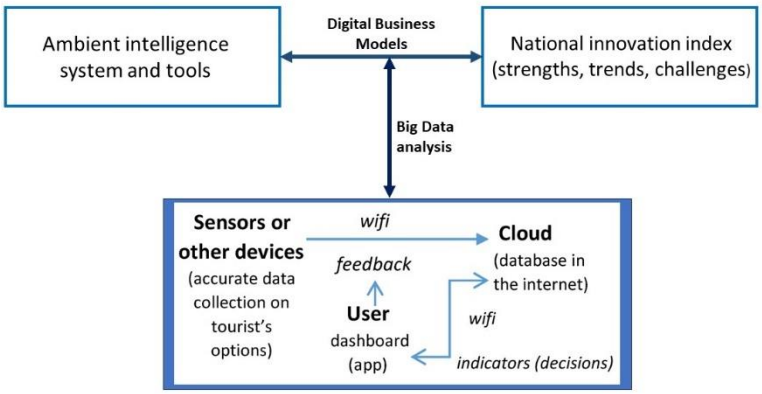

Figure 2: A framework for managing assertive digital business models (Fernandes, 2021)

Theme 3: Stakeholder Engagement and Innovative Approaches in Tourism

In the realm of tourism, stakeholder engagement and innovative approaches are critical for enhancing destination management and tourist experiences. E-democracy, which facilitates stakeholder participation in decision-making through ICT, exemplifies how regions can implement democratic processes in tourism planning, as seen in an Italian region's ongoing e-democracy project (Presenza et al., 2014). Engaging Millennials and Generation Z through gamified practices like geocaching can benefit even less technologically advanced destinations, enhancing tourism experiences via mobile-enabled games (Skinner et al., 2018). The adoption of AI in tourism, driven by economic benefits, faces barriers such as technical challenges and social concerns like job security and trust. A multidisciplinary approach and hybrid solutions are recommended to address these issues (Cubric, 2020). The hospitality sector is exploring mobile technologies, like NFC-enabled mobile keys, to improve security and user convenience, promoting contactless ecosystems that are particularly relevant in the pandemic era (JosephNg, 2024). Additionally, the integration of smart tourism apps is pivotal for developing regions, as demonstrated by the increased presence of touristic sites in mobile applications in Upper Silesia, reflecting the broader adoption of smart tourism practices (Naramski & Herman, 2020).

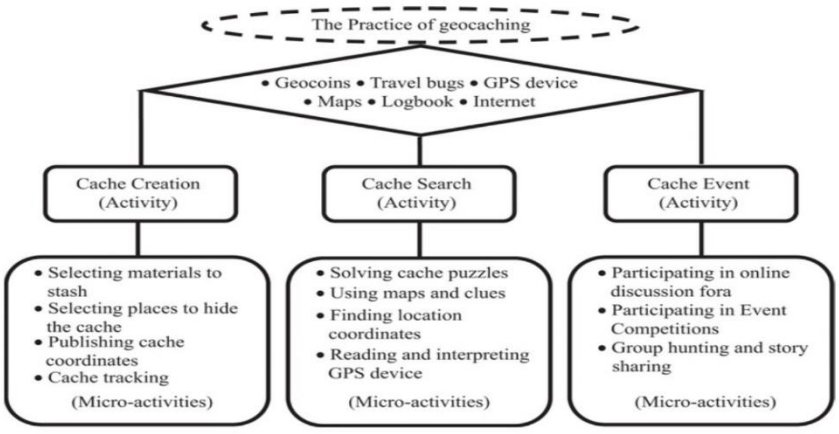

Figure 3: The Practice of Geocaching (Skinner et al., 2018)

Table 3: The research article finding based on the proposed searching criterion

Theme 1: Smart Tourism and Technology Integration

Author	Title	Year	Sources Title	Abstract	Finding
Özköse, Hakan; Uyar Oğuz, Hande; Aslan, Ahmet (Özköse et al., 2023)	Scientific mapping of smart tourism: a content analysis study	2023	Asia Pacific Journal of Tourism Research	An ecosystem of intelligent travellers, intelligent technology, and intelligent enterprises can be conceptualized as smart tourism. Regarding Smart Tourism, the Web of Science (WoS) database has over 952 scholarly studies. As such, a review of Smart Tourism's conceptual framework and thematic development would be beneficial.	Applying scientific mapping methodologies, this study aims to explore the realm of smart tourism. The WoS yielded bibliometric data for 489 publications in total. To begin, the researchers use VosViewer to undertake a co-occurrence analysis, which will help them to discover the key terms and the relationships between them. Then, in the direction of gain a deeper understanding of the domain and its development from 2013 to 2022 within the Smart Tourism context, the content is thoroughly examined using SciMat. In furtherance to better understand the field, SciMAT was used to obtain strategic maps, topic thematic networks, and an evolutionary map.
Cavalheiro, Mariana Brandao Cavalheiro, Gabriel Marcuzzo do	Applying patent analytics to understand technological trends of smart	2021	Technology Analysis and Strategic Management	The advancements in technology that have occurred over the past several decades have had a significant influence on the business strategies and procedures utilized by a variety of economic sectors, including the travel and tourist industry.	Among the many contributions that this research makes, one is a comprehensive examination of patent applications throughout the course of time, as well as the concentration of these applications in specific

Canto; Mayer, Verônica Feder; Marques, Osiris Ricardo Bezerra (Cavalheiro et al., 2021)	tourism destinations			The emergence of the notion of smart tourist destination (STD) is a potential answer to the strong rivalry among tourism destinations, driven by the widespread adoption of digital technology. In general, the STD concept denotes unique instances of smart city initiatives that capitalize on the burgeoning technological infrastructure to improve the tourist experience. Scholars have employed this particular type of data to conduct comprehensive temporal and comparative analyses, as patent documents provide a wealth of information regarding technological advancements and innovative endeavours. As a result, we acquired patent materials related to STD technology from the European Patent Database, ESPACENET. This study provides significant empirical data on the characteristics of potential inventions that are especially designed for STD programs, as identified through the analysis of patent information.	geographic areas, an examination of the character of tourist technology developers, and an assessment of the dispersion of technological themes. Specifically, the data indicates that Asian nations have the highest number of STD patent applications, suggesting that they will likely be at the forefront of STD technological advancement in the future.
Khan, M. Sajid; Woo, Mina; Nam, Kichan; Chathoth, Prakash K.	Smart city and smart tourism: A case of Dubai	2017	Sustainability (Switzerland)	Over the course of the past decade, the introduction of new technology has resulted in the creation of smart cities. These cities have the goal of providing its stakeholders with technologically driven solutions that are not only effective but	Finding the most effective strategies for smart cities and smart tourism in Dubai is the main goal of this research. While doing so, we identify Dubai's goal and vision, as well as its important dimensions and pillars, in connection

(M. S. Khan et al., 2017)				also efficient. The major objective of smart cities is to improve the well-being of all residents by enhancing the outcomes associated with the systems and procedures of individuals, businesses, the government, and other public and private entities. Smart tourism has recently evolved as a component of the smart city idea, with the goal of offering visitors targeted solutions for their travel needs. Dubai is a burgeoning tourist hotspot that has successfully deployed intelligent city and intelligent tourism platforms to actively involve many stakeholders.	to the literature's achievements, and we emphasize the city's important resources and problems. We provide a Smart Tourism Dynamic Responsive System (STDRS) architecture to help Dubai improve the user experience and encourage more participation.
Kim, Dongwook; Kim, Sungbum (Kim & Kim, 2017)	The role of mobile technology in tourism: Patents, articles, news, and mobile tour app reviews	2017	Sustainability (Switzerland)	This study seeks to investigate the present state and use of mobile technology in promoting sustainable and smart tourism. It also aims to make recommendations for future research and strategic directions for both university researchers and industry management. This study used a variety of sources, including patents, academic papers, and news, and followed processes adapted to the individual goals of each investigation. In the first investigation, a social network analysis application called Netminer was utilized to analyse the connections between different International Patent Classification (IPC)	For smart city systems and maps, research 1 uncovered a variety of data-related and mobile technologies. The second research found that mobile technology is related to sustainability, the environment, business, and the market. Thirdly, they looked at client preferences and opinions about mobile travel apps through user reviews. New capabilities for smart tourism, an advantage for travel spots and vendors in the long run, and exciting new experiences for visitors are all on the horizon thanks to mobile device tech.

				codes. The T-LAB tool was utilized in Study 2 for the purpose of conducting content analysis on patents, journal papers, and news stories. When conducting the third study, the Leximancer software, which is based on the concept of relative frequency, was utilized to evaluate the ratings that users gave to mobile applications.	
Marine-Roig, Estel; Anton Clavé, Salvador (Marine-Roig & Anton Clavé, 2015)	Tourism analytics with massive user-generated content: A case study of Barcelona	2015	Journal of Destination Marketing and Management	This study seeks to illustrate the feasibility of using big data analytics to support intelligent destinations. It accomplishes this by analysing the digital perception of Barcelona, a major city known for its smart technology and popularity among tourists, as expressed on social media platforms. More than one hundred thousand travel blogs and online travel reviews (OTRs) written in English by tourists who have visited the city during the past ten years are carefully investigated as part of this inquiry. It is possible to effectively collect, organize, and analyse user-generated content (UGC) that is related to tourism by utilizing the method that is provided in this study. The process centres around the careful selection of the most suitable sources and the extensive utilization of digital data to establish the depicted image of the city. Furthermore, it is	The results of this exhaustive examination of data obtained from a reliable source, user-generated content (UGC), proved to be particularly advantageous for the use of business intelligence (BI) in the field of destination management. The formulation and evaluation of marketing strategies, as well as the enhancement of branding and positioning policies within tourism and marketing companies, are all possible applications when they are applied. In addition to enhancing the capacity of cities like Barcelona to construct a smart city and destination idea, it also enhances the ability of these cities to define their own plan.

				utilized to extract business information (BI) from online travel reviews (OTRs) regarding visits to La Sagrada Familia, the main landmark and attraction in Barcelona.	

Theme 2: Urban Mobility and Sustainability in Smart Cities

Author	Title	Year	Sources Title	Abstract	Finding
Kakderi, Christina; Komninos, Nicos; Panori, Anastasia; Oikonomaki, Eleni (Kakderi et al., 2021)	Next city: Learning from cities during covid-19 to tackle climate change	2021	Sustainability (Switzerland)	The COVID-19 epidemic has put into question fundamental ideas of contemporary urban planning and city size, including the benefits of high population density, huge cities, rapid transit, unfettered individual movement within cities, and free use of public space. For almost a century, these ideas influenced the growth of cities and metropolitan regions, but there are now indications that they are becoming more of a burden than an asset. Cities' public agencies and private businesses adopted a range of regulations and commercial strategies in response to the COVID-19 pandemic. These countermeasures formalize an invaluable experience and can provide insights on how cities might address climate change, another major problem. Do the actions implemented during the COVID-19 crisis serve as a	The authors analyse the inquiries using two different methods: the first is a comprehensive review of the existing literature, and the second is an analysis of three case studies that investigate policies and practices that are targeted at altering urban contexts that have been extensively impacted by the COVID-19 epidemic. They are focusing their emphasis, to be more specific, on the central business district, the transportation ecosystem, and the tourist and hospitality ecosystem. The researchers investigate the ways in which the strategies used in these ecosystems have influenced the development of new policy and planning models, with the goal of enhancing the preparedness of

				temporary remedy for the existing health issue? Or do they pave the way for a different kind of urban growth that will be more successful during periods of environmental and health emergencies?	cities to deal with critical issues. Using their experience in this field, they also conduct an analysis of the most effective form that cities should take in order to properly address the significant issue of environmental sustainability and climate change.
Fernandes, Silvia (Fernandes, 2021)	Which way to cope with covid-19 challenges? Contributions of the iot for smart city projects	2021	Big Data and Cognitive Computing	The COVID-19 crisis has caused several activities and sectors to cease. The utilization of technology and advancements in virtual reality and remote help have significantly transformed the routines and behaviours of individuals and workers. Enterprises and urban areas have been compelled to swiftly adjust to the novel obstacles. The utilization of digital technology has facilitated enhanced access to public services by optimizing resource allocation. Smart cities provide immense promise for connecting individuals to employment and amenities in unprecedented ways. Moreover, technological convergence generates data that might improve interactions and decisions in relation to the "new normal". This research aims to evaluate Portugal's readiness to address the rapid changes that cities are now experiencing. Portuguese small and	The pandemic has had a significant impact on the Internet of Things (IoT) and other connected technologies, and the purpose of this research is to analyse the significant demands placed on those technologies as well as the changes that have occurred in them. An analysis is conducted to assess the correlation between innovation and the level of intelligence of a city. Using the European Innovation Scoreboard as a point of reference, this is accomplished by doing an analysis of the primary factors that both encourage and discourage creative thinking processes. Providing a clear picture of the future trajectory in the creation of more intelligent services is the goal of this research, which aims to give some insight into that trajectory. This issue

				medium-sized enterprises (SMEs) have demonstrated a commendable aptitude for entrepreneurship and innovation. However, they have yet to fully capitalize on the knowledge they have obtained in terms of sales and exports. Additionally, there is a scarcity of coordination between the public and private sectors. The proliferation of smart cities facilitated by the Internet of Things (IoT) has the potential to stimulate transformations in these matters. There is a need for a stronger connection between the emerging technology and the digitalization objectives of enterprises.	concerns the tourism industry, which is the primary economic activity in the country in terms of exports. An extensive analytical framework, utilizing technologies such as Power BI and Azure IoT Hub, can efficiently determine and support the optimal areas for development inside the country.
Carter, Ebony; Adam, Patrick; Tsakis, Deon; Shaw, Stephanie; Watson, Richard; Ryan, Peter (Carter et al., 2020)	Enhancing pedestrian mobility in Smart Cities using Big Data	2020	Journal of Management Analytics	Smart City is a new idea in town planning around the world. A smart city uses information and communication technologies (ICT) to make its cities and people more efficient. One important thing for a Smart City is to use data from its ICT infrastructure, like devices that are linked to the Internet of Things, to make city services and features better, like making them more accessible and environmentally friendly. In order to meet this need, the City of Melbourne (COM) Smart City office keeps track of over 300 sets of data about urban activity and growth. These files cover things like	The results can be used to find places where people like to walk and help plan where traffic lights and street layouts will go in the future to make the city a better place for pedestrians. You can also use what you've learned to look at other sets of data, like bike traffic, which can be used to help plan city building projects. It has been suggested that in the future, these data on pedestrian movement may be combined with data related to social media from cell phones and possibly even personal devices

				parking, transportation, land use, 3D data, numbers, the environment, and big city projects like rail projects. One interesting piece of data is about pedestrian travel. Sensors send data to the COM website, which is regularly updated by the City of Melbourne Open Data Platform. These numbers show how many people were walking by 53 specific spots in the central business area, as well as the times and routes they took. Over 650,000 people on foot were seen walking by all sites in 24 hours. During city rush hours, hotspots often record peak rates of several thousand people per minute. This means that Big Data analysis methods can be used on the data. For static analysis, results are shown in the form of heatmaps and charts of human traffic in cities. PowerBI is used for more advanced dynamic visualization and analysis.	such as fitness monitors in order to discover a connection between the level of happiness experienced by walkers and the rate at which traffic flows. It is also possible to measure the "happiness" effect of people walking through open spaces like city parks. Under the Capstone Project program at Swinburne University, this study was done with their help.
Lyons, Glenn (Lyons, 2018)	Getting smart about urban mobility – Aligning the paradigms of smart and sustainable	2018	Transportation Research Part A: Policy and Practice	The digital era is progressing, presenting extraordinary technical opportunities. These possibilities are based on a growing and detailed electronic connection between people, places, and items, along with advanced data collection and processing capacities. The future of urban mobility has the potential to undergo significant	This research investigates a series of inquiries, uncovering a lack of agreement on smart cities and a scarcity of literature aimed at comprehending smart urban mobility. The study explores the relationship between intelligence and sustainability, highlighting concerns about the conflicting

				transformation through advancements in propulsion technology, vehicle control systems, evolving ownership and usage models, empowering mobile technologies, and the ability to engage in activities without the necessity of physical travel. 'Smart' is the prevailing trend at present. Smart urban transportation evokes a feeling of fresh possibilities and advancement. However, what is the precise definition of "smart".	opinions and discussions around this topic. Smart technology has raised concerns about the influence of big corporations, as they may prioritize their own goals over the interests of urban planners who focus on social and environmental sustainability, as well as economic prosperity. The study presents and examines the following concept of smart urban mobility: "connectivity within urban areas that is cost-effective, efficient, appealing, and environmentally friendly." The purpose of this is to facilitate the convergence of the concepts of intelligence and sustainability, in order to provide a shared framework for the advancement of urban mobility.

Theme 3: Stakeholder Engagement and Innovative Approaches in Tourism

Author	Title	Year	Sources Title	Abstract	Finding
JosephNg, P.S. (JosephNg, 2024)	Hotel room access control: an NFC approach ecotourism framework	2024	Journal of Science and Technology Policy Management	The purpose of this study is to demonstrate that security and flexibility continue to be the primary areas of disagreement in the hospitality industry. According to this research, a framework that enables hotel guests to enter their rooms using a mobile access key should be planned. By using an application that	The findings that corroborated the hypothesis demonstrated that the proposed approach can do away with physical cards, improve security, and promote a contactless environment. This discussion covers theoretical, managerial, and social contributions. Limitations

				contains a fake mobile key for explicit authentication of access, mobile phones equipped with "Near Field Communication" (NFC) capabilities are being exploited as admission devices in protected facilities. Design, procedure, and strategy: Partial least square structural equation modeling (PLS-SEM) is used to triangulate experimental, numerical, and logical assessment of the proposed system using Malaysian hotel customers and staff.	and implications of the research: The limitations of this experiment include the fact that it was limited to two hotels and does not accurately represent the preferences of a larger group of travelers. Second, while technology advances and supply outpaces demand, the price of current NFC smart locks will drop. However, they are still somewhat expensive. Practical implications: The use of NFC technology allows for the creation of an application that emulates a smart key for specialized authentication access, hence enhancing security measures. During the pandemic, host-card emulation enables cost-effective profitability and the implementation of a defensive strategy. Social implications: The use of NFC technology involves designing an application that includes a simulated smart key for specialized authentication access. This promotes enhanced security features. During the pandemic, host-card emulation enables cost-effective profitability and the implementation of a defensive

					strategy. Originality/value: This study demonstrates innovation by utilizing readily available smartphone NFC technologies that have not yet been included into the tourism sector. The study questions the practicality of mobile smartkeys.
Naramski, Mateusz; Herman, Krzysztof (Naramski & Herman, 2020)	The development of mobile tourism in the upper Silesian metropolitan area of Poland	2020	Sustainability (Switzerland)	The notion of smart tourism is gaining increasing popularity in the global tourist industry. It is a tourism-focused component of the smart city idea, which may also be seen as a distinct form of business model. The initial phase of implementing this concept in a tourist destination involves providing smartphone users with support and access to tourist sites through a range of applications.	The purpose of this paper is to track and look at how tourist sites' mobile apps are growing in an area that is becoming more popular with tourists. In order to do this, they looked at information from mobile apps from 2015 and 2019. Individuals are able to search for things to do, hotels, and restaurants using the applications that were selected. These apps also have libraries of tourist destinations. This comparison demonstrated that there were shifts in the quantity of certain sorts of things discovered by mobile applications in the urban region of Upper Silesian. This gave an idea of how these apps have grown and are used in that area.
Cubric, Marija (Cubric, 2020)	Drivers, barriers and social considerations for AI adoption in	2020	Technology in Society	In the past 10 years, there has been a substantial rise in the number of academic papers that are focused on Artificial Intelligence (AI) and its	This paper provides a thorough examination of the most recent systematic evaluations in the rapidly expanding field of research,

	business and management: A tertiary study			application in the fields of business and management. This trend has been seen in a major way. An equal and opposite increase in the number of comprehensive assessments of the books and articles that are already in existence has occurred in tandem with this spike in the number of books and articles.	with the objective of consolidating the findings regarding the societal repercussions, driving factors, and obstacles associated with the integration of artificial intelligence into business and management. The methodology utilized in this tertiary study is based on the guideline established by (Kitchenham & Charters, 2007). Consequently, a total of 30 evaluations published between 2005 and 2019 were chosen to summarize the results of 2021 primary investigations. The evaluations cover the application of artificial intelligence (AI) in a variety of sectors, including healthcare, information technology, energy, agriculture, the apparel industry, engineering, smart cities, tourism, and transportation. In addition, they comprise a wide range of business and management tasks, including but not limited to human resources, customer service, supply chain, health and safety, project management, decision-support, systems management, and the use of technology. The primary drivers

					for the adoption of artificial intelligence in these areas are economic, while the challenges are primarily related to technical aspects (such as the availability of data and the reusability of models) and social considerations. These challenges include an increased reliance on non-human entities, concerns about job security, a lack of knowledge, safety, and trust, and limited perspectives from multiple stakeholders. Beyond the healthcare management discipline, only a very small number of assessments consider the human, organizational, and broader social aspects of AI adoption. Furthermore, the studies suggest a greater emphasis on assessing the societal consequences of AI, implementing more thorough evaluations, adopting hybrid solutions that combine AI and non-AI methods, and adopting a multidisciplinary approach to the design and assessment of AI. Moreover, this study discovered a dearth of systematic assessments in several industries that have recently

					embraced AI, such as the banking industry and retail.
Skinner, Heather; Sarpong, David; White, Gareth R.T. (Skinner et al., 2018)	Meeting the needs of the Millennials and Generation Z: gamification in tourism through geocaching	2018	Journal of Tourism Futures	In order to fulfil the expectations of Millennials and Generation Z, the purpose of this paper is to present a conceptual framework that is based on a knowledge of the basics of popular mobile-enabled games on the basis of which the framework is based. This may be achieved by illustrating how firms in the tourism sector could participate in geocaching, which is a location-based activity that incorporates elements of entertainment. This activity is a gamified addition to the experience of traveling to a location, which is made possible by the advancements in information and communication technology. The design, the technique, and the strategy: In this mostly conceptual study, the authors create a theory by employing an inductive qualitative technique. This theory is dependent on their knowledge of a well-established activity known as geocaching, which is carried out by a community of practitioners known as geocachers. Consequently, the authors present a conceptual framework, which is the theory they have developed based on their understanding of the situation and whose principles can be	According to the findings, geocaching may be advantageous for businesses who are less entrepreneurial and are located in non-urban areas that are not included in smart city plans. Additionally, geocaching may be advantageous for tourism places that have limited access to technology or resources. By embracing the ideas and practices of smart tourism, these firms have the ability to satisfy the requirements of the new generation of tourists who are interested in having experiences that are both digitally immersive and gamified. The significance of this study lies in the fact that it addresses a gap in the existing body of literature by examining the ability of various tourist sites to cater to the tastes and requirements of Millennials and Generation Z tourists.

				subsequently applied to other tourism practices.	
Presenza, Angelo; Micera, Roberto; Splendiani, Simone; Chiappa, Giacomo Del (Presenza et al., 2014)	Stakeholder e-involvement and participatory tourism planning: Analysis of an Italian case study	2014	International Journal of Knowledge-Based Development	The objective of this article is to examine the possibilities and difficulties of knowledge management, namely the utilization of information and communication technologies, in facilitating collaboration among stakeholders in the tourism destination. The focus will be on e-democracy. E-democracy refers to the use of electronic means to facilitate stakeholder engagement in the decision-making process on territorial policies and tourism development. Although there is increasing interest in this notion among academics and the tourist business, research connected to it is still in its nascent stage.	This paper aims to address the existing gap by analysing the case study of an Italian area that is presently implementing an e-democracy initiative on destination governance. This study discusses the primary contribution to the existing information, as well as the management implications and limits. Additionally, it suggests potential areas for future research.

Analysis of Document by Subject Area of Research

The pie chart highlights that Business, Management, and Accounting (23.8%) is the leading subject area in terms of document count, followed by Social Sciences and Humanities (19.0%). Energy and Decision Sciences are tied for third place with 11.9% each. Engineering accounts for 9.5% of the documents, while Environmental Science and Mathematics make up 14.3% and 2.4%, respectively. Computer Science, at 7.1%, represents the smallest share of documents. However, the pie chart has limitations, as it does not specify the types of documents included (e.g., journal articles, conference proceedings, books). Additionally, Scopus, the bibliographic database used, may not encompass all scholarly publications in each field. For a more comprehensive bibliometric analysis, you might explore why certain fields like Business and Social Sciences dominate—perhaps due to their broader scope or better funding. The spread across multiple subject areas indicates interdisciplinary research, which can be examined through co-authorship patterns. Smaller slices, such as Computer Science, might represent emerging fields with potential growth trends. Comparing these distributions with other fields can reveal trends and differences.

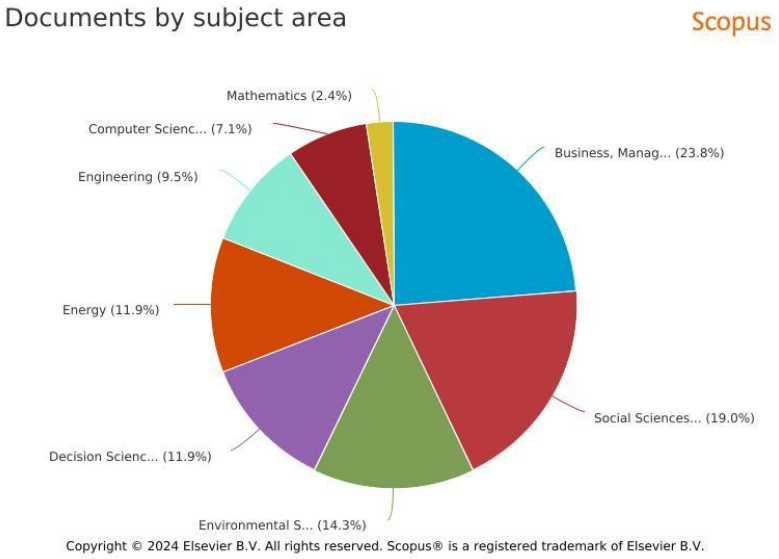

Figure 4: Document by Subject Area

Analysis of Document by year of Research

Data shows the rate of journal publication in the ten-year period from 2014 to 2024. Publications in this field are not very encouraging even though topics related to tourism, smart cities and urban development are so hotly discussed. three years show that no publications were made on this topic in 2016, 2019 and 2022. while there was only one publication in 2014, 2015, 2023 and 2024. in 2017, two publications were recorded. in 2018, 2020 and 2021 it is seen that the trend is increasing for the better by recording three publications in that year.

Several factors could have influenced these fluctuations in publication rates. Technological advancements, such as the rise of digital platforms and data analytics, may have impacted research methodologies and the dissemination of findings. Changes in funding availability or priorities could also have played a role, as research funding often dictates the extent and direction of scholarly output. Additionally, shifts in research priorities or emerging trends

within the broader academic community might have diverted attention and resources away from this specific field during certain years.

The observed trends and patterns suggest that while interest in topics related to tourism, smart cities, and urban development exists, the field may face challenges in achieving consistent and sustained scholarly output. The sparse publication rates in certain years highlight potential gaps in knowledge dissemination and research engagement. These fluctuations may have implications for the future development and direction of the field, as they indicate areas where further research attention may be needed to address gaps in understanding or to capitalize on emerging opportunities. Moving forward, efforts to support and incentivize research in this area, along with collaboration across disciplines and sectors, could help stimulate growth and innovation in tourism, smart cities, and urban development research.

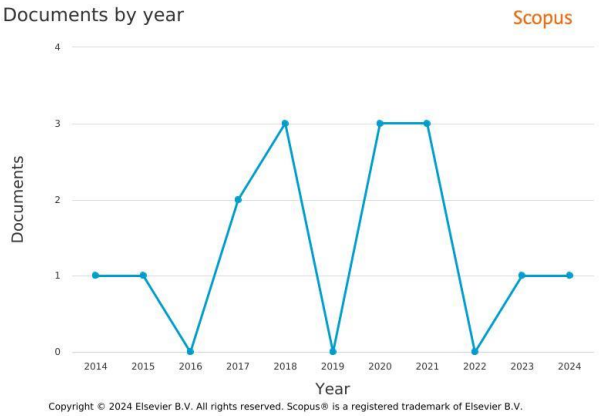

Figure 5: Document by Year

An Examination of the Co-authorship Based on Bibliometric Analysis

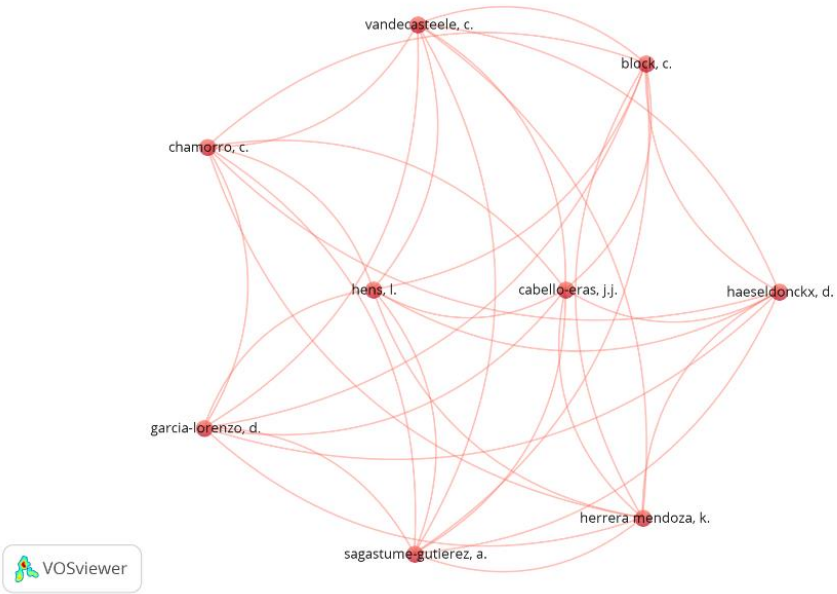

Figure 6: Co-author Relationship

The bibliometric analysis shows a network of co-authorship from scientific articles and research partnership between nine authors. The co-authorship is the affiliation: Juan Jose Cabello-Eras, Liat Hens-Herbst, Dries Haeseldonckx, Ketty Herrera-Mendoza, Alexis Sagastume Gutierrez, Begona Garcia-Lorenzo, Cesar R. Chamorro, Bart Vandecasteele and Caryn Block. Liat Hens-Herbst and Juan Jose Cabello-Eras which seems to be a visualization of most co-authorship among researchers on the topic of aesthetic innovation. In this kind of network visualization, circles or nodes represent individual researchers, and lines or edges represent co-authors. Edge thickness may indicate the number of times two researchers have co-authored a paper. So, for example, in this network, Cabello-Eras seems to have a paper co-authored with Garcia-Lorenzo and Sagastume-Gutierrez and others. This type of network visualization can help researchers see patterns of collaboration among scholars in a particular field. It can be used to identify leading scholars and research groups. For example, this network shows that Hens,L. and Cabello-Eras,J.J were all central to a network of researchers who co-authored papers on aesthetic innovation.

Discussion and Conclusion

Smart Tourism and Technology Integration

In order to uncover best practices in Dubai's smart city and smart tourism projects, this report delivers a thorough examination. It proposes a Smart Tourism Dynamic Responsive System (STDRS) framework to improve user engagement and experience while examining Dubai's goal, vision, core aspects, and pillars in reference to previous research. A longitudinal study of patent filings demonstrating the dominance of Asian nations in the development of smart tourism technology is another important addition made by the research. The study examines 489 articles to map the development of smart tourism from 2013 to 2022 using scientific mapping techniques, providing insights into technological themes and relationships. The research encompasses three distinct studies that explore diverse facets of data and mobile technologies, environmental sustainability, and consumer preferences for mobile travel applications. These studies underscore the capacity of mobile technology to transform tourism experiences and establish enduring competitive advantages for suppliers and destinations. The results highlight how important it is to leverage user-generated material for business intelligence in destination management, supporting the worldwide development of concepts for smart cities.

Urban Mobility and Sustainability in Smart Cities

This study examines the ways in which city ecosystems have altered, particularly those that were impacted by the COVID-19 epidemic. It does so by doing a review of the existing literature and by conducting three case studies that concentrate on the central business district, the transportation ecology, and the tourism-hospitality ecosystem. This study looks at how well the steps taken in these areas worked and how they might help create new policies and planning models for places that are better able to deal with problems like climate change and protecting the environment. In addition, it talks about the role of IoT and related technologies after the pandemic and how they relate to creativity and making cities smarter. The study shows that smarter services are needed, especially in the tourism industry, and it suggests a way to look at things that will help the country's growth in certain areas. In addition, it looks at data on pedestrian flow to improve city infrastructure and offers future work that would connect this data with social media inputs to get a full picture of how happy pedestrians are and how traffic flows. Finally, the study talks about how different people have different ideas about smart cities and how to get around them. It stresses how important it is to match smart projects with

sustainability goals and comes up with a definition for smart urban mobility to help bring these ideas together.

Stakeholder Engagement and Innovative Approaches in Tourism

Progress in several areas in the tourism industry and technology shows significant significance and positive impact. A study shows the promise of NFC technology in improving security and the contactless experience in the hotel business, while it has limitations in terms of sample size and cost factors. A separate investigation examines the development of mobile applications in the field of tourism, emphasizing the increasing prevalence and usefulness of these applications in the metropolitan region of Upper Silesia. Furthermore, the comprehensive analysis reveals the factors, barriers and societal consequences of implementing AI in many industries, highlighting the importance of comprehensive evaluation and interdisciplinary methods. Furthermore, the research highlights the capacity of geocaching and the concept of smart tourism to positively impact not only metropolitan areas but also rural areas, while addressing gaps in internet access. This approach caters specifically to Millennial and Generation Z visitors. Finally, the examination of e-democracy projects in the Italian area contributes to a better understanding of the dynamics of destination governance, offers managerial lessons, and indicates possibilities for further research. These results contribute to the advancement of knowledge and practice in the field of tourism, technology and governance. They highlight the importance of innovation, evaluation and inclusion in determining the future of tourism destinations.

In conclusion, this study contributes significantly to the fields of tourism, technology, and governance by highlighting the importance of innovation, evaluation, and inclusion in shaping the future of tourism destinations. By aligning smart city projects with sustainability goals, cities can enhance urban living standards, promote economic development, and ensure resilience against future challenges. This comprehensive approach not only supports the growth of smart cities but also ensures that tourism remains a dynamic and sustainable driver of urban development.

Limitations

The many shortcomings of this study should be addressed in future research. The focus on publications from 2014 to 2024 may, at first, overlook basic or ongoing research that could offer important context or future opportunities. This could limit our understanding of the past evolution and potential future trends in the partnership between smart cities and tourism. Furthermore, the study's geographic coverage does not fully capture the range of impacts and uses of smart tourism technologies around the globe. Every urban setting has different problems and opportunities; therefore, the conclusions' limited global application may be affected. The nuanced impacts of smart tourism technologies may not be completely considered in a comprehensive assessment of these technologies. Notwithstanding fully understand the complex interactions that exist between technology, urban environments, and tourism, a more extensive data collection and a wider range of analytical techniques are required. Moreover, the emphasis on state-of-the-art technologies like artificial intelligence, data analytics, and the Internet of Things may overshadow the importance of other crucial factors like socio-cultural dynamics, legal frameworks, and economic considerations in achieving sustainable urban expansion. Since every city has unique qualities and challenges, using specific case studies—like the smart city initiatives in Dubai—may not adequately reflect the broader variety of smart tourist operations worldwide, making it more difficult to generalize the findings across other urban contexts.

Recommendations

To further enhance future study, it is recommended to extend the duration and include a broader range of geographic regions. This will provide a more comprehensive understanding of the conception and implementation of smart tourism and smart city initiatives globally. Undertaking extensive, long-term research is advised in the interest of track the enduring impacts of smart tourism technology on urban development. These investigations will provide important insights into the long-term viability and adaptability of these technologies. Encouraging interdisciplinary research that integrates knowledge from the fields of urban planning, environmental science, sociology, economics, and technology may lead to a thorough understanding of the many factors that influence sustainable urban development via smart tourism. Comparative studies of different smart city models are needed to get insights into the factors that make smart tourism projects successful in diverse metropolitan regions. By helping to uncover common challenges and best practices, these studies will improve knowledge of the contextual elements influencing the results. Examining how non-technological factors—like community involvement, governance, and cultural heritage—affect the efficacy of smart tourism programs is also crucial. This is essential for developing inclusive and sustainable urban development strategies. Providing comprehensive frameworks for assessing the social, economic, and environmental impacts of smart tourism is essential. These frameworks must include precise metrics for evaluating how well different technologies and approaches achieve the goals of sustainable urban development. To further understand how new technologies like augmented reality and blockchain may improve smart tourism, more research is required. To the extent of execute smart tourism initiatives successfully, it's also critical to examine viable methods of stakeholder engagement, such as public-private partnerships and community participation. Finding cooperative solutions that work will improve the effectiveness and inclusiveness of urban development procedures.

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