

Digital Tourism Research: A Global Bibliometric Analysis

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ABSTRACT

This study conducts a global bibliometric analysis of digital tourism research, revealing key trends, developments, and future directions. Driven by technological advances, policy initiatives, market dynamics, and changing consumer behavior, digital tourism has grown rapidly, with the COVID-19 pandemic further accelerating digital transformation through innovations such as AI, VR, and smart tourism solutions. Analyzing literature from 2015 to 2024, the study maps citation networks, co-authorship patterns, and keyword trends to identify emerging themes. Results highlight a surge in research after 2021, particularly from Asia and Europe, while noting persistent challenges in cross-disciplinary and international collaboration. The findings emphasize the sector's growing role in economic development, especially through digital marketing, user experience enhancement, and smart tourism applications. Future research should focus on integrating marketing, service design, and digital innovation to bolster resilience and sustainability in tourism.

Keywords: Digital Tourism, Bibliometric Analysis, Artificial Intelligence (AI), Virtual Reality (VR), COVID-19, Global Research Trend.

Introduction

Digital tourism refers to using digital technology to enhance all aspects of the tourism industry, including information access, booking, experience, and feedback. In recent years, digital tourism has been growing rapidly across the globe. According to industry analysts, the global digital travel market has exceeded \$10 trillion and is still growing rapidly [1].

The main reasons for the development are

Epidemic Impact: the 2020 outbreak of the new crown epidemic accelerated tourism product innovation and promoted the development of digital marketing and services. Efthimiou highlights that the COVID-19 pandemic has profoundly disrupted the global tourism industry, leading to economic

losses and operational challenges. In response, the sector has undergone a significant transformation, with a stronger emphasis on sustainability, resilience, digital integration, and community engagement to adapt to evolving traveler demands [2].

Policy Support: Governments are also responding to the times and actively promoting digital tourism as a tool for the development of the tourism economy.

Market Competition: Tourism enterprises have also discovered the huge profits of digital tourism, and are increasingly focusing on the impact of digital transformation on the overall development of their business. For example, Gonçalves et al. highlight that digitalizing cultural routes in Tavira has enhanced tourism, strengthened local identity, and boosted the regional economy by integrating technology and fostering local engagement [3].

Changes in Consumer Demand: Recent studies underscore significant shifts in contemporary tourism demand, driven by

global disruptions such as the COVID-19 pandemic and evolving consumer priorities. Notably, travelers now prioritize domestic and localized experiences, as international mobility restrictions and heightened health concerns have redirected interest toward exploring proximate destinations [2,4].

Concurrently, sustainability and health-conscious tourism have emerged as critical demand drivers, with tourists favoring eco-friendly accommodations, wellness-oriented retreats, and destinations adhering to stringent hygiene protocols by OECD and UNWTO [5]. Demographically, Millennials and Generation Z dominate demand trends, valuing authenticity, cultural immersion, and unique experiences—evidenced by their heightened responsiveness to digital campaigns like Indonesia's "Wonderful Indonesia" promotional videos, which boosted travel intentions by 60.7% post-exposure (ETC, 2021) [4]. These shifts collectively reflect a redefined tourism landscape where localization, sustainability, digital innovation, and experiential authenticity dominate consumer priorities. Also, there are authors who believe that in tourism development, technological advancement drives human demand, and at this stage, there is more technology and less but personalized customer service, which needs adjustment in the future [6]. They suggest developing 'human-centered tourism high technology'.

The current research direction of 'digital tourism' mainly focuses on how to promote the development of the tourism economy through technological application innovation, and the economic effectiveness and social impact of the upgraded tourism industry.

While existing studies have explored the immediate and potential long-term impacts of COVID-19 on digital tourism development, this study focuses on the medium-term effects, as observed through publication trends and thematic evolution up to 2024. This study also aims to guide future research efforts and make effective recommendations for the sustainability of digital tourism. Through an extensive review of the systematic literature review over the past five years, we shed light on the main areas encompassing digital tourism, highlighting its applications and potential impacts. By reviewing the current state of research and progress in the field, we provide insights into the current state of development of digital tourism, shedding light on the challenges faced and what positive impacts have been brought about. Another aim of this study is to reveal emerging research avenues in the field of digitization.

Based on the proposed objectives, the research questions are as follows:

Question 1: What are the key themes, strengths, and limitations of digital tourism identified in the existing literature and limitations of digital tourism are?

Question 2: How can digital tourism lead to tourism economic development, and in what ways?

Question 3: Based on the existing literature and current trends in the field, what are the future trends and potential research directions for digital tourism?

Although there have been many studies related to digital tourism, my study makes a unique contribution. Unlike previous studies, we used a "bibliometric analysis" approach,

which detects emerging trends: through citation networks, co-authorship patterns, and keyword analysis, bibliometric analysis can identify nascent research areas, enabling researchers to stay ahead of emerging topics. Through this method, we can not only review individual studies, but also synthesize the findings of multiple reviews, thus providing a more comprehensive picture of the development of digital tourism around the world. This approach fills a gap in previous reviews and contributes to the existing literature, thus increasing the differentiation and value of our study.

The paper is structured into four parts: the first part is the introduction, which describes the background of the study and identifies the relevant research questions, the second part is the methodology, which explains the qualitative methodology employed, the third part is the results, which summarizes and discusses the results, and the fourth part is the conclusion, which summarizes the results and shortcomings of the study and makes recommendations for further research.

Theoretical Background and Methodology of the Research

The research method selected in this paper is bibliometric analysis, which is very suitable for application in the research field of large amount of information and review literature, and can effectively refine the key content and systematic summarization, reflecting the current situation can also provide guidance for future development.

This research method was chosen for four advantages. 1) Provide an integrated perspective: in some research areas, there have been multiple reviews that have systematically analyzed different aspects." bibliometric analysis" can synthesize these reviews to provide a more comprehensive perspective and avoid fragmentation. 2) Identify research gaps: By analyzing the coverage, topics, and methods of existing reviews, it is possible to identify issues that have not yet been fully explored in the research field. 3) Improve information efficiency: In the face of a large number of literature reviews, it is more efficient to directly summarize and integrate the results of these reviews than to analyze the original research one by one, especially when it involves a multidisciplinary and complex field. 4) Verify the consistency of the review: Comparing the consistency of conclusions between reviews can test the consistency of research findings and the consistency of findings. Also, it can test the degree of consensus or points of controversy in the research field.

The goal of bibliometric analysis is to synthesize a large amount of data and present it in a format that is easy for the user to view. Therefore, bibliometric analysis is playing an increasing role in facilitating decision-making and knowledge application as a valuable knowledge synthesis product (Michelle Pollock et al., 2016)

Inclusion Criteria

- Core Themes-Tourism Economy, Digital Tourism, Digital Economy.
- Timeframe: Selecting literature from the last 5 to 10 years. 2015-2023: for analyzing the current state of affairs and the latest technologies, such as big data in tourism. 2010-2015:

for tracing the background and early theories of the rise of digital tourism.

- **Source and authority:** Choose the Scopus database for its broader coverage of journals, conference papers and patents. Citation analysis tools are abundant and convenient for analyzing research performance.
- **Geographical and case diversity:** try to select literature covering different regions (e.g., Europe and the United States, Asia, and the Middle East), reflecting the characteristics of globalization.
- **Topic Relevance:** the content of the literature must revolve around the intersection of digitization and the tourism economy. Explore e.g. discuss the economic impact of digital technologies on the tourism industry. Present the current status of smart technologies (e.g. AI, VR,) in the tourism industry. Off-topic articles were not considered, such as literature that exclusively explored the digital economy or traditional tourism without combining the two.

According to the American Economic Association (AEA)'s founding purpose of "the encouragement of economic research", requires intellectual and professional integrity. Integrity demands honesty, care, and transparency in conducting and presenting research; disinterested assessment of ideas; acknowledgement of limits of expertise; and disclosure of real and perceived conflicts of interest [7].

Research in economics itself needs to be guided by the ethical standards of academic research, especially in ensuring objectivity and transparency in data collection, analytical methods and research reporting.

Since the methodology used in this article is the "literature summarization method", the primary objective is to ensure that the data are authentic, legal and accurate.

Therefore, I have made the following efforts, firstly to ensure the legitimacy of the data sources, the data are collected from official databases and follow all relevant legal and ethical standards. Secondly, to avoid any distortion of the research results due to bias in data selection or subjective analysis, and to ensure the fairness and reliability of the research results. Finally avoiding cultural bias, this study is a cross-country comparative study, I minimize the possibility of unfair judgments or interpretations of economic phenomena in other countries or cultures due to their nationality background.

Results

A search of the Scopus database in December 2024 with the keywords "digital" and "tourism" yielded 6,289 articles that met the criteria. Next, the literature for the years 2015-2024 was selected, and the number of articles was narrowed down to 936 by choosing "Economics, Econometrics & Finance" as the field of articles. The number of articles was further reduced to 884 by eliminating "undefined" for country sources. Finally, only articles in "English" were selected. Also, the source is only a "journal" excluding books and proceedings from official organizations.

Finally, for the purposes of the study, only 224 documents remained, excluding books and proceedings from official bodies.

The following is a graphical analysis of the literature data by year, nationality, and type.

Based on the Figure 1, we can summarize the following points:

- Rapid increase in the heat of the research field
- From 2015 to 2020, the number of literatures grows slowly, indicating that research related to digital tourism has a low level of interest or is only in the initial stage of development. However, from 2021 onwards, there is a significant increase in the number of literatures, indicating a rapid rise in the heat and importance of research in this area.
- In 2024, the number of literatures reaches a peak of 60 and there is no downward trend in the curve, indicating that the research in this area still has a high and sustained potential.

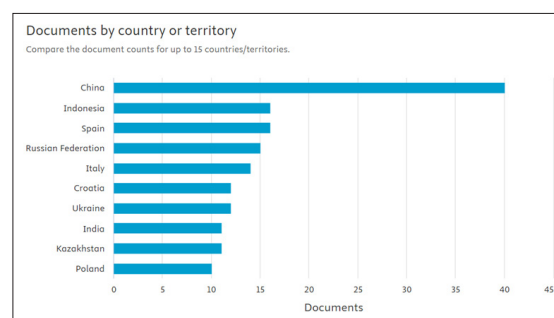


Figure 2: Document Distribution by Country or Territory

Source: the author's own compilation based on data from Scopus

Although China, Indonesia, Spain, and Italy are all prolific in digital tourism research, their thematic orientations diverge significantly, reflecting national priorities (Figure3): China focuses on sustainability through advanced technologies, Indonesia on smart visitor management, Spain on strategic smart destination development, and Italy on the digital enhancement of cultural heritage.

Country/Region	Main Research Focus	Representative Topics
China	Technology-driven sustainable tourism	Big data, AI, smart scenic areas
Indonesia	Smart services and visitor management	IoT, intelligent service hubs
Spain	Smart tourism destination development	DTI model, policy coordination
Italy	Digital integration in cultural tourism	Cultural heritage digitization, generative AI

Figure 3: Comparative Summary: Focus Areas of Digital Tourism Research (2015–2024)

Source: the author's own compilation based on thematic analysis of literature

Comparing the causal relationship between national policies and tourism development in four countries: China, Indonesia, Spain and Italy (Figure 4). Spain and Italy are found to be the most dependent on national policies for tourism development, while China and Indonesia are less dependent. The Spanish Government has long promoted tourism through national strategic planning. In recent years, it has published the National Comprehensive Tourism Plan (PNIT) 2012-2015, the Spanish Sustainable Tourism Strategy 2030 and the Tourism Modernization and Competitiveness Plan [8-10]. The aim is to enhance the competitiveness and profitability of the tourism industry through quality improvement and digital transformation. Italy created a specialized Ministry of Tourism in 2021 and in 2023 published the National Tourism Strategy 2023-2027: focusing on sustainable tourism, innovation and

high-end tourism for economic and social growth. Tourism development in China relies more on market-driven and local government initiatives, with relatively little strategic planning at the national level. Indonesia, on the other hand, focuses more on “tourism branding”

Country/Region	Level of Policy Involvement	Key Features
ES Spain	Very High	Long-term strategic planning, strong focus on sustainability and competitiveness
IT Italy	High	Central-regional collaboration, focus on innovation and high-end tourism
ID Indonesia	Moderate	Policy adjustments in response to overtourism, but lacking a long-term national strategy
CN China	Moderate to Low	Mix of top-down support and market-driven growth; national-level strategic planning less prominent

Figure 4: Policy-Driven Development of the Tourism Industry: A Comparative Overview

Source: the author's own compilation based on thematic analysis of literature.

Figure 5 shows that there is an overwhelming majority of journal articles, totaling 212. This indicates that most of the research results were published in journals in the form of scholarly articles. Reviews a total of 12 articles, accounting for a relatively small proportion. This indicates that there are fewer comprehensive analyses and summaries of existing research in this field.

Document type ↑	Documents ↓
Article	212
Review	12

Figure 5: Document type

Source: the author's own compilation based on data from Scopus.

Combined with the three tables, the annual trend graph shows an exponential growth of the literature in the field from 2021 onwards, especially reaching a new peak in 2023-2024. Combined with the distribution of literature types, the large number of journal articles (212) suggests that the field is rapidly accumulating original research results. It is reasonable to speculate that it is a combination of technological drivers (e.g., VR, AR, AI) and societal needs (e.g., post-COVID-19 digital transformation) that are driving the research explosion in the field of digital tourism.

The distribution of literature types shows that review articles account for only 5.4% of the total (12/224). Combined with the annual trend graph, it can be seen that research is still in a period of rapid growth, with researchers focusing more on original research and a relative lack of systematic summarization of existing research. It is hypothesized that the theoretical framework of the field has not yet been fully developed.

After identifying 224 publications, the data were analyzed using VOS viewer to systematically reveal research hotspots, trends, core authors, collaborative networks, and theoretical sources in the field.

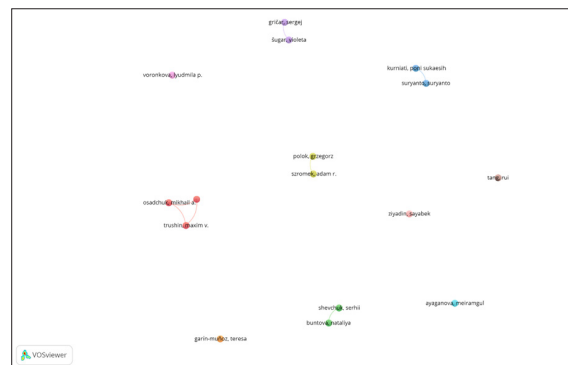


Figure 6: Visualization of Co-authorship Relationships Among Researchers

Source: the author's own compilation via VOS Viewer.

From Figure 6, we can see that it can be divided into ten clusters. In terms of time nodes, the yellow nodes from 2021-2023 represent the most recent active authors (e.g., Tang Rui in the upper right corner) focusing on more emerging digital tourism topics, such as meta-universes and virtual reality applications in tourism. And virtual reality in tourism. Blue-green nodes represent earlier active authors (e.g., garín-muñoz, teresa) exploring grounded theory or early technology applications. In the red cluster, the author with the largest nodes and densest connections is Osadchuk, Mikhail A., a core author. And checking his findings, Osadchuk, Mikhail A. in Geriatric Problems in Medical Tourism explores the problems faced by older people in medical tourism, which, although focusing mainly on medical tourism, deals to some extent with digital management and service optimization in the tourism sector [11].

There is almost no connectivity between the clusters in the graph, suggesting that these author teams collaborate less or are completely independent of each other. It can also further show that the digital tourism field currently suffers from the following problems: inter-disciplinary segregation: technologists, management scholars, and user behavior researchers may conduct their research in their small circles, with less cross-disciplinary collaboration. Geographical segregation: some clusters may represent researchers from specific countries or regions, e.g: East or Southeast Asian scholars may focus on regional tourism issues [12]. European scholars may focus more on transnational tourism or regional policies [13].

As can be seen from this collaborative network diagram, research in the field of digital tourism is currently characterized by significant clustering and geographic/field segregation.

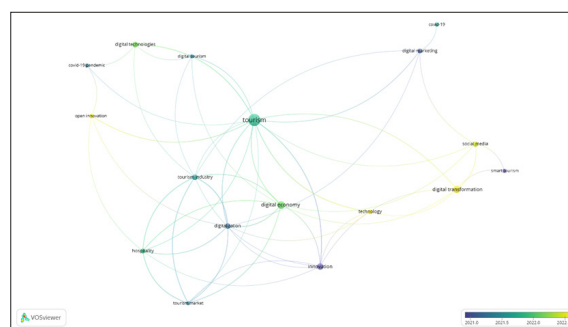


Figure 7: co-occurrence analysis of keywords

Source: the author's own compilation via VOS Viewer

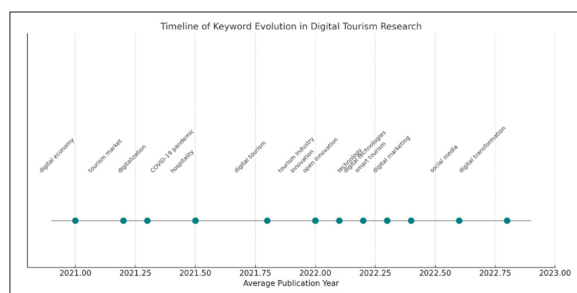


Figure 8: Timeline of keyword evolution in digital tourism research

Source: the author's own compilation based on data from Scopus

The visualization was generated using VOS viewer based on co-occurrence analysis of keywords from bibliographic data. The size of the nodes represents the frequency of keywords, while the thickness of the lines indicates the strength of co-occurrence relationships. The color of nodes reflects the average publication year, providing a timeline of research trends.

This keyword co-occurrence network map by VOS viewer shows that

The keyword tourism is located at the center of the network, which is the core of the whole research area. Digital tourism, digital transformation, and digital economy are the core digital themes, that are closely related to tourism. Digital tourism, digital transformation, and digital economy are core digitalization themes that are closely related to tourism. Innovation and technology indicate the key role of innovation and technology in digital tourism. The COVID-19 pandemic is also strongly connected, reflecting the impact of the pandemic on digital tourism.

Changes in the time dimension, early research hotspots (dark blue-green, around 2021) The foundational themes of the digital economy and tourism market are widely discussed in 2021, indicating an early research focus on the digital economy and market transformation. Recent hotspots (yellow, after 2022) The keywords digital transformation and social media indicate that recent research has focused more on the transformation process, and the impact of social media on the tourism industry. COVID-19 pandemic and open innovation suggest that the pandemic promoted the exploration of new and innovative approaches.

The transition from dark blue to yellow reflects the temporal evolution of research attention. Keywords such as digital economy and tourism market (in blue-green) peaked in earlier years (2021), indicating foundational interest, while keywords like digital transformation and social media (in yellow) represent current and emerging focus areas (post-2022). This gradient visually demonstrates the shift in research interest toward transformation and user-centric digital engagement. Grouping of keywords and research hotspots, green clusters: directly related to the tourism industry. The keywords tourism industry, hospitality, and tourism market are clustered to show how digitalization is applied in the tourism industry and its market. These studies may involve online platforms, booking systems, smart hotels, etc [14]. Duarte Sampaio de Almeida (2024)

studied the application of digital twin technology in tourism-cultural heritage digitalization, virtual tourism, experience enhancement through mobile phones or AR glasses to provide interactive information and found that the technology is mainly used in cultural tourism and destination management. Currently, digital twins have the potential to enhance tourist experience and resource management, but there are still challenges of data synchronization and application scope [15].

Blue Cluster

Technology-enabled digitalization, keywords such as digitalization, digital technologies, digital marketing, etc. illustrate the impact of digital technologies (e.g., big data, AI) on tourism. Abate discussed the readiness of tourism industry firms in adopting digital marketing by combining TOE and TAM models in the context of the Ethiopian economy. It was found that managerial commitment, regulatory support, and customer demand drove digital marketing readiness among tourism firms in emerging economies, but surprisingly, factors such as security concerns and resource availability were less influential". social media and smart tourism reflect the importance of technology in user experience and information dissemination [16].

Yellow cluster: emerging trends and innovation, digital transformation, innovation, open innovation illustrates that digital transformation and innovation are hotspots for continuous research. covid-19 pandemic shows that the epidemic has promoted digital innovation, such as no-touch services, virtual tourism.

Cross-Disciplinary Collaboration

Keywords such as digital marketing and hospitality suggest that future research could further explore the integration of marketing and service design. Post-pandemic transformation: research related to the COVID-19 pandemic is likely to continue, with a focus on how digitalization can be used to increase the resilience of the tourism industry. Combining technology and people: The intersection of social media and innovation suggests the need to explore how digital technologies can meet the deep experiential needs of tourists. As Stors, Baltes investigates how digital platforms reconfigure urban tourism spaces by analyzing 960 Airbnb listings in two neighborhoods of Berlin (city west and Kreuzkölln). The study debunks the old notion of 'tourist space = attraction + amenities' and emphasizes that it is the result of social/digital co-construction. Moreover, digital tourism has already penetrated the traditional tourism industry through social media, etc., and has enabled more urban citizens (Airbnb hosts) to participate in the construction of urban tourism space [17]. While "Fronzetti Colladon demonstrated that semantic and social interaction metrics derived from TripAdvisor travel forums significantly enhance the accuracy of tourism demand forecasts, outperforming even models based on Google Trends data [18]. It is also easy to see the potential for interdisciplinary collaboration and the important role that social media plays in the development of digital tourism.

Overall, it can be seen from the figure that the digital tourism research area focuses on three aspects: technology-driven, industrial application and transformation and innovation.

This study also has some limitations. First, due to the adoption of bibliometric analysis methods, keyword extraction and trend identification are mainly based on article metadata, which does not involve in-depth analysis of the full-text content of the articles, and some potential research themes and semantic information may be missed. Future research can introduce AI tools such as natural language processing (NLP) and sentiment analysis to improve the depth and precision of literature analysis. Secondly, the current research in the field of digital tourism suffers from an obvious split in cooperation, with a lack of systematic cooperation between different countries and disciplines, which affects the integration of knowledge and the construction of theoretical frameworks. Finally, the existing literature is still insufficient in answering the question of ‘how digital tourism promotes the development of tourism economy’, and lacks systematic research perspectives and empirical analyses, which are needed for subsequent studies [19,20].

Current research suffers from a ‘technology-management-user’ divide. In the future, we can encourage cross-border cooperation among tourism, information science, user experience design and other disciplines. For example, the second question raised in this paper is that there is no systematic research on how digital tourism can directly promote economic benefits. Future research can use quantitative models or empirical research to explore how AR/VR, AI tours, online platforms specifically affect tourism revenue, consumer behavior and other economic indicators. Meanwhile, most of the current studies are country-based and lack a systematic comparison of elements such as policy context, cultural differences, and market acceptance. For example, it explores the differences in the paths between China and Europe in the promotion of digital cultural heritage tourism, or the differences in the strategies of developing regions in the construction of smart tourism infrastructure.

Conclusions

Overall, the study provides an overview of what changes and key developments characterize academic research on topics related to digital tourism after 2015. First, by summarizing and assessing the existing literature, we identified recurring themes, strengths, and limitations in digital tourism. These findings can guide researchers in identifying areas for further research and formulating more effective research questions.

Insufficient cooperation between authors from different countries on the topic of digital tourism was also identified, and relevant recommendations were made such as 1) Cross-regional cooperation: to promote exchanges and cooperation between scholars from different regions (e.g., East Asian and European scholars). 2) Cross-disciplinary cooperation: research that combines technology and social sciences is more likely to produce innovations, e.g., inviting user-experience researchers to work together with technologists in the development of new tools for digitization in tourism.

Notably, certain emerging concepts such as metaverse or virtual tourism do not appear prominently in the current network, suggesting that although these terms are gaining popularity in industry discourse, they have not yet been widely adopted in academic literature. This indicates a potential gap and

opportunity for future research exploration. Similarly, there is room for further research on how smart tourism can boost the tourism economy. Virtual tourism experience or tourism recovery after the epidemic digital tools as innovative products in the tourism economy, what specific economic effects have been brought about, and the level of development in each region are also topics worthy of study.

In addition to theoretical contributions, this study also offers practical implications for policy makers and practitioners in the tourism industry: at the policy level, attention should be paid to the development trend of digital tourism technology, especially the application prospect of cutting-edge technologies such as AR/VR, and relevant supporting policies should be formulated to promote the implementation and innovative application of the technology; at the industry level, tourism enterprises can optimize their marketing strategies and customer experience design according to the current digitalization trend, such as enhancing online interaction and intelligent guiding services to enhance user engagement and satisfaction. At the industrial level, tourism enterprises can optimize their marketing strategies and customer experience design based on the current digital trend, such as enhancing online interaction, intelligent guides and other services, in order to improve user participation and satisfaction.

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