Research trends on the impact of digital transformation on the development of the tourism industry: A bibliometric analysis

Heirvan Gunawan*, Udin Udin*, Meika Kurnia Puji Rahayu*

*Master of Management, Muhamadiyah University Yogyakarta, Indonesia.

Abstract
This comprehensive study is dedicated to the careful exploration and highlighting of a very specific and important research issue that is at the core of the impact of digital transformation on the multi-faceted tourism industry. The method used in this study is through a thorough examination of 206 related articles sourced from the Scopus database, this study utilized an elaborately designed data extraction process with an explicit focus on the thematic element of "Impact" within the broader spectrum of "Digital Tourism". The findings in his study found that although the bibliometric analysis shows a surge in publications addressing the impact of digital transformation, a more in-depth and detailed analysis yields a clear observation-a noticeable void in explicit attention to overarching research issues. These findings serve as a clear wake-up call, underscoring the critical and urgent need for future research to sharpen its focus, focusing on uncovering specific and pressing issues in this complex domain. One focal point that invites exploration relates to the complex interplay between digital transformation and the preservation of the authenticity of the tourist experience.

Keywords: impact, digital transformation, tourism industry, names with capital letter

1. Introduction
The problem with the intersection of digital transformation and the tourism industry is a dynamic world navigating an ever-evolving landscape of travel experiences, technological advancements, and consumer expectations. As we stand at the threshold of a new era in global tourism, understanding the profound implications of digital transformation is a scholarly endeavor and an imperative for industry stakeholders, policymakers, and researchers. This introduction delves deeply into the issues that define the contemporary discourse on the impact of digital transformation on the tourism sector. The surge in digital technologies in recent years has ushered in an era where the essence of the tourism industry is undergoing a profound metamorphosis. From the way travelers plan and book their trips to on-the-ground experiences and post-trip reflections, every aspect of the tourism ecosystem is under the influence of digital transformation.

The digital transformation of the tourism sector must innovate and generate new business opportunities to ensure competitiveness, growth, and sustainable development (Akhtar et al., 2021). The ultimate goal is to make a strong contribution to achieving the Sustainable Development Goals. Digital transformation in tourism is also important to ensure the tourism sector’s competitiveness, growth, and sustainable development. The ultimate goal is to make a solid contribution to achieving the United Nations' Sustainable Development Goals and creating new jobs (Watkins et al. 2018).

The growing literature in this field attests to the global recognition of the importance of these changes. Yet, there remains a critical gap, a problem of clear, concise, and focused research that summarizes the intricacies of the impact of digital transformation on the tourism industry. This research addresses this void, seeking to uncover the challenges and opportunities that define the landscape. Digital transformation is not simply an evolution of technology; it is a shift in culture and society that transcends industry boundaries. In the context of tourism, this change not only means the adoption of digital tools but also signals a redefinition of the travel experience, consumer behavior, and the roles of various stakeholders in the tourism industry.

At its core, the impact of digital transformation on the tourism industry is reflected through changing consumer expectations. Today’s empowered and tech-savvy travelers seek both destinations and immersive and digitally enhanced experiences. Understanding the contours of this paradigm shift requires a comprehensive study of the existing challenges and opportunities.

The temporal dimension adds another layer of complexity. The years 2019 to 2023, examined in this study, encapsulate a period of rapid technological evolution and global events that have shaped the tourism landscape. Uncovering trends and patterns within this timeframe provides a contextual backdrop for a more diverse understanding of the impact of digital transformation. Although publications addressing the broad theme of digital transformation in tourism have increased, critical viewpoints have a gap in the absence of a spotlight on such distinct and thorough research issues. This research seeks to fill this gap, guiding future researchers toward a more incisive exploration of specific issues within this transformative space.
The symbiotic relationship between technology and the authenticity of the tourist experience emerges as a potential focal point. As digital tools shape and redefine travel, questions arise about how this transformation impacts the authenticity of local experiences and the preservation of cultural heritage - a theme that warrants in-depth exploration. The methodological approach adopted in this study involved a careful examination of 206 articles sourced from the Scopus database (2019 to 2023). This curated dataset, covering five key years, formed the basis for a thorough bibliometric analysis, which aimed not only to quantify but also qualitatively assess important research issues related to the impact of digital transformation on the tourism industry.

In explaining the need for more targeted investigations, this study aims to lay a solid foundation for future researchers. The issues identified and addressed are not merely theoretical postulations; they provide a pragmatic roadmap for navigating the complex terrain of digital transformation in the tourism sector. The aligned study titled “Research Trends on the Impact of Digital Transformation on Tourism Industry Development: A Bibliometric Analysis” summarizes the commitment to uncover the intricacies of the impact of digital transformation. The journey undertaken is not just an academic exploration but an important endeavor to shape the trajectory of the tourism industry in an era where digital and physical realities are intricately intertwined.

In recent years, the tourism industry has increasingly become the center of attention of market players and stakeholders because it can encourage the rate of economic growth of a country that has natural resources that have the potential to provide adequate infrastructure for tourists who want to visit (Lisboa et al., 2015). The tourism industry has undergone a significant transformation due to digital technology, thus revolutionizing the tourism ecosystem from traditional to modern and easily accessible to users (Pranita, Kesa, and Marsdenia, 2021). Technological advances encourage the tourism industry to develop and transform into a digital idea (Sari et al., 2021). Information available online, such as websites, print advertisements, television advertisements, social media, tour operators, or influencers, are marketing tools for the tourism industry to provide information according to tourism needs and knowledge of various destinations (Sari et al., 2021). This increases interest in analyzing how the adaptation of digital transformation can facilitate tourism and facilitate customer travel to tourist destinations, thus strengthening the impact of digital on users and tourism industry players (Thees et al. 2021).

Digitalization has experienced a paradigm shift in the tourism industry. With the rapid flow of information to customers and the various methods used in the product marketing system to provide various feature services promoted by tourism industry market players, users can access tourist destinations with available digital tools and techniques (Thees et al., 2021). The tourist business has significant potential to grow due to the fast growth of digitization and the usage of new technical gadgets, which can promote more efficient interactions. Given that so far in the tourism industry, the paradigm shift has also led to a change in the structure of the tourism industry market participants by offering services and commodities at tourist attractions or tour operators to manage tourist consumers (Priescu and Oncioiu, 2022). However, the traditional trade structure has been upended by digitization, creating new complications (Kurniawati et al. 2022). Digital transformation is very important for tourism industry players because it can bring very significant changes to customers, therefore, if tourism industry players cannot adapt to technological advances, they will not be able to compete (Wiraputra and Noviaristanti, 2022).

The social and environmental sciences are the key disciplines in digital tourism research, according to earlier studies that used bibliometric analysis to describe the knowledge map, explore the subject, research hotspots, year of publication, author occurrence, institution, and evolution of digital tourism research (Luo and others, 2022). To discover development trends and the impact of digital transformation on the tourism industry going forward, the researcher examines these earlier studies from a different angle by focusing on the cooperation between researchers, institutions, or institutions and countries in conducting joint research. The researcher also analyzes the most citations that discuss this research.

By examining the evolution of tourism-related subjects over the last five years, this study attempts to assess how digital transformation has affected the sector. We can determine the future influence of digital on the sustainable tourism business by examining these development tendencies. According to Popova et al. (2023), the tourism ecosystem has revolutionized from traditional to modern, marked by dynamic business processes, adjustments to tourism services, technological advancements, and a fiercely competitive environment. The tourism industry has undergone a major transformation due to digital technology. The study's background and significance should be briefly discussed in the Introduction, along with the study’s need and importance. It should provide a general background of the study, define a problem, emphasize the purpose/justification for its execution, and present a clear and concise study objective. Hypotheses are addressed here.

2. Materials and Methods

2.1. Digital transformation in the tourism industry

One definition of digital transformation is changes brought about by or influenced by factors that shift the development of concepts from traditional to modern (Winarsih, Indriastuti, and Fuad, 2021). Digital transformation is, in general, a radical and comprehensive change in the use of technology to improve the quality of the tourism industry. The impact of digitalization on the growth of the tourist sector is enormous because tourist attractions require technologically systemized governance, which makes it easier for tourists to interact with each other (Firman et al., 2022). This in social exchange theory is referred to...
as a process of interaction, which combines the needs of one with other needs so that actors and customers obtain satisfying rewards and exchanges, or can be a means of increasing the encouragement of local communities to exploit their resources (Pappa et al., 2022). The tourism industry is currently based on digital information, and tourism services are the main source of credibility for customers (Pranita, Kesa, and Marsdenia, 2021).

Tourism refers to the collection of services travelers require during their time away from their residences. It is widely recognized as an industry that heavily relies on acquiring and disseminating information. Selecting a location is closely tied to conducting a comprehensive and dynamic search for information. Clients cannot only obtain information but also compare different service alternatives to facilitate decision-making (Madzik et al., 2023). Trivisi et al. (2023) argue that advancements in digital technology create new opportunities and innovations that improve the quality of service offered to users (Troisi, Visvizi, and Grimaldi, 2023). Functional internet use is essential for implementing data-driven management models in design, production, marketing, sales, and presentation. In addition, the topics of blockchain, cybersecurity, the internet, security, and simulation are encompassed. Many of these definitions exemplify profound inspiration, ingenuity, and results when implemented. An analysis of the swift growth of the tourist sector can offer valuable insights for scholars and stakeholders in the industry. This knowledge can aid in recognizing the numerous social and environmental effects, presenting the potential for effective management of the tourism industry (Firman et al., 2022).

2.2. Digital transformation shapes tourism industry ecosystem

Digital tourism within the tourism ecosystem establishes an automated setting for travel-related endeavors and provides tourists with a diverse range of information (Luo et al., 2022). Through the utilization of digital tourism, customers are able to easily locate, personalize, and purchase travel products via online platforms. Additionally, it enables the globalization of the travel business by providing travel companies with efficient resources to develop and promote their products globally. Hence, digitization will modify business models and transform the digital ecosystem (Pranita, Kesa, and Marsdenia, 2021). Furthermore, digital tourism has the potential to shape customer preferences by providing information services on digital platforms (Onciou & Priescu, 2022).

Digital transformation is the study of the digitalization of the tourism ecosystem in assessing its impact on virtual social processes and determining adequate innovative and creative capabilities (Boiko et al., 2022). The process of major business change brought about by digital transformation in the tourism ecosystem introduces new technical and technological solutions that have the power to alter the way the tourism industry behaves in the market, involve consumers in the decision-making process, and reshape the customer journey's overall service experience (Troisi, Visvizi, & Grimaldi 2023). The tourism ecosystem's digital transformation has resulted in a data-driven focus on advancements and changes in digital technologies that can open up new service opportunities by suggesting new channels for enhancing the delivery of information, coming up with fresh approaches to making offers to clients, and developing innovative, digitally integrated business models (Zentner, Gračan, &d Barkidija, 2022).

2.3. Research methodology

This study examines publications about digital transformation in the tourism sector using a quantitative method and a literature study methodology. Finding, interpreting, and communicating the meaning or symbols of data that is expressed and retrieved from the data obtained are the top priorities of quantitative research.

Danandjaja (2014) defines literature study as a systematic scientific bibliographic research method that entails gathering resources pertinent to the research topic, gathering methods using library procedures, and compiling and presenting data. Thus, it can be said that quantitative research methods combined with literature study techniques are ways to gather data that rely on looking for textual information in documents like books, journals, papers, and notes. Falk and Zed (2004) state that four steps are involved in doing a literature study: gathering the required resources, creating a working bibliography, setting aside time, and reviewing and documenting research materials. Data collection was done by looking for sources and reconstructing from diverse sources, such as books, journals, and previous research. Reference materials from libraries are thoroughly and critically examined in order to bolster claims and concepts. Inductive data analysis is the type of data analysis employed in this study. The data pertaining to the tourist business is evaluated and examined using this inductive methodology. Using inductive analysis, researchers examine specific data to derive unbiased findings.

This research uses a qualitative method with a literature study approach to analyze articles related to digital transformation in the tourism industry sector. The data sources scientific articles written with the keywords (TITLE-ABS-KEY ( "impact" ) AND TITLE-ABS-KEY ( digital AND tourism ) AND PUBYEAR > 2018 AND PUBYEAR < 2024 AND PUBYEAR > 2018 AND PUBYEAR < 2024 AND ( LIMIT-TO ( DOCTYPE , "ar" ) OR LIMIT-TO ( DOCTYPE , "cp" ) OR LIMIT-TO ( DOCTYPE , "ch" ) OR LIMIT-TO ( DOCTYPE , "re" ) OR LIMIT-TO ( DOCTYPE , "le" ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) ) AND ( LIMIT-TO ( EXACTKEYWORD , "Digital Tourism" ) OR LIMIT-TO ( EXACTKEYWORD , "Tourism" ) OR LIMIT-TO ( EXACTKEYWORD , "Tourism Development" ) ) AND ( LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "ENVI") OR LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "ENER") OR LIMIT-TO (SUBJAREA, "ECON") OR LIMIT-TO (SUBJAREA, "COMP")
We analyzed the data by looking at the number of publications per year, country contribution, field of study, researcher collaboration, cited documents, related issues, affiliations, and cited papers. In addition, we used visualization tools, such as VOSviewer, to analyze this research. We used VOSviewer to analyze the collaboration between authors.

Article mining using the Scopus database was conducted in several stages. In the first stage, we categorized the search using two keywords, “Impact and Digital Tourism” identified by category title, abstract, or keywords, resulting in 206 documents. In the second stage, we limited the time by modifying the database search to five years from 2019 to 2023. This time limit was chosen to obtain the most recent references related to the issue of the impact of digital tourism. The research produced 206 papers as of this writing. We concentrated on the categories of documents examined in the third research stage, which resulted in 206 documents: articles, conference papers, book chapters, reviews, and lasters. Following is a review of the 206 papers’ titles and abstracts. Step four involves classifying the English-language documents so there is no language bias in the data processing process. This yields 206 documents that are ready for analysis (Figure 1).

3. Results

3.1 Documents by year

The number of research papers published each year is a crucial gauge of the field’s vast research and development trend (Luo et al., 2022). Thus, the yearly publication volume of this study on the effects of digital transformation on the tourist sector was examined using Scopus search results.

Figure 2 below shows that the number of scientific publications published has been rising this year, with 65 documents discussing the influence of digital transformation on the growth of the tourist sector in 2023. Additionally, in 2019, 13 documents looked into this subject despite the fact that the globe was going through a pandemic that had a big effect on the travel and tourist sector. Trivisi, Visvizi, and Grimaldi (2023) emphasize the significance of doing research to ascertain the function of digital technology development in the tourist sector, as it might yield novel suggestions for enhancing the sector’s quality. The quantity of publications during the previous five years is shown in Figure 2.

Based on Figure 3 above, it can be shown that out of 206 scientific publications published in Scopus-indexed journals. China is the nation with the most publications, having released thirty papers. Researchers found that, out of these nations, Asian nations are most interested in studying how the digital revolution is affecting the growth of the tourist sector, as evidenced by the publishing of 61 Scopus-indexed publications. This provides great potential for developing countries that have the best tourist attractions, especially in countries with high research interest. This makes research on the impact of digital tourism a primary reference in developing the tourism industry in their country (Zainal-Abidin, Scarles, and Lundberg, 2023).
Figure 2 Publications by Year. 
*Source: Scopus Database*

Figure 3 Publication Trends by State. 
*Source: Scopus Database*

Figure 4 Highest Subject Presentation. 
*Source: Scopus Database*
Based on Figure 4 above, it can be seen that the distribution of disciplines in research analyzing the impact of digital transformation on the development of the tourism industry is increasingly playing an important role in various fields of science. The most numerous scientific fields, Social Sciences (94), Computer Science (92), Business, Management, and Accounting (77), these three scientific components are very relevant to the tourism industry, mutually sustainable with each other between digital subjects and objects. The tourism industry is managed to facilitate services. Referring to the view of (Troisi, Visvizi, and Grimaldi 2023), advances in digital technology create new opportunities and breakthroughs to improve the quality of service to users.

Figure 5 above shows the highest number of publications on the impact of digital transformation on the development of the tourism industry. Furthermore, each author published two documents, but of the 206 articles, many authors were involved in the analysis of this research. Still, some writers' works in these journals are pertinent to the situation of the travel and tourism sector, such as Potential Digital Business Models in Tourism-Quantitative Study (Fleischer 2021). The essay examines the emergence of a digital tourist ecosystem and the many effects of digital transformation on the growth of the travel and tourism sector, focusing on digitalization users.

As a result, the use of new technology and the rapid development of digitalization may promote more effective interactions and have enormous potential for the growth of the tourist sector (Boiko et al., 2022).
Figure 6 shows the collaboration between authors in analyzing the issue of the impact of digital transformation on the development of the tourism industry. In this study, out of 206 documents, four authors collaborated. The authors’ collaboration resulted in the following two articles: Emergency Remote Work in Portugal: Evaluation, Impact, and Recommendations (Oliveira et al. 2020) and Project Workforce and future initiatives to overcome the challenges posed by digital transformation (Oliveira, LMesquita et al. 2020). Collaboration among authors can yield more reliable study knowledge and information while performing research, claims (Luo et al., 2022).

Figure 7 above is derived from 206 scientific articles published in Scopus-indexed journals from the top 10 universities analyzing the issue of the impact of digital tourism and collaborative affiliation articles and on average, dominated by Portugal. The author analyzes that cooperation between universities in conducting scientific research makes obtaining valid and relevant information easier according to the theme under study.

4. Discussion

The study's conclusions indicate that governments, institutions, and writers work closely to examine the tourist industry's growth tendencies. In this sense, researching subjects that advance yearly can lead to scientific innovation (Thees et al. 2021). Furthermore, this partnership may offer proof of cross-border cooperation in international organizations (Luo et al., 2022).

According to the findings presented in the Figure above, researchers and institutions collaborate due to the importance of the topic being examined. They conduct lengthy and complex research to facilitate further investigation. In addition, the study was conducted from other scientific perspectives. The partnership resulted in the publication of eight scientific papers, and an average of over eight countries participated in the worldwide collaboration. This rationale elucidates the various stakeholders or participants engaged in the collaborative alliance of this research investigation. When analyzing the impact of digital transformation on the travel and tourist industry, we typically observe certain patterns. Examining the rapid expansion of the tourism industry can provide valuable insights for future researchers and industry stakeholders, presenting benefits for the sector’s social and environmental impacts and multiple management possibilities (Firman et al., 2022).

5. Final considerations

Continuing research on the impact of digital transformation on the expansion of the tourism industry is crucial, as evidenced by this study’s findings and discussions. This provides insights into the current and future state of the tourism industry. This study aims to analyze the impact of digital transformation on the expansion of the tourism industry in the year 2022. Nevertheless, the typical author has generated two papers within the past five years, while Portugal and China have devoted significant focus to this subject matter. This study also revealed a strong correlation between scholars, universities or institutions, and countries doing collaborative research. Consequently, this topic is attracting significant attention globally and can be approached from various scientific perspectives. Given these improvements, this strategy is extremely beneficial for users who take advantage of the advantages of digital technology in today's globalized world.

The authors exclusively utilized a single data source. The journals obtained from other official websites were sourced from Scopus due to the constraints of our inquiry. We advise future scholars to investigate more complex patterns in the travel
and tourism industry. As managers in the industrial sector and digital consumers, we actively participate in the ongoing growth of the modern tourist business.

**Ethical Considerations**

Not Applicable.

**Conflict of Interest**

The authors declare no conflicts of interest.

**Funding**

This research did not receive any financial support.

**References**


