

Article

# Blockchain in Peer-to-Peer Platforms: Enhancing Sustainability and Customer Experience in Tourism

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**Abstract:** Blockchain technology is emerging as a high-impact solution for the tourism industry, a topic chosen for its growing research relevance and potential to revolutionise the tourism sector in several areas. This study examines how the combination of Blockchain technology and P2P platforms advances sustainability and marketing in the tourism accommodation market. It attempts to fill a gap in the literature by focusing on its application in two areas, namely digital markets and technology, which are expanding. The originality of this research lies in its comprehensive review of blockchain applications in tourism from a practical point of view, which has been largely unexplored in the existing literature. Through a bibliometric review of forty-two papers, various Blockchain applications were identified, such as improving transparency, trust, and efficiency in hotel operations and eliminating intermediaries to reduce costs. The adoption of smart contracts and the use of cryptocurrencies have also emerged as key trends. These findings highlight the transformative potential of Blockchain technology to build trust between hosts and guests, streamline processes, and improve the customer experience. However, they emphasise the need for the careful planning and consideration of the challenges associated with implementing this technology. Future research should further explore the specific applications of Blockchain technology in tourism to optimise its impact on industry and ensure long-term sustainability.

**Keywords:** blockchain technology; P2P platforms; tourist accommodation; marketing advancements; consumer adoption



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## 1. Introduction

### 1.1. Brief Overview of the Practical Application of Blockchain Technology in the Tourism Industry

Blockchain technology is often described as a decentralised ledger that utilises a consensus algorithm and immutable data structure to ensure the accuracy and transparency of transactions [1]. Since its introduction in 2008 [2], this technology has revolutionised the way data are stored and transmitted. It generates encrypted blocks of information, enabling secure and transparent storage and the transmission of transaction records [3]. Blockchains are known for their ability to facilitate cryptocurrency transfers and international payments and smart contract execution, thus eliminating the need for intermediaries. The usefulness of Blockchain technology has been demonstrated in various industries [4], including reducing financial costs and enhancing security and transparency. In the tourism industry, Blockchain technology plays a fundamental role in project financing, company management, and business model development [5,6], bringing benefits to the value chain [7,8].

Blockchain technology, with its capacity to create unchangeable and transparent records, has the potential to considerably impact all stages of tourism services [9]. As the adoption of this technology advances, improvements in operational efficiency, data security, transaction traceability, and the ability to eliminate intermediaries in the tourism industry are anticipated [6]. Although academic research on the application of Blockchain technology in tourism is still developing, several potential benefits have been recognised [10]. The current academic literature highlights its ability to enhance customer service quality by providing a higher level of transparency and therefore confidence in tourism [11]. Moreover, Blockchain technology can impact the sustainability of the tourism sector by addressing challenges such as environmental data management, product traceability, and tourism supply chain management using smart contracts [12].

Blockchain technology presents innovative solutions for regulating and managing tourism. For example, they can be employed to create more secure and efficient traveller identification and verification systems, enabling authorities to better manage tourism flows and ensure the safety of visitors [13]. Additionally, the implementation of Blockchain-based smart contracts can simplify the execution of agreements between various tourism sector actors, eliminating the need for intermediaries and streamlining booking and payment processes [3]. Technological advancements in tourism are not limited to Blockchain technology. Other advancements, such as artificial intelligence, data analytics, and augmented reality, are also transforming the tourism industry. The combination of these technologies can lead to additional innovation, build personalised travel experiences, improve destination management [14], and create new business models.

The rapid evolution of the internet has transformed the tourism sector, enabling customers to compare services, book travel, and make payments online. Leading financial institutions and public entities are beginning to incorporate Blockchain technology into their business models and processes. Decentralised platforms such as Winding Tree seek to leverage the Ethereum network to offer functionalities ranging from booking accommodation to improving customer knowledge [4]. Even though there are few studies in the academic literature on the application of Blockchain technology in tourism, its potential to revolutionise the sector is enormous [15]. Blockchain technology is expected to adapt to the short-term holiday home rental market through P2P platforms in the coming years [16], which will require the development of theoretical frameworks and new research proposals [10].

### *1.2. Blockchain Technology and Opportunities for Short-Term Accommodation Rentals*

Blockchain technology can be an effective solution for addressing current housing rental challenges such as centralised access control and the lack of systematic management of the rental process [17]. For example, instead of relying on centralised authority to control access to rental areas, Blockchain technology enables decentralisation and the creation of smart contracts. These automated contracts arrange rental terms and are executed transparently and securely on the Blockchain. Blockchain technology provides an immutable record of all transactions and events related to renting [18]. This allows for the systematic and accurate management of the leasing procedure, from the signing of the contract to the payment of rent and the resolution of any disputes that may arise. Blockchain technology offers a new solution for improving efficiency and trust in short-term housing rental businesses [19]. This tourism business segment can benefit from Blockchain technology through the development of smart contracts, which have already been applied in several projects [20]. These contracts are transaction protocols that execute the terms of a contract, offering a new level of automation and reliability [12] that can be applied to tourist rental contracts. The potential of this technology to develop smart digital assets, improve transparency in rental terms, and streamline the legal aspects of rental contracts is highly relevant [21,22].

It is worth noting that while Blockchain technology presents endless opportunities for innovation in the context of short-term accommodation rentals, there is a significant

gap in the literature with respect to comprehensive research in this area. Most studies have not fully explored the potential of the Blockchain to revolutionise this niche in terms of improving trust, security, and transparency between hosts and guests.

This study presents a theoretical framework that expands the scope of research in this area to address the shortage of academic publications in this field. Additionally, it offers a comprehensive conceptual framework based on a thorough literature review, allowing for the identification of critical concepts and the establishment of a strong foundation for future investigations. This work can also support future case studies that explore specific implementation models while considering the challenges and limitations of Blockchain technology and its use in peer-to-peer (P2P) rental homes used for tourism purposes.

This study investigates the potential of Blockchain technology to tackle the challenges faced by the tourist accommodation sector in terms of sustainability and promotion through P2P platforms, particularly Airbnb. The increasing popularity of P2P platforms for short-stay rentals presents several challenges, including data security, regulation, fraud prevention [23], and other issues [24]. To address these issues, this study conducts a comprehensive literature review to examine the limitations and challenges of P2P platforms for holiday home rentals and to explore the opportunities offered by Blockchain technology to expand the regulation, transparency, productivity, and promotion of this sector of the tourism industry. Ensuring the long-term sustainability of the tourist accommodation sector requires the consideration of these factors.

Though there has been an abundance of academic publications on Blockchain technology in recent years, studies that specifically analyse its application in the marketing and regulation of tourist accommodation through P2P platforms are still limited. The increasing magnitude of this topic is expected to result in intensified research interest in the coming years. Previous studies have emphasised the potential advantages of Blockchain technology, such as improved data confidence, regulatory compliance, and trust in decentralised marketplaces [25]. This study aims to contribute to the literature by exploring the possibilities of using Blockchain technology to enhance the marketing, transparency, and regulation of tourist accommodation through P2P platforms, focusing on addressing the future sustainability of the industry.

In summary, this study explores the capability of Blockchain technology to enhance the regulation, transparency, productivity, and promotion of the tourist accommodation market through P2P platforms. For this, two research questions are proposed: RQ1: How can Blockchain technology contribute to improving the regulation, transparency, efficiency, and promotion of the tourist accommodation market through P2P platforms? RQ2: What are the possible applications of Blockchain technology to improve tourism accommodation businesses? The answers to these research questions will help identify the feasible uses of Blockchain technology in the tourist accommodation sector based on the marketing of tourist accommodation through P2P platforms.

To gain a deeper understanding of Blockchain technology's potential applications in short-term rental housing centred around using P2P platforms, a systematic review approach was adopted, focusing specifically on this industry. An analysis using bibliometric techniques was conducted, and the findings are presented in this paper, which also contains a discussion of these findings and the conclusions that can be drawn from them. Although Blockchain technology has been the subject of over 24,000 scientific publications [26], this review examines its influence in the tourism sector in particular. The tourism sector has a significant global impact on Gross Domestic Product (GDP) and employment creation [27]. Furthermore, given that the tourism industry is typically composed of entities that are highly receptive to the integration of new technologies [28], it has a significant impact on both macroeconomic variables.

## 2. Materials and Methods

Bibliometric analysis is used to study the influence of scientific research and encompasses a variety of tools and software [29]. Technological progress has led to the creation

of specific software that includes predefined roadmaps and is accessible to the scientific community [30]. For this study, open-source tools were used in order to facilitate the necessary bibliometric workflow to eliminate the need for purchasing a commercial license. Bibliometrics is a technique commonly used by many researchers to rate the influence of scientific [31] research. It can also be used to determine the advancement of a research field [32], providing insights into various issues, including the most referenced research documents, cited authors, and influences by country [33]. By using bibliometrics, one can obtain a comprehensive understanding of the performance and status of a specific research area, enabling the analysis of a specific field of study. Bibliometrix software version 4.1. was used for this research study to create thematic maps and analyse the growth of the research field under study.

In the first phase of the analysis, the Web of Science (WoS) database was selected as the main font of sources for our bibliometric analysis. This indexing source is the most widespread collection of research journals in the world [34]. Peer-reviewed articles published up to 12 July 2023 and mainly written in English were analysed as they were judged to be the most genuine academic source [35]. A Boolean approach was used, and our selected keywords were as follows: “Blockchain marketing rental”, “Blockchain marketing tourism”, “Blockchain promotion tourism”, “Blockchain promotion tourism”, “Blockchain marketing tourist”, “Blockchain behaviour rental”, “Blockchain behaviour tourism”, and “Blockchain behaviour tourist”. Publications were filtered by their title, abstract, and keywords. The breadth of the keywords used is justified by the specificity of the subject matter analysed, which makes it necessary to be specific. Utilising Prisma Statement data practice [36], from the WoS database, data were extracted until the aforementioned date, yielding 35 initially identified documents. After a detailed analysis, a total of seven documents were excluded from the metadata analysis because their subject matter did not coincide with the objectives of the present study (based on the research questions posed), and four documents were considered not to provide relevant knowledge to the research questions and were therefore also excluded from the metadata analysis.

In the second phase, a more specific metadata analysis was performed by using Google Scholar. To this end, the ten most relevant documents were selected by using the keywords “Blockchain”, “marketing”, “tourism”, “rental”, and “P2P”. Google Scholar indexing considers variables such as the total number of citations, reputation of the authors, keywords used, and relevance of the publisher [37]. One of the documents collected through Google Scholar was deleted because it belongs to one of the authors of the present paper. Nine documents were selected for this study. In addition, the authors selected nine relevant documents that were not previously included, and owing to their subject matter, were considered relevant to the research objectives set out earlier in this study. Figure 1 depicts the workflow employed in this investigation, which has been validated in various scientific studies [30]. Peer-reviewed articles, conference papers, and book chapters were selected for the second phase.

An initial descriptive analysis was conducted for the first block of 35 documents using Biblioshiny software (version 4.1) [29], which is suitable for descriptive and visualisation bibliometric analyses. Once the results of this phase were gathered, we attempted to validate the research questions using the 42 documents identified, which can be located in the Supplementary Materials (Table S1). A discussion of the documents in question, as well as a discussion of the conclusions that can be drawn from them and the present study, is presented later in this paper.

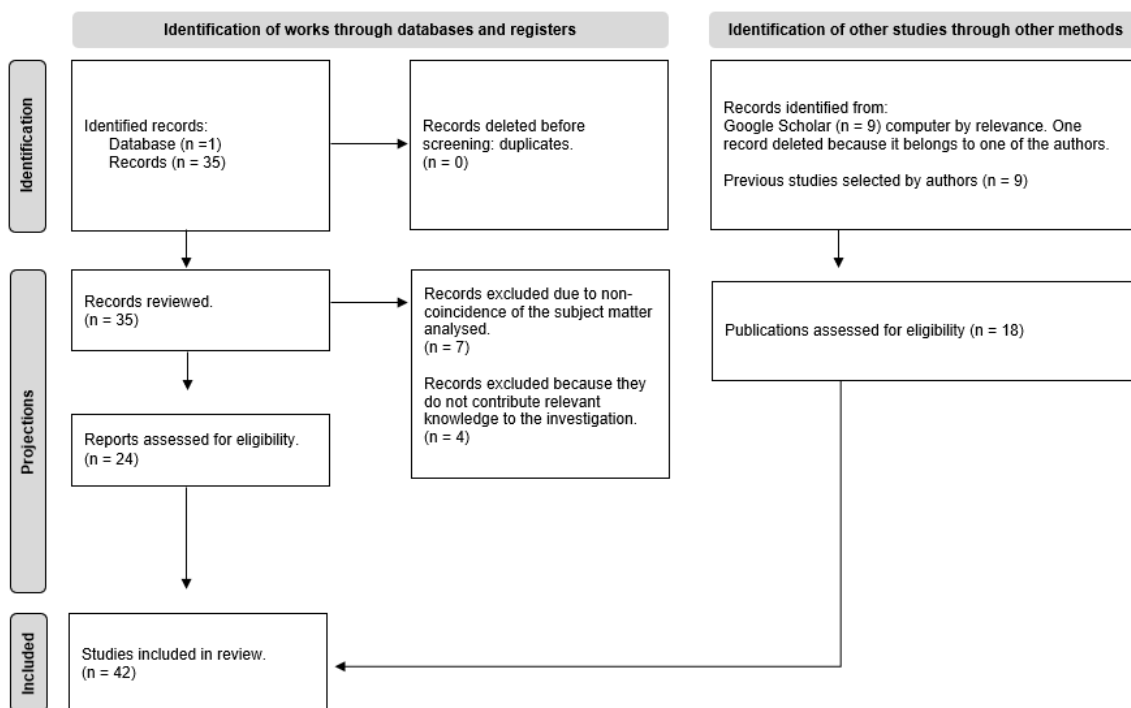


Figure 1. Workflow underpinning the analysis.

### 3. Results

#### 3.1. Descriptive Analysis

The outcomes were as follows:

##### 3.1.1. Main Data

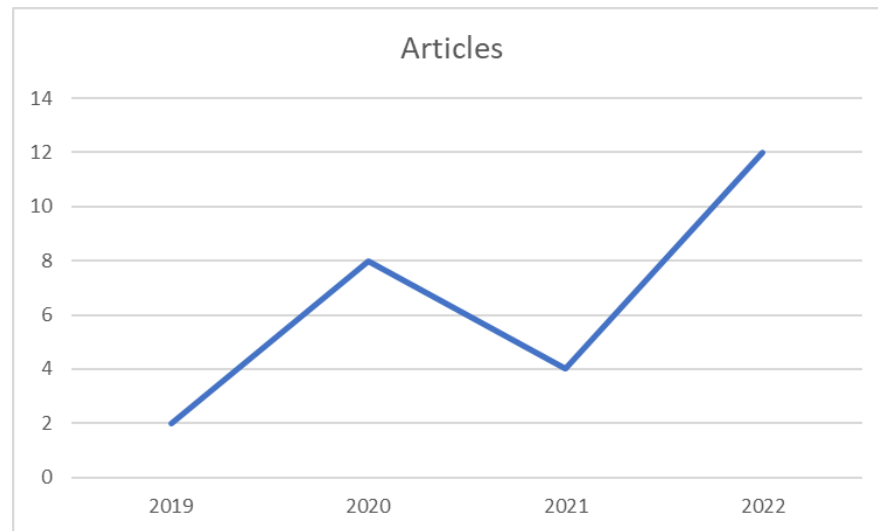
Table 1 presents the records from 2019 to July 2023, which includes 35 documents published in 28 different sources (such as journals and books) by 94 authors. It is worth noting that, on average, each publication had two co-authors (with a ratio of 2.77 co-authors per publication). This table provides a detailed overview of the existing collaboration and academic output in the field of study. This highlights the existence of a great diversity of sources and extensive collaboration between authors. These data provide a quantitative indication of research activity and can be used to identify publication trends and the evolution of author collaboration over time.

Table 1. Data characteristics.

Description	Results
Timespan	2019–2023
Sources (Journals, Books, etc)	28
Documents	35
Annual Growth Rate %	45.65%
Document Average Age	1.49
Average citations per doc	15.06
Keywords Plus (ID)	117
Author’s Keywords (DE)	148
Authors	94
Authors of single-authored docs	5
Single-authored docs	5
Co-Authors per Doc	2.77
International co-authorships %	20

### 3.1.2. Trends

As shown in Figure 2, progress in this area has recently begun to gain momentum, with an annual increase of 45.65%. This increase in interest can be traced back to a publication from 2019, which looked at possible research avenues for using Blockchain technology in the field of Internet of Things (IoT) [38]. This publication laid the groundwork for future research, indicating a growing awareness of the transformative potential of integrating Blockchain technology with other technologies.



**Figure 2.** Total annual production.

### 3.1.3. Trend of the Annual Citations

Table 2 shows the evolution of citations of publications by year of publication, highlighting the academic impact of the documents by displaying the average number of citations that each article receives annually. The table reveals a notable peak in 2021, when publications obtained the highest average number of citations, indicating relevant scholarly interest in this period.

**Table 2.** Total annual citations.

Year	N <sup>1</sup>	MeanTCperArt <sup>2</sup>	MeanTCperYear <sup>3</sup>	Citable Years
2019	2	27.50	6.88	4
2020	8	32.75	10.92	3
2021	4	38.50	19.25	2
2022	12	4.17	4.17	1

<sup>1</sup> N, number of documents. <sup>2</sup> MeanTCperArt, mean total citations per document. <sup>3</sup> MeanTCperYear, total citations per year.

### 3.1.4. Productive Authors

The effect of authors based on the total citations is shown in Table 3. The ten most influential authors have been included, along with their h-index, m-index, g-index, total number of citations, and total number of documents. The highest m-index value was 0.5, belonging to several authors. Because multiple authors had the same highest m-index value of 0.5, additional metrics were considered to determine the most prolific author.

**Table 3.** Most relevant authors.

Author	h_Index	g_Index	m_Index	TC <sup>1</sup>	NP <sup>2</sup>	PY_Start <sup>3</sup>
Achyldurdyeva J	1	1	0.25	70	1	2020
Adalier A	1	1	0.5	2	1	2022
Ajayan S	1	1	0.5	2	1	2022
Alkhathami M	1	1	0.5	1	1	2022
Alsahli A	1	1	0.5	1	1	2022
Alshammari A	1	1	0.5	1	1	2022
Altin M	1	1	0.2	40	1	2019
Ampountolas A	1	2	0.5	7	2	2022
Balasubramanian S	1	1	0.5	2	1	2022
Cai YJ	1	1	0.333	101	1	2021

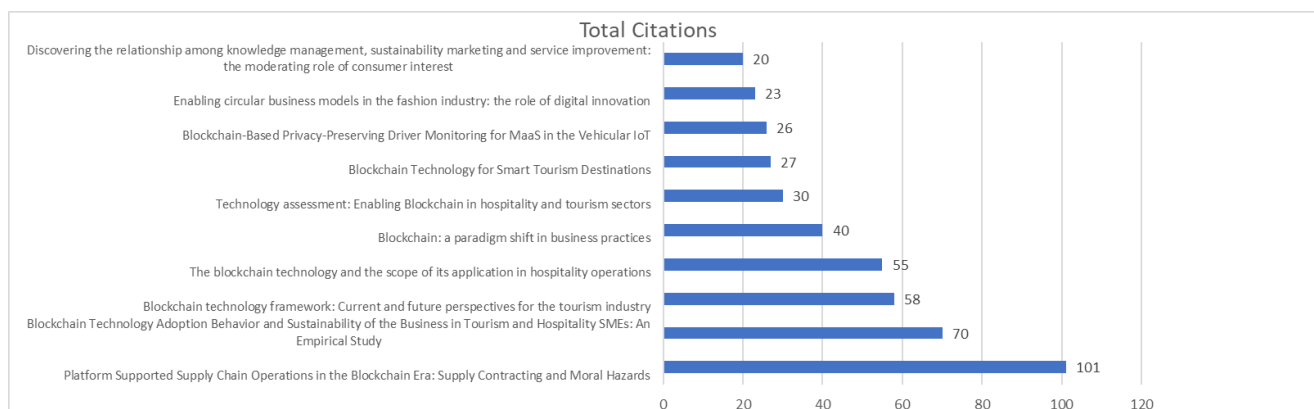
<sup>1</sup> TC, total citations. <sup>2</sup> NP, numbers of papers. <sup>3</sup> PY Start, publication year.

Considering the number of papers (NP) as a tiebreaker, the author “Ampountolas A” has an m-index of 0.5 and a total of 7 papers, which is the highest number of papers among authors with an m-index of 0.5.

The dataset contains information from several publications on the use of Blockchain expertise in tourism. “Achyldurdyeva J” is the author with the highest number of total citations (TC), with 70 citations, and the highest citation rate per year (TCpY), with 17.5 citations. In addition, “Strebinger A” also has a significant number of total citations (8) and a citation rate per year of 4. The predominant theme of the publications is research on the effect of Blockchain technology on the sector, addressing aspects such as the adoption of the technology, acceptance among different types of travellers, and its effect on the sustainability and economics of tourism.

### 3.1.5. Most Influential Documents

Figure 3 presents a list of the most influential papers based on their citation metrics, including the total number of citations, citations per year, and normalised citations. Among the most prominent papers are “Platform Supported Supply Chain Operations in the Blockchain Era: Supply Contracting and Moral Hazards”, with a total of 101 citations and a rate of 33.67 citations per year, and “Blockchain Technology Adoption Behavior and Sustainability of the Business in Tourism and Hospitality SMEs: An Empirical Study”, with 70 citations and a rate of 17.50 citations per year. These papers cover diverse fields, such as decision sciences, sustainability, tourism, and hotel management, and have received a significant number of citations, evidencing their impact and relevance in their respective research communities.

**Figure 3.** Most influential documents.

### 3.1.6. Prominent Sources of Publication

Table 4 displays the most prominent publication sources based on the number of times they cropped up in the dataset. The source “Sustainability” stands out as the most prominent source, appearing three times in the dataset, demonstrating its relevance in sustainability-related research. In addition, “Frontiers in Blockchain”, “Information Technology & Tourism”, and “International Journal of Contemporary Hospitality Management” were mentioned twice, highlighting their importance in research on Blockchain technology, information technology, tourism, and contemporary hospitality management. The dataset includes several other sources with one mention each, showing a wide range of publication sources for research in various fields, such as image and video processing, decision sciences, and financial innovation.

**Table 4.** Prominent sources of publications.

Year	Articles
Sustainability	3
Frontiers in Blockchain	2
Information Technology & Tourism	2
International Journal of Contemporary Hospitality Management	2
Journal of Environmental And Public Health	2
Tourism Economics	2
Applied Sciences-Basel	1
Decision Sciences	1
Eurasip Journal on Image and Video Processing	1
Financial Innovation	1

### 3.1.7. The Most Influential Countries

Table 5 gives a summary of the citations and influence of research papers from different countries. Saudi Arabia has the greatest average amount of citations per paper, reaching an impressive value of 29.50, while China also shows a significant impact, with an average of 22.50 citations per document. The United States and the United Kingdom had strong average citation values of 19.00 and 27.50, respectively. On the other hand, countries such as Spain, Norway, and Korea also show reasonable impacts, with averages of 11.33, 23.00, and 11.00 citations per article, respectively. Some countries, such as Austria, Switzerland, and several others do not have such a marked impact in terms of citations. These data provide valuable insights into the influence and recognition of studies in different countries and can be useful for understanding the relevance and visibility of scientific output globally.

**Table 5.** Most cited countries.

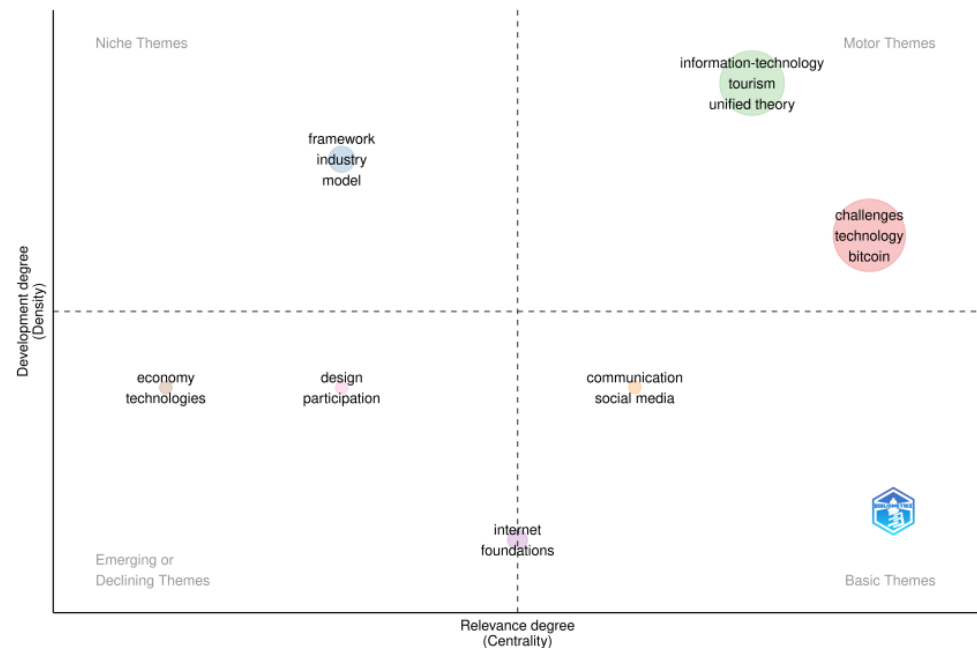
Country	Total Citations	Average Article Citations
China	225	22.50
USA	76	19.00
Saudi Arabia	59	29.50
United Kingdom	55	27.50
Spain	34	11.33
Norway	23	23.00
Republic of Korea	22	11.00
Switzerland	16	8.00
Austria	9	4.50
Cyprus	2	2.00

### 3.1.8. Thematic Map Analysis

Figure 4 presents a thematic map, which groups words into different clusters, each with a specific theme. The clusters are labelled and contain keywords related to the corresponding theme. Themes such as challenges, technology, Blockchain, tourism, user



acceptance, Internet, communication, economy, and design are included. In addition, centrality measures were provided for each word within its cluster. However, additional research and more domain-specific contexts are required to gain a deeper understanding of the trends and relationships between words and clusters. This suggests that the information contained in the figure should be considered more as a starting point in the research than as a conclusive analysis. Researchers are invited to delve deeper into each thematic cluster and explore their connections to enrich the current understanding of the role of Blockchain technology in the tourism sector.



**Figure 4.** Thematic map of terms.

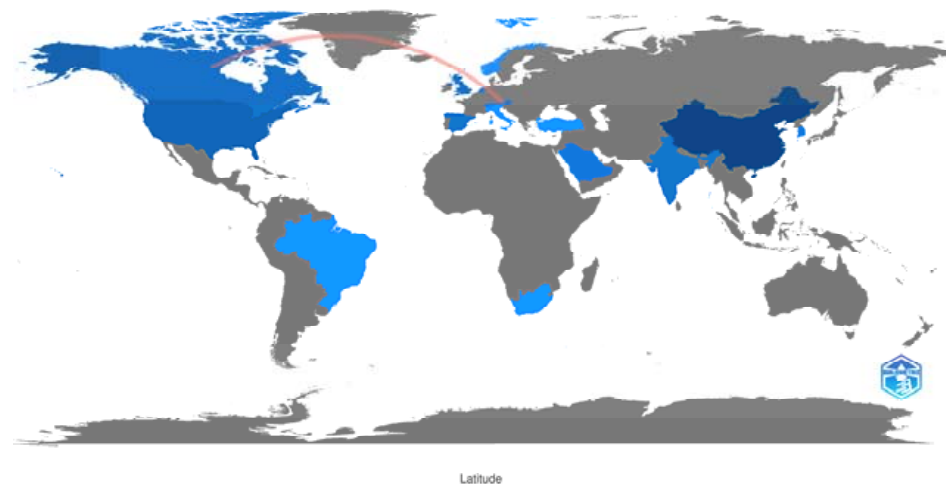
### 3.1.9. World Collaboration Map

Figure 5 shows a map of global collaboration, showing the level of collaboration between different countries. Several collaborations were observed between countries in different regions, such as Austria and Canada (red stripes). Countries shaded in light blue represent emerging partnerships, medium blue indicates a moderate level of joint objectives and collaborations and research exchanges. Finally, dark blue indicates deep collaboration between countries. Chinese authors have collaborated with those from Canada, Spain, and the United States. Authors from India and the Netherlands have collaborated, and authors from the United Arab Emirates have collaborated with authors from South Africa. Authors from the United Kingdom and Switzerland have also collaborated. Finally, authors from the United States have collaborated with those from India, the Netherlands, and Spain. These international collaborations indicate the exchange of knowledge, research, and general collaborative efforts between nations, contributing to the advancement of science, technology, and global cooperation in various fields. This figure highlights the cross-border nature of the research in this field, underlining the relevance of international partnerships in driving innovation and knowledge sharing in the context of Blockchain technology and its applications to the tourism sector.

### 3.2. Validation of Research Questions

A rigorous process of validating the research questions posed was followed based on an analysis of the gaps identified in the literature review described in Section 1 of this paper. By pointing out these gaps, the research questions were anchored in the discourse of the study, designed to investigate the less well-explored links between Blockchain technology

and P2P-based tourism platforms. The researchers' selection of documents based on relevance and contribution to the research questions was critical to ensure that this study effectively addressed these identified gaps. This study's approach served as a cornerstone to validate the research questions, ensuring that they reflect and contribute to the advancement of knowledge in the field of Blockchain technology and the tourism industry.



**Figure 5.** World collaboration map.

Regarding the first research question posed (RQ1: How can Blockchain technology contribute to improving the regulation, transparency, efficiency, and promotion of the tourist accommodation market through P2P platforms?), some studies highlight how Blockchain technology can improve transparency and confidence in the tourism sector [39] by streamlining customer loyalty programs and improving the verifiability of customer reviews [8]. These applications are directly relevant to the tourism accommodation market and P2P platforms, as they can help build trust between hosts and guests, improve transparency in listing information, and foster loyalty within the platform community [40]. The potential to promote security, transparency, and P2P transactions in the tourism business has also been explored [41]. Eliminating intermediaries by integrating Blockchain technology can streamline the accommodation booking process on P2P platforms, ensuring more efficient, secure, sustainable [42], and cost-effective transactions [43]. Taking advantage of Blockchain technology's immutability and decentralisation, this article highlights how technology can enhance the regulation and efficiency of the tourism accommodation market [41]. In particular, the implementation of smart contracts and decentralised identification systems can lead to more efficient and secure transactions, contributing to a well-regulated and thriving market [20,44]. On their own, each of these themes can be a field of future research in its own right and have its own practical development from a management point of view.

All of these requests demonstrate the significant potential of Blockchain technology to address RQ1. By providing transparent, secure, and efficient solutions for the tourism accommodation market through P2P platforms, Blockchain technology can revolutionise industry operations [45] and foster an ecosystem of trust for both hosts and guests [39]. The findings of these studies provide a strong foundation for future research and development in the use of Blockchain technology to optimise the regulation, transparency, efficiency, and promotion of the tourism accommodation market [18,40,46].

Concerning the second question (RQ2: What are the possible applications of Blockchain technology to improve tourism accommodation businesses?), the identified documents offer valuable insights into the applications of Blockchain technology in enhancing tourism accommodation businesses, thus answering RQ2. Each document examines different aspects of how Blockchain technology can be leveraged to optimise operations and customer experience in the tourism sector. Several studies have provided insights into how

Blockchain technology can improve trust and security in the hospitality industry [8], which can be applied to the tourist accommodation rental segment through P2P platforms [22]. The adoption of Blockchain technology for tracking guest records, loyalty programmes [8], and customer reviews can be extrapolated to the tourist accommodation sector [47]. By implementing such solutions on P2P platforms, businesses can improve their transparency, competitiveness [46], and trust, resulting in increased customer satisfaction and loyalty.

Specifically, it identifies the advantages and challenges associated with adopting Blockchain technology in this sector of the tourism industry [48]. These findings indicate that Blockchain technology can improve security, transparency, interoperability, and P2P transactions. For tourism accommodation companies, this involves exploring ways to streamline booking processes and payment transactions using Blockchain technology, thereby reducing costs and improving efficiency. They highlight the impact of Blockchain technology in eliminating intermediaries from the tourism value chain [20]. By adopting Blockchain technology, tourism accommodation companies can establish more direct and secure interactions with customers on P2P platforms, eliminating unnecessary intermediaries and streamlining operations [11,49].

These enquiries collectively offer valuable insights into the potential applications of Blockchain technology to address RQ2. Blockchain integration can optimise various aspects of tourism accommodation businesses, including customer loyalty programmes [8], payment transactions, customer feedback, and interoperability. By adopting Blockchain solutions, businesses can improve their operations, increase customer confidence [50], and foster greater competitiveness in the tourist accommodation market. The insights derived from these articles serve as a basis for future research and development to explore the full potential of Blockchain technology to revolutionise tourism accommodation businesses. A summary of the proposed applications is shown in Figure 6.



**Figure 6.** Blockchain applications to improve short-term rental accommodation through P2P platforms.

Research trends in the tourism accommodation market are marked by the incorporation of Blockchain technology, which promises a significant transformation in the sector. One of the trends highlighted is the improvement in regulations and transparency with the use of Blockchain technology to increase trust and prevent data manipulation [22]. Similarly, the implementation of smart contracts [22] focuses on streamlining operations and reducing administrative costs. Security and data protection are also priorities, and cryptography and decentralisation are used for this purpose [17]. In addition, it seeks to improve customer experience [40,51] by offering authentic and transparent reviews through Blockchain technology, loyalty programs based on tokens [52], and incorporating new technologies such as the metaverse [53]. The exploration of multiple applications of smart contracts in rental agreements and payments, along with the search for interoperability and standardisation to facilitate platform integration [39], is also on the research radar. Finally, the potential of cryptocurrencies as a faster, safer, and lower-fee means of payment has been explored [22,39,54]. These trends promise to optimise the tourism accommodation market in the future and improve the experience of travellers [55].

#### 4. Discussion

The results obtained in this study demonstrate the significant potential of Blockchain technology and P2P platforms to improve sustainability and marketing in the tourism accommodation market [14]. More specifically, in the tourist housing business sector, activities [56] and impacts [57] have increased in recent years. These findings are supported by previous research that has highlighted the positive impact of Blockchain technology in various industries, including in the tourism industry. Through the literature review, it was confirmed that Blockchain implementation could improve regulation [58], transparency [59], efficiency [60], and promotion in the hospitality industry [42], especially through P2P platforms. However, it is relevant to note that while the emergence of Blockchain technology in transforming the accommodation and hospitality market is promising, further research and developments are needed to entirely understand its capabilities and overcome potential challenges [40].

The findings of previous works support the idea that Blockchain technology can play a key role in building trust between stakeholders in the tourist accommodation market. By optimising customer loyalty programs and improving the verifiability of user reviews [18], P2P platforms can benefit from a higher level of transparency and security in their operations [48]. These advancements in the tourism accommodation market have contributed to making the industry more sustainable and efficient for the long term [61]. The deployment of Blockchain technology in short-term rental housing has the potential to significantly enhance sustainability, marketing, and customer experiences. In addition, eliminating intermediaries [39] through Blockchain integration can streamline booking processes and ensure more efficient and cost-effective transactions [18]. Our findings suggest that Blockchain technology can revolutionise the tourist accommodation market and other related industries. However, more fieldwork and practical applications are required [62].

Trust and transparency are key issues in any sector, and Blockchains offer innovative solutions to address these challenges. Technology can also drive the adoption of new business models in the rental sector [63] and improve customer experiences [64], especially in this field. The implications of this work are significant for both academia and the tourism industry. Our findings provide a solid foundation for outlook research in the context of applying Blockchain technology to the field under study. Researchers are encouraged to explore specific topics more deeply, such as the integration of smart contracts in the accommodation booking process or the development of decentralised identification solutions to augment customer security [65]. Furthermore, the effect of Blockchain technology on the sustainability and operational efficiency of tourism accommodation companies should be explored further, as suggested in studies pertaining to other fields [66]. The integration of Blockchain technology in the tourism sector has the potential to transform the industry by addressing key challenges, such as transparency, trust, and efficiency [67]. It is suggested that the influence of Blockchain technology on the sustainability and operational efficiency of tourism accommodation companies should be explored further.

However, the tourism industry should seriously consider the adoption of Blockchain technology and P2P platforms as a strategy to improve its operations and gain customer trust. The implementation of Blockchain-based solutions can help to generate a competitive advantage [13,18,52], attract new customer demographics, and improve customer loyalty [52,53,68]. The successful adoption of this technology requires careful planning and a thorough understanding of its implications and challenges.

Several areas of interest could be addressed in future research. First, further research on how tourism accommodation companies can address sustainability challenges through Blockchain implementation is needed. In particular, solutions to reduce energy consumption associated with cryptocurrencies and ensure greater resource efficiency should be explored to ensure sustainability. The ability of Blockchain technology to enhance customer experience in the tourism accommodation market [46] should be further explored via studies investigating potential consumer adoption. This could include the development

of mobile applications or specific platforms that use Blockchain technology to provide authentic and transparent reviews [68], token-based loyalty programs [52], and other innovative solutions.

The impacts of Blockchain technology on client trust and security in the tourism business is another area that warrants further research. The implementation of Blockchain technology in the tourism industry has the potential to revolutionise the business sector under study by addressing key challenges such as transparency, trust, and efficiency. In order to fully capitalise on the benefits of Blockchain technology in the tourism industry, it is crucial to establish interoperable networks not only within the industry but also with related sectors [40].

## 5. Conclusions

This study emphasises the significant promise of Blockchain technology and P2P platforms in improving sustainability and marketing in the tourism accommodation market. Through an analysis of the academic literature, various ways in which Blockchain technology can improve regulation, transparency, efficiency, and promotion in the hospitality industry have been identified, especially through P2P platforms. The implementation of Blockchain technology in the tourism sector could help to build trust between hosts and guests, improve the transparency of listing information, and foster loyalty in the platform community. Furthermore, by eliminating intermediaries, this technology can streamline booking processes and ensure secure and efficient transactions. It also highlights the immense potential of Blockchain technology and P2P platforms in enhancing sustainability and marketing strategies within the tourism accommodation market. By examining the relevant academic literature, it is evident that Blockchain technology can bring about significant improvements in regulation, transparency, efficiency, and promotion in the hospitality industry, particularly through the utilisation of P2P platforms. A key advantage of implementing Blockchain in the rental business is the establishment of trust between hosts and guests.

These findings indicate that Blockchain technology can revolutionise the tourist accommodation market and other related industries. Factors such as trust and transparency are key issues in any sector, and Blockchain technology offers advanced solutions to address these challenges. Furthermore, technology can drive the adoption of new business models and improve customer experiences in the tourism industry. The implications of this study are relevant to both academia and the tourism industry. Researchers can delve into specific areas to increase the applications of Blockchain technology in tourism, such as the integration of smart contracts in the booking process or the development of decentralised identification solutions. However, the tourism industry should seriously consider the adoption of Blockchain technology and P2P strategies to improve its operations and gain customer trust. Blockchain technology has the potential to significantly improve the tourism sector, particularly in terms of trust, transparency, and efficiency. By utilising Blockchain technology in P2P platforms, the tourism accommodation market can enhance sustainability and marketing strategies. The implementation of Blockchain technology will enable the establishment of trust between hosts and guests because the immutable distributed ledger will provide a transparent and secure transaction record. This eliminates potential doubts or concerns regarding the accuracy of listing information, fostering a sense of reliability and credibility within the platform's community. Consequently, users are more likely to trust the platform and have positive experiences, leading to increased satisfaction and loyalty.

It is key to recognise the role of Blockchain technology in decentralisation and its multiple advantages in the analysed tourist accommodation market. Decentralisation not only improves regulation and efficiency [9,20,41,44] but also serves to strengthen trust and transparency in transactions between hosts and guests [17,39]. The implementation of smart contracts and decentralised identification systems promises improved efficiency and security in the management of the rental process [18,19]. Decentralisation encourages

the adoption of new business models in the tourism industry [40,54]. These decentralised characteristics of the Blockchain promise a transformation in the operability of the analysed sector, establishing a new paradigm in the customer experience and sustainability of the analysed market.

Future research should explore how this technology is accepted by different stakeholders (including consumers) and how its efficiency and security in tourism can be improved. Furthermore, it is necessary to define the legal framework and infrastructure needed to fully exploit the capability of Blockchain in the tourist accommodation market. Blockchain technology and P2P platforms significantly impact sustainability and marketing in the tourist accommodation market. These developments can transform the industry and improve overall customer experience. Further research and the development of innovative solutions should help to maximise the utility of Blockchain technology in the tourism in general. In addition to the integration of smart contracts into the booking procedure and the development of decentralised identification solutions, other important aspects of the rental tourism segment should be considered when adopting Blockchain technology. One significant advantage of a sector adopting Blockchain technology is consequential potential for improved trust, transparency, and efficiency within that sector. By implementing Blockchain technology in P2P platforms, the tourism accommodation market can enhance its sustainability and marketing strategies. By leveraging Blockchain technology, trust can be established between hosts and guests. The use of an immutable distributed ledger, such as the Blockchain, ensures that all transactions are recorded transparently and securely, eliminating any doubts or concerns regarding the accuracy of listing information, particularly sensitive to holiday rentals. This fosters a sense of reliability and credibility within the platform community, leading to increased trust among stakeholders.

## 6. Limitations and Implications for Practices

Regarding the limitations of the current study, the nature of its bibliometric review is comprehensive but limited by the selection and availability of the sources analysed, which could have resulted in the omission of relevant studies not indexed in the WoS database. In addition, owing to the rapid evolution of the Blockchain technology analysed, the conclusions could be overtaken by further developments. In any case, we believe that these findings can be incorporated into future investigations. Finally, by focusing on a specific segment of the tourism sector, the findings cannot be generalised to other economic, industrial, or cultural contexts.

The findings of this study are for academics and stakeholders involved in the sector analysed. This paper highlights the potential of Blockchain technology to improve sustainability and customer experiences in the tourism accommodation market through P2P platforms. However, the practical implementation of Blockchain technology in this business segment requires the consideration of the technical, regulatory, and user adoption complexities involved. This study aims to contribute to ongoing innovations and applied research. In addition, we consider these aspects as opportunities for future research, especially in the field of practical implementation.

It is crucial to highlight the disadvantages and obstacles associated with blockchain technology in the tourism sector to reinforce the discussion in the previous sections. Despite the potential of Blockchain technology to revolutionise the industry under study, there are major challenges, such as data security, proper regulation, and fraud prevention, which need to be addressed to ensure successful implementation. These challenges, together with the need for technological adoption by users, represent significant barriers that could slow or complicate the adoption of this technology. Recognising these obstacles is crucial to achieving the proposed improvements in areas such as sustainability and customer experience.

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