



THE EVOLUTION OF AGRITOURISM: A COMPREHENSIVE ANALYSIS OF INFLUENCING FACTOR

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Abstract. In recent years, agritourism has captured significant interest from researchers due to its potential for fostering sustainable development in rural areas and preserving local cultures. However, comprehensive analyses of the factors influencing the growth of this sector remain limited. This study employs Bibliometric and content analysis methods using the Scopus database, covering 427 articles published from 1991 to 2025 through the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guideline to provide a clearer and more comprehensive picture of agritourism development. The findings indicate a global increase in publications and international collaboration efforts, particularly among countries like the United States, Italy, China, Japan, and South Korea. Co-occurrence and thematic evolution analyses reveal a shift from traditional rural experiences to high-tech, sustainable tourism models, highlighting trends in digital marketing and personalized tourist experiences. The knowledge framework developed from this study integrates factors from both the demand side, such as tourists' perceptions of sustainability and their use of technology, and the supply side, which includes infrastructure development, human resources, resilience, and community engagement. This research significantly contributes to a deeper understanding of the dynamics shaping agritourism, offering valuable insights for policymakers, researchers, and practitioners seeking to advance sustainable agritourism development.

Keywords: agritourism, agritourism development, factor, sustainability, bibliometric, content analysis

1 Introduction

In the context of globalization, tourism is gradually shifting from traditional models to experiential models associated with nature and indigenous culture [1, 2]. Agritourism is considered one of the prominent trends, providing tourists with the opportunity to experience agricultural production activities directly, learn about the lifestyle and customs of local communities, and at the same time, contribute to increasing income for farmers and developing the rural economy [3, 4]. Agritourism, defined as educational and recreational activities provided on working farms or a blend of agriculture and tourism, is an innovative approach that offers tourists an immersive experience in a rural environment while bringing economic benefits to local communities [5, 6]. Building on the period research, agritourism is a means to supplement declining agricultural income and provide alternative employment opportunities, contributing to rural economic development, job creation, and livelihood enhancement [3, 4, 7]. Also,

agritourism creates an entrepreneurial environment for local farmers and small businesses, stimulating the local economy and increasing employment opportunities in rural areas [8–10]. Agritourism is increasingly recognized to support sustainable rural development, allowing tourists to engage in agricultural activities and experiences about local cultures. However, while agritourism is broad, specifically focuses on integrating technology, sustainable practices, and community participation as key drivers of agritourism's growth [1, 4, 6].

According to a report by Fortune Business Insights, the global agritourism market size was valued at USD 69.24 billion in 2019 and is projected to reach USD 117.37 billion by 2027, exhibiting a compound annual growth rate (CAGR) of 7.42% during the forecast period from 2020–2027. The trends of urbanization and industrialization contribute to environmental degradation, making agritourism an appealing option for urban residents seeking to escape to cleaner rural settings for relaxation and a break from urban pollution [11–12]. As noted in various studies, agritourism has increasingly garnered attention from scholars due to its potential to support sustainable rural development [1, 3, 4]. In many developing countries, agritourism is still in the early stages of development, encountering challenges such as limited financial resources, inadequate infrastructure, and outdated technologies [1, 13, 14]. Furthermore, this sector's lack of effective marketing strategies and management experience constrains its ability to generate economic value [15, 16]. In contrast, developed countries have successfully established agritourism as an innovative and sustainable model, allowing farmers to sustain their livelihoods and enhance their competitiveness due to better access to capital, infrastructure, and development experience [13, 17]. Nevertheless, the current tourism market is undergoing rapid shifts in demand, with tourists increasingly seeking authentic and unique experiences. This trend poses significant challenges for adapting agricultural tourism models to meet new consumer preferences, including integrating organic farming, technology, and green development practices [18, 19].

The increasing research on agritourism emphasizes the need for a comprehensive framework to identify key factors influencing its development. While environmental factors and infrastructure have been discussed, the model's adaptability to market changes and evolving tourist demands remains underexplored. Additionally, the relationships between agritourism and its influencing factors have not been thoroughly examined, hindering effective policy formulation for sustainable development. Previous studies have clarified some factors influencing agritourism development, but these factors are still quite scattered. Moreover, there is still a lack of a comprehensive knowledge framework and systematic analysis of factors from both perspectives: tourist demand related to behavior, concern for sustainability and supply from internal factors such as infrastructure, management policies, and human capacity have not been systematically analyzed. In addition, the rapid development of technology and sustainability requirements have not been fully integrated into existing models, and assessing the interaction

between these factors is still lacking in comprehensiveness and depth. This study uses a combined bibliometric and content analysis approach to address these gaps, offering insights into research trends and future directions. To the best of the author's knowledge, this is the first attempt to explore these aspects in the agritourism literature, but it also highlights many unexplored and emerging areas in the context of the research literature.

This contribution signifies a critical advancement in promoting future research and generates substantial value for the academic community and relevant stakeholders. First, we focus exclusively on agritourism and the factors influencing its development, aiming to describe this specific research area and its productivity. Concentrating on a particular sub-sector of tourism can lead to new lines of research and reinforce the theoretical foundations established by prior studies, ultimately contributing to the growth of agritourism in the current context. Second, we identify key scholars and significant works in the field that can serve as a foundation for future research. Third, we conduct bibliometric and content analysis, examining the thematic clusters that emerge from keyword co-occurrences and tracking the thematic evolution of topics over time to construct a theoretical model from demand (tourists) and supply (farmhouse families/tourism enterprises) perspectives. This comprehensive approach will elucidate the external factors influencing tourists' decisions, such as tourism resources, community participation, and technological advancements. Simultaneously, the analysis will cover the influences from the business side, including capital, human resources, management skills, and market access strategies. By integrating these diverse factors, our study aims to provide a holistic understanding of the interplay between demand and supply in the development of agritourism, thereby paving the way for new research avenues that can optimize these influences and foster sustainable growth tailored to specific regional contexts. Fourth, our study employs a theoretical framework to guide the content analysis, enabling a deeper exploration of the assumptions and methodologies utilized by researchers in agritourism. This dual approach of bibliometric and content analysis enhances our understanding of the field's trends, methods, and theories and lays a robust foundation for future research initiatives.

- Analyze research distribution and international collaboration through publication metrics and citation impact.
- Identify emerging trends in agritourism by analyzing keywords related to co-occurrences and thematic evolution.
- Building a knowledge framework linking demand and supply factors to agritourism development.

The following sections of the paper are organized as follows: The second section details the data collection and research methodology; the third section outlines the results and main findings; and the fourth and fifth sections provide discussion and conclusions, respectively.

2 Materials and method

2.1 Bibliometric Approach

Bibliometric methods are used to analyze, quantify, and describe scientific literature [20, 21], helping to identify important elements and connections between authors and new research topics [1, 21]. This method is applied in communication, health, education, and technology, providing a comprehensive view of industry developments and supporting decision-making [22]. Bibliometric methods have become essential to traditional assessment methods, significantly influencing academic, policy, and institutional strategies in the data age.

In this study, the bibliometric method was applied to quantitatively analyze the scientific literature on agritourism, thereby identifying statistical information such as the number of articles, key authors, and important keywords, as well as influential journals, and organizations. In addition, it constructs a map of collaboration networks between countries, evaluates the evolution of research topics, and identifies new research trends. Bibliometric analysis provides insights into the factors that promote research, improving the quality and volume of future research.

2.2 Data Collection

Secondary data was collected from the Scopus website. Scopus data was chosen as the secondary data source for this study because

- Scopus is an international journal indexing database used for the QS World Ranking [23].
- The database is known for its reliability and accuracy in indexing peer-reviewed literature, ensuring that the data used in the bibliometric analysis is reliable and up-to-date [24].
- Scopus data is compatible with many bibliometric analysis software such as VOSviewer, Citesapsce, and Binoshyny [25].

The data collection process of this study was carried out following strict guidelines according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) [26] procedure using queries entered into the search feature on the Scopus website, keyword strategies based on the objectives of the study, through multiple steps of testing the applied keyword string (TITLE-ABS-KEY: ("agrotourism" OR "agritourism" OR "farm tourism" OR "rural tourism") AND ("development" OR "growth" OR "expansion" OR "progress") AND ("factors" OR "influences" OR "determinants"))), including explicitly 4 steps:

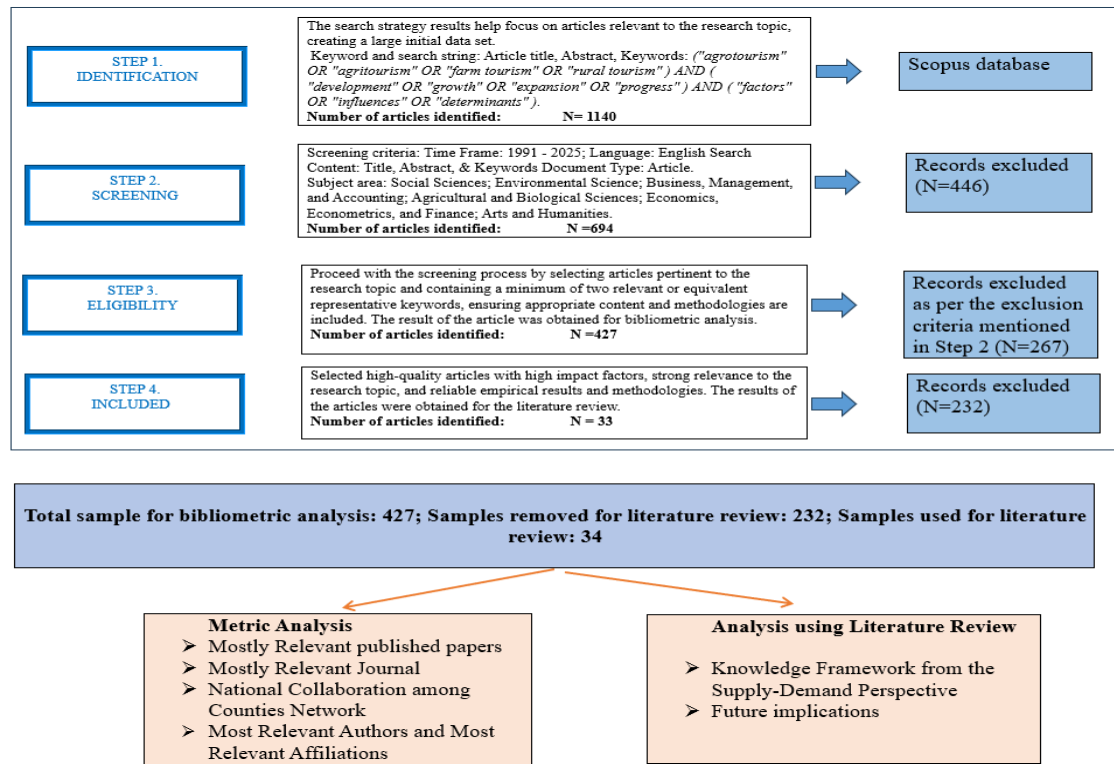


Figure 1. PRISMA flowchart of data collection and analysis

Step 1 (Identification): By focusing on "Article title, Abstracts, and Keywords" in Scopus, the search strategy is designed to specifically target articles pertinent to the research topic and optimize the discoverability and indexing of scientific articles [27, 28]. This method ensures a more detailed and precise research process. The result yielded 1,140 articles from Scopus, establishing a robust initial dataset. This dataset, generated in Step 1, will be further processed and analyzed in Step 2.

Step 2 (Screening): After obtaining an initial 1,140 articles, we applied predefined criteria to filter out inappropriate articles in this step (Figure 1). Only articles that reflect the latest research trends and developments in the field and have a higher citation frequency will be selected. Non-English articles will be excluded, as English is the dominant language of science, and most high-impact journals are published in English [29]. This helps ensure that research results are accessible to the global scientific community, increasing citation and scholarly influence. As a result, 694 relevant articles were retained, forming a more research-focused set for Step 3. These documents will be saved to a CSV format file. However, before exporting the documents to a CSV file, it is necessary to select additional criteria on the Scopus website, including citation information, bibliographic information, abstracts, and keywords.

Step 3 (Eligibility): With the results of 694 articles obtained from step 2, to create a standardized data set that can be reliably synthesized in the next step. The manual screening step was performed by the research team over the course of one week. During this period, we carefully reviewed the abstracts of the 694 articles obtained from Step 2. The research team continued the manual screening step, selecting articles that are relevant to the research content and have at least two related or equivalent representative keywords. The documents must have content, methods, and results relevant to the research topic. The results obtained from 427 documents were included in the bibliometric analysis. Furthermore, to select articles that focus on content for content analysis and citations in the analysis, we continued to screen for Step 4.

Step 4 (Included): With 427 documents from Step 3, the research team is assigned to screen and give opinions manually, and if there is disagreement, a third party will be asked to ensure the scientific nature and quality of the article. We selected high-quality articles with prominent impact factors, strong relevance to the research topic, and reliable empirical results and methods, resulting in 34 articles that could be analyzed and reviewed to support content analysis and related citations.

This study combines two software, VOSviewer and Biblioshiny from R Studio, to analyze the data. VOSviewer excels in generating co-occurrence networks of terms and providing visualization of research topics [30]. Meanwhile, Biblioshiny excels in mapping structures and concepts, helping to clarify the progression and development of research topics [30, 31]. This combination aims to take advantage of both software, providing a comprehensive and detailed picture of the development of agritourism.

3 Result and findings of research

3.1 Metrics Analysis

Basic information on bibliometric analysis

In bibliometric analysis, the study of publishing trends focuses on examining the growth, distribution, and influence of scholarly publications across different disciplines and platforms. This approach often uses bibliometric statistical tools to assess research progress, authors, national collaborations, and citation counts [32].

In evaluating the distribution of articles by year, it was observed that the first article in the dataset was published in 1991 ($N = 1$), accounting for 0.14% of the total number of articles available. Articles have increased since 2015, especially from 2020 to 2025. The highest number of articles was recorded in 2024 ($N = 123$), accounting for 17.72% of the total articles. In the bibliometric analysis, 694 articles were identified by article type. The annual growth rate was 10.06%, with an average of 6.06 articles published yearly. Each article had an average of 21.66

citations. A total of 35,699 references were used for all articles. The authors used 3,750 keywords. A total of 1,947 authors contributed to the articles. Only 83 articles had a single author. Each article had an average of 3.41 co-authors, with an international co-authorship rate of 23.49% (Table 1).

Mostly published papers in journals

Figure 2 shows a journal with the most published articles (top 10) on Agritourism Development. The image shows the number of articles published on this topic in each journal, indicated by the color bar. The darker the color, the higher the number and relevance of the research. Sustainability (Switzerland) is the top journal with the most significant number of articles. Journals with specific titles related to agritourism and rural tourism also have more published articles than journals with more general titles related to broader topics.

Table 1. Basic information on bibliometric analysis

Description	Results	Description	Results
MAIN INFORMATION ABOUT DATA		AUTHORS COLLABORATION	
Timespan	1991:2025	Single-authored docs	83
Annual Growth Rate %	10.06	Co-authors per doc	3.41
Document Average Age	6.06	International co-authorships %	23.49
Average citations per doc	21.66	DOCUMENT TYPES	
References	35699	Article	694
DOCUMENT CONTENTS		AUTHORS	
Keywords Plus (ID)	1210	Authors	1947
Author's Keywords (DE)	2073	Authors of single-authored docs	80

Source: Data processed by Biblioshiny

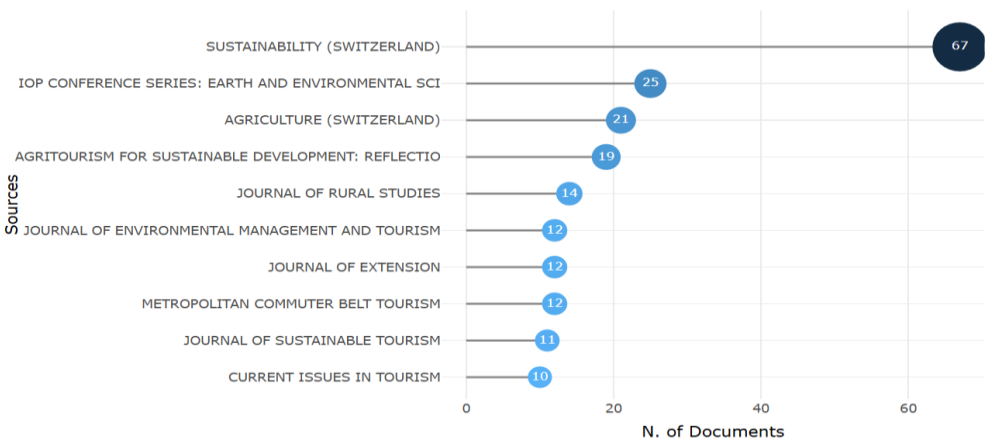


Figure 2. Mostly published papers in journals in Agritourism Development

Table 2 presents the most influential research papers on agritourism based on citation count (TC), average citations per year (TC per Year), and normalized total citations (Normalized TC). Studies published in prestigious journals such as *Tourism Management*, *Journal of Travel Research*, and *Journal of Sustainable Tourism* indicate that the agritourism field primarily focuses on tourism management, sustainable development, and rural community engagement. Leading papers regarding citation counts, such as Tew C (2012) and Phillip S (2010), with TC scores of 311 and 307, respectively, reflect pioneering contributions and a broad impact in the field.

The collaboration relationships between countries, topics, authors, and affiliations

VOSviewer network map showing research linkages between leading countries in agritourism, with a threshold set at 10, meaning that only countries participating in at least 10 joint research articles will be included in the map (Figure 3). This threshold helps highlight countries with significant research collaboration in the research field you are analyzing while ignoring countries with fewer connections [30]. The results show that countries such as the United States, Italy, China, Japan, and South Korea have strong connections, especially from 2020 to 2025,

Table 2. Most Influential Papers and Citations in Agritourism Research

Paper	DOI	Total Citations	TC per Year	Normalized TC
TEW C, 2012, <i>Tourism Management</i>	10.1016/j.tourman.2011.02.005	311	22.21	8.92
PHILLIP S, 2010, <i>Tourism Management</i>	10.1016/j.tourman.2009.08.001	307	19.19	8.61
MCGEHEE NG, 2004, <i>Journal of Travel Research</i>	10.1177/0047287504268245	285	12.95	1.38
NICKERSON NP, 2001, <i>Journal of Travel Research</i>	10.1177/004728750104000104	212	8.48	1.92
GIL ARROYO C, 2013, <i>Tourism Management</i>	10.1016/j.tourman.2012.12.007	205	15.77	8.34
BARBIERI C, 2008, <i>SOCIOL RURALIS</i>	10.1111/j.1467-9523.2008.00450.x	205	11.39	5.36
BRANDTH B, 2011, <i>Journal of Rural Studies</i>	10.1016/j.jrurstud.2010.09.002	204	13.6	7.67
BARBIERI C, 2013, <i>Journal of Sustainable Tourism</i>	10.1080/09669582.2012.685174	175	13.46	7.12
OLLENBURG C, 2007, <i>Journal of Travel Research</i>	10.1177/0047287507299574	175	9.21	2.93
CHOO H, 2014, <i>Tourism Management</i>	10.1016/j.tourman.2013.07.011	156	13	5.21

Source: Data processed by Biblioshiny, March 2025

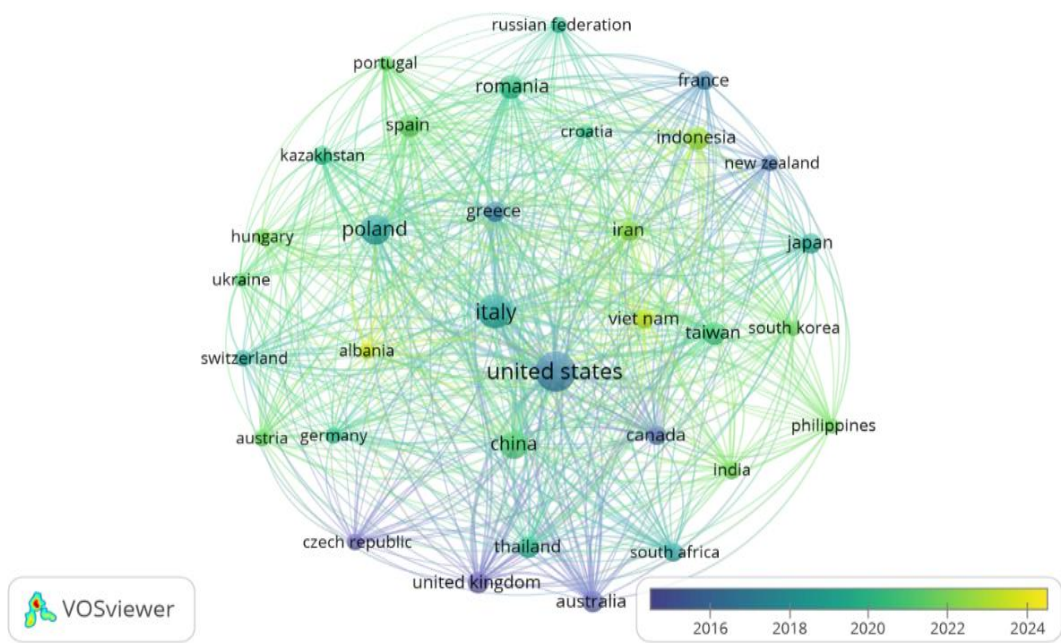


Figure 3. Influence map of national cooperation

Source: Data processed by VOSviewer

significantly influencing research. European countries like France, Germany, and the United Kingdom also have significant connections. Countries outside this region, such as India, Australia, and South Africa, participate in global research on agritourism, reflecting strong international collaboration in the field.

Figure 4 shows the relationship between research topics, authors, and affiliations in agritourism. Topics such as agritourism, sustainability, local, and social are strongly associated with authors Barbieri C and Knollenberg W, reflecting a focus on agritourism and sustainable development. Authors such as Iancu T, Călin A, and Jakes S are associated with topics such as rural, agriculture, and tourism, indicating a focus on the role of rural and agritourism development.

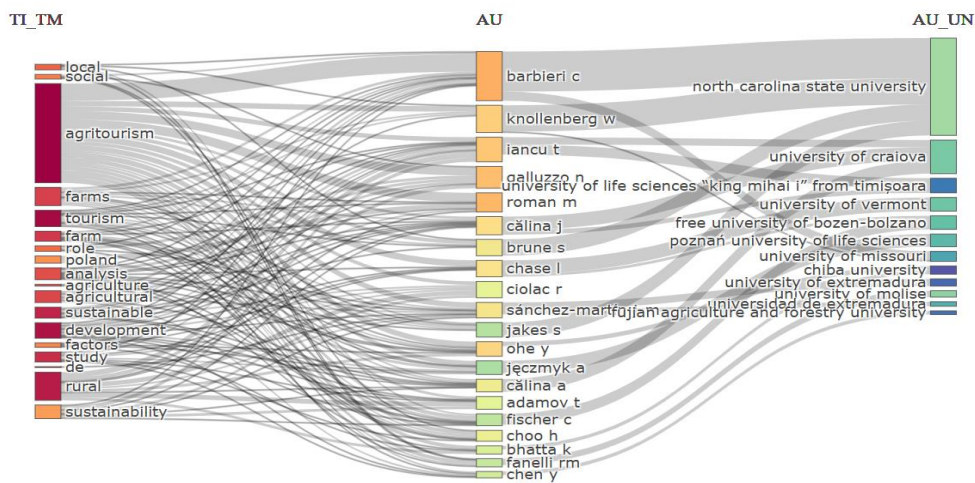


Figure 4. Influence map of research topics and Authors and Affiliations

Source: Data processed by Biblioshiny

Research institutions such as North Carolina State University and the University of Craiova contribute strongly to sustainability and agritourism research. Poznań University of Life Sciences and the University of Vermont focus on social factors and rural tourism.

Table 3. Most Relevant Authors and Most Relevant Affiliations

Affiliation	Articles	Authors	Articles	Articles Fractionalized
NORTH CAROLINA STATE UNIVERSITY	73	BARBIERI C	24	9.52
UNIVERSITY OF PALERMO	21	ROMAN M	11	4.48
UNIVERSITY OF MOLISE	19	GALLUZZO N	10	10.00
UNIVERSITY OF SASSARI	17	IANCU T	10	1.71
UNIVERSITY OF CRAIOVA	15	KNOLLENBERG W	10	2.95
UNIVERSITY OF VERMONT	15	OHE Y	8	4.25
FREE UNIVERSITY OF BOZEN-BOLZANO	14	CHASE L	7	1.35
POZNAŃ UNIVERSITY OF LIFE SCIENCES	14	CĂLINA J	7	2.12
UNIVERSIDAD DE EXTREMADURA	14	SÁNCHEZ-MARTÍN J-M	7	3.00
UNIVERSITY OF MISSOURI	14	BRUNE S	6	1.70

Source: Data processed by Biblioshiny

Table 3 shows the authors and important research institutions in agritourism based on the number of articles and the distribution of articles. North Carolina State University is in the lead with 73 articles, followed by the University of Palermo (21 articles) and the University of Molise (19 articles). Other institutions, such as the University of SASSARI, the University of Vermont, and the Free University of Bozen-Bolzano, also contributed significantly with 14 to 17 articles. Regarding authors, Barbieri C has the highest number of articles, with 24, followed by Roman M (11 articles) and Galluzzo N (10 articles). Other authors, such as Iancu T, Knollenberg W, and Ohe Y, also had a significant influence, with the number of articles ranging from 8 to 10. The number of fractionalized articles shows the level of contribution of the authors, with Galluzzo N (10.00), Barbieri C (9.52), and Sánchez-Martín J-M (3.00) having a strong influence in the research related to agritourism. These results reflect the significant contribution of the authors and institutions in the development of research on agritourism and the sustainable development of rural communities.

3.2 Content analysis

Keyword co-occurrence network analysis

Figure 5, conducted with VOSviewer, identifies 86 keywords based on a frequency threshold of 7, meaning that only keywords that appeared in at least seven documents were included in the analysis. The keyword "agritourism" is prominently positioned in the center and is connected to related terms like "rural tourism," "agriculture," and "regional development." Additional clusters of keywords focus on aspects of rural tourism, including "satisfaction," "tourist behavior," and "marketing." Other significant factors such as "economic efficiency," "climate change," "food security," and "innovation" highlight the increasing interest in sustainable development within agritourism. The color of the nodes is used to indicate the time of keyword emergence in the map. Specifically, the dark blue nodes represent keywords that emerged early, before 2016, while the green and light green nodes indicate keywords that became prominent between 2016 and 2020. The yellow nodes highlight keywords that emerged from 2021 to 2025. This color scheme helps easily identify prominent research trends over different periods.

Tourists and experiences (Cluster 1): Factors such as tourist behavior, satisfaction, motivation, and recreational activities form the key factors determining agritourism's quality of experience and attractiveness. Keywords prominent in this cluster, such as "tourist behavior," "tourist satisfaction," and "recreational activity," indicate that the attractiveness of an agritourism destination is closely linked to tourists' perceptions and expectations.

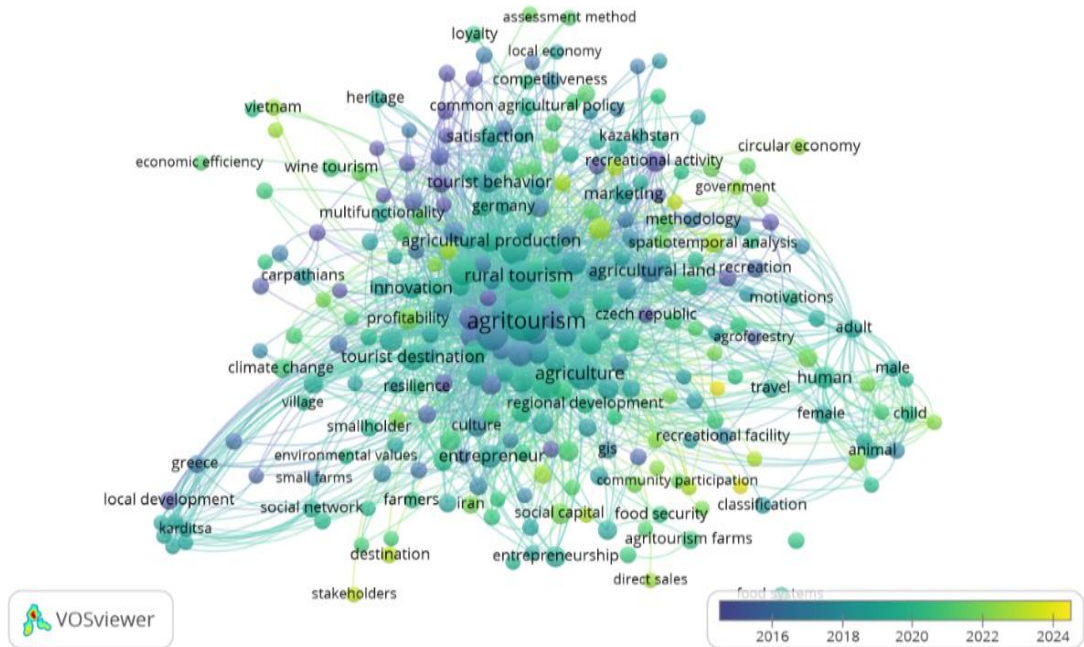


Figure 5. Keyword co-occurrence knowledge map

Source: Data processed by VOSviewer

Agricultural production and business (Cluster 2): Factors related to agricultural production, including "small farms," "agritourism farms," and "entrepreneur," show the close relationship between the sustainable agricultural foundation and agritourism development. These factors support economic development and ensure sustainability in the tourism model.

Economic development (Cluster 3): Keywords such as "economic efficiency," "economic growth," and "local economy" show that agritourism can promote local economic development and a circular economy model and create a shift in rural economic policies.

Governance (Cluster 4): The role of policy and governance is shown by keywords such as "tourism policy," "local development," and "agricultural policy." Government support policy is an essential factor for effective agritourism development.

Community and culture (Cluster 5): Representative keywords such as "community participation," "social network," and "cultural" indicate that community participation and preservation of cultural values are indispensable for the sustainability of agritourism.

Technology and innovation (Cluster 6): Keywords such as "innovation," "technology," "smart technology, and virtual reality reflect the increasingly important role of technology in the development of agritourism, from management to the promotion of rural activities.

Table 4. Analysis of Clusters and Associated Keywords

No. of Cluster	Names of clusters	Displayed Keywords	Representative Keywords
Cluster 1	Tourists and experiences	18	tourist behaviour, satisfaction, tourism destination, motivations, recreational activity, travel, recreational facility, virtual reality
Cluster 2	Agricultural production and business	16	agriculture, small farms, farmers, agricultural production, smallholder, agriculture, agricultural land, entrepreneur, agritourism farm
Cluster 3	Economic development	15	economic efficiency, economic growth, local economy, circular economy
Cluster 4	Governance	12	tourism policy, government, local development, agricultural policy
Cluster 5	Community and Culture	14	community participation, social capital, social network, culture, social network, stakeholders, co-operation, heretical cultural
Cluster 6	Technology and innovation	11	innovation, innovation, smart technology, spatiotemporal analysis, smart agritourism, digital marketing, Big data, virtual reality
Cluster 7	Sustainability and resilience	7	sustainability, food security, climate change, agroforestry, resilience

Source: Author’s work

Sustainability and resilience (Cluster 7): Environmental factors such as "sustainability," "climate change," "agroforestry", and “resilience” show that the combination of environmental protection factors and resilience factors due to climate change and global crisis is a key factor in ensuring the long-term development of agritourism.

The cluster analysis results indicate that agritourism development factors include tourist behavior, sustainable agricultural factors, supporting policies, community participation, innovative technology, and resilience and sustainable development factors. These factors are important in building and maintaining sustainable agritourism development, promoting local economic development, and protecting natural resources.

Temporal keyword analysis: Thematic evolution

Figure 6 illustrates the evolution of agritourism themes over three time slices: 1991 to 2010, 2011 to 2019, and 2020 to 2025. The analysis is based on four quadrants with two main axes: Development (density) and Relevance (centrality).

Niche Themes: The themes in this quadrant have low development but high relevance. These emerging themes have not yet been popularized but have the potential to have a lasting

impact in the future. During 1991-2010, themes related to rural areas, agriculture, and tourism emerged, but they were still in the niche stage, with high relevance, although they had not yet been strongly developed. From 2011 to 2019, elements such as historical sites and ethnic communities began to emerge and become niche themes, while tourism and agriculture themes moved to more central positions, reflecting their growing development and interest. From 2020 to 2025, elements such as historical sites and ethnic communities continue to maintain their niche theme status, along with the emergence of digital collaboration. However, they are still considered niche themes compared to others, which are developing more strongly in the current context.

Motor Themes: Motor themes are themes with high levels of development and relevance, acting as key factors driving the development of agritourism in each period. From 1991 to 2010, the driving themes included climate change and supply chains. Although these themes grew strongly, they were not strong enough to significantly change the agritourism industry. From 2011 to 2019, agritourism, sustainability, local development, and social media became important driving themes. These themes grew strongly and played a key role in developing agritourism. From 2020 to 2025, themes such as digital marketing, personalized experiences, and virtual reality emerged strongly, reflecting the transformation of the agritourism industry in the context of rapid technological development. During this period, agritourism and sustainability continued to play an important role and were the driving force behind the development of the industry.

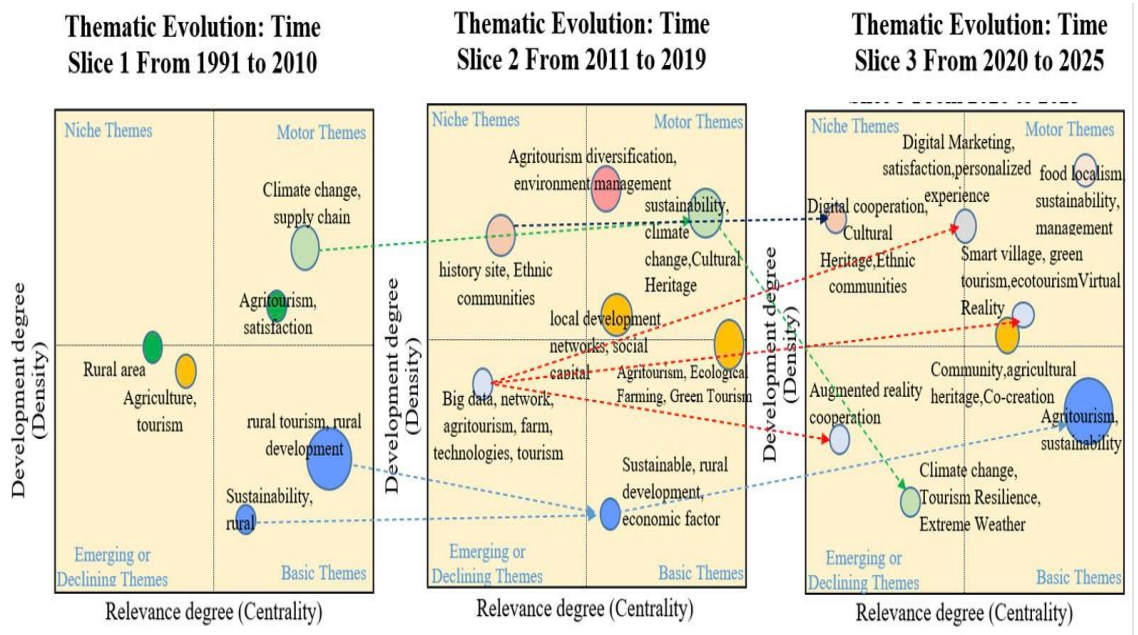


Figure 6. Thematic evolution knowledge map (1991-2025)

Source: Author's work

Basic Themes: These themes are central but less developed. They are the foundation for the field and often act as a bridge between different research areas. From 1991 to 2010, themes such as agriculture, rural tourism, and rural development emerged as basic themes, serving as the foundation for the development of the industry. However, these themes have not been focused on in significant development strategies. From 2011 to 2019, themes such as sustainable rural development and economic factors became important basic themes, supporting and promoting agritourism's comprehensive development. These factors have contributed to a solid foundation for the industry's progress during this period. From 2020 to 2025, community agricultural heritage and co-creation have become important underlying themes in agritourism development. Although these themes are growing strongly, they are not yet considered the main driving factors in the industry's overall development.

Emerging or Declining Themes: These areas are less central and less developed. They may represent new research areas that are gaining attention or old areas that are losing relevance. From 1991 to 2010, themes such as direct marketing and economic benefit began to decline as they were gradually replaced by new research elements, reflecting the industry's changing needs and research directions. From 2011 to 2019, topics such as big data, networks, and agritourism technologies began to emerge in this area, reflecting the shift of research towards technological factors and emphasizing the role of big data and technology in agritourism development. From 2020 to 2025, topics such as virtual reality, eco-tourism, and digital transformation have increased significantly, reflecting the strong development of technology and sustainable models in the agritourism industry. These topics can potentially become the center of research and application in the context of rapid technological change.

The evolution of topics in agritourism over the three periods demonstrates the strong development of topics from niche to dynamic. The agritourism industry is making great strides, from developing elements such as agritourism and sustainable development to the substantial transformation with the emergence of digital technology and personalized experience. However, Climate Change and Extreme Weather still need to be addressed in sustainable tourism development.

4 Discussion

4.1 Discussion metrics analysis

The findings of this study show that the increasing trend of articles related to agritourism and its development factors, especially from 2020 onwards, highlights the growing interest and expansion of this field in the academic community. These results are in line with previous research by Ndhlovu and Dube [1] and Baby and Kim [4]. This trend stems from the potential to support rural development and provide sustainable economic opportunities and cultural

preservation, which is increasingly being emphasized. The academic community has responded to this interest with a significant increase in research output, especially from 2020 to the present [33, 34]. As revealed by the data, the 10.06% annual growth rate observed in this study aligns with the global trend, where agritourism is increasingly seen as an alternative to traditional agricultural activities. Furthermore, *Tourism Management*, *Journal of Travel Research*, and *Journal of Sustainable Tourism* are considered influential journals with many highly cited articles, especially those by Tew et al. (2012) and Phillip (2010), with 311 and 307 citations, respectively. In addition, other prominent authors such as McGehee NG (2004) with 285 citations and an average of 12.95 citations per year, Nickerson NP (2001) with 212 citations, and Gil Arroyo C (2013) with 205 citations have all had a significant impact on the study of the relationship in agritourism development.

These articles have had a profound influence and made important contributions to the development of agritourism. Consistent with previous studies [1, 35], this study finds that the international collaboration map shows that countries such as the United States, Italy, China, and South Korea play an important role in promoting joint research on agritourism development. This shows that global collaboration is expanding and developing. In line with earlier studies, this paper confirms that developed countries have the potential and pioneering role in the research field. Other indicators, such as the average number of citations per article (21.66) and the rate of international collaboration (23.49%), also indicate a strong growth in agritourism research and increased collaboration between authors and research institutions globally. This collaboration indicates a growing recognition of agritourism as a cross-border development opportunity, consistent with the findings of E. Ndhlovu and K. Dube [1], who discussed the growth of agritourism as a global phenomenon. The participation of these countries in joint research reflects a shared interest in the role of agritourism in sustainable development and rural revitalization.

The cluster analysis results of this study highlight the effect of Indrayanti and Mulyo [36], Roman and Golnik [37], suggesting that the elements of tourist experience and satisfaction have been emphasized in promoting the development of agritourism. However, our study expands the understanding of tourist behavior, emphasizing that they are now looking for simple rural experiences and want to participate in sustainable and environmentally friendly activities [38]. This is consistent with the study about tourists being increasingly interested in cultural engagement, natural resource protection, and real experiences rather than just focusing on material factors [39, 40]. Thus, our study clarifies the shift in tourist behavior from traditional experiences to activities with long-term value and a positive impact on the community and the environment. Regarding developing sustainable agricultural practices, previous studies have shown that smallholder and organic production models play an important role in agritourism [41–43]. Our study agrees with the view that organic agricultural models and ecological farms

not only meet the needs of tourists but also contribute to the protection of natural resources and the environment. In addition, the application of circular economic models and resource conservation is essential to maintain agritourism's sustainable development and reflects the shift from traditional economic models to more sustainable models [44]. In economics, our study extends previous views on creating economic value for rural communities from agritourism. Previous studies have shown that agritourism can promote economic development in rural areas. However, this study shows that sustainable development cannot be separated from protecting natural resources and applying circular economic models, thereby creating more sustainable and long-term economic development. This reflects a change in the mindset of agritourism development, from exploiting short-term economic benefits to building a green and sustainable economic model.

Finally, technology and innovation in agritourism product management and development are important factors in enhancing competitiveness in the development of tourism [45, 46]. The study has shown that technology can play an important role in optimizing management and marketing in business [47, 48]. Our study adds that innovative agriculture technology and digital technology can help create more innovative and efficient tourism products, thereby improving tourist satisfaction, which is one of the factors in line with the global technology trend. These findings underscore the importance of opening a new direction for agricultural tourism, where technology helps economic growth and promotes resource conservation and environmental protection [49–51]. This study marks a step forward in supplementing and expanding previous perceptions of factors affecting agritourism development. Economic, environmental, technological, and community factors have independent impacts and close interactions, contributing to the formation of a sustainable agricultural tourism model and the ability to maintain long-term development.

The results of the evolution of research topics on agritourism development over three periods (1991-2025) reflect the shift from economic, social, and tourist satisfaction factors to sustainability and technology application factors. The results from this study reinforce the views of previous studies [6, 22, 47] while expanding new trends in integrating technology and sustainable development in agritourism. This shift not only helps clarify the factors affecting agritourism development but also points to the need to develop comprehensive strategies and policies to optimize these factors, thereby ensuring sustainable development for the agritourism industry in the future. There has been a noticeable shift in topics such as climate change, tourism resilience, and extreme weather, which are important factors in the industry.

4.2 Building Knowledge of the Factors Influencing Agritourism Development

In this study, we propose a knowledge framework of the factors influencing agritourism development, analyzed from two main perspectives: demand (tourists) and supply (tourism enterprises). This model is built on analyzing key clusters and thematic evolution from previous studies. Through the analysis, we found that there has been a significant change in the needs of tourists, especially since 2011, when sustainability, technology, and community participation have become central factors in the development of agritourism (Figure 7).

Changes in tourist demand and the shift from nature to sustainability

The results of the analysis of clusters and thematic evolution have highlighted a clear shift in the needs of tourists during the period 1991-2025. From 1991 to 2010, rural tourism was in its infancy, and visitors mainly looked for essential experiences related to nature, agricultural products, and rural landscapes, reflecting the need for visitors to seek relaxation and harmony with nature [36, 49]. These findings agree with previous studies that natural resources, such as rural landscapes and farms, were the main factors attracting visitors during this period [5, 38, 52]. A

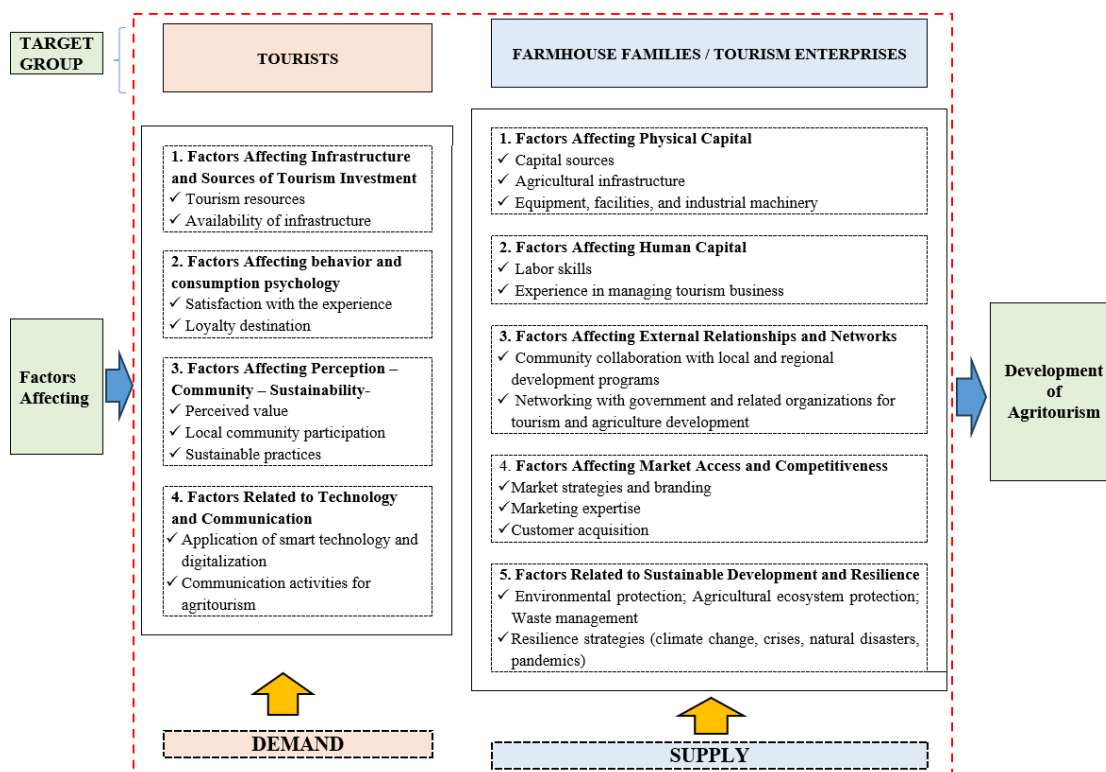


Figure 7. Knowledge Framework of Factors Influencing Agritourism Development

Source: Author's work

transition from 2011 to 2019 has seen a change in visitor needs, as reflected in Cluster 5 Community and Culture. Studies during this period have linked experiences with significant social and environmental activities, such as protecting cultural heritage, producing sustainable agricultural products, and supporting local communities. This aligns with previous findings [36] that community participation in agritourism helps preserve cultural values, enhances social cohesion, and improves livelihoods. This is also clearly demonstrated by the evolution of research topics, in which factors such as sustainability, community, and environmental protection have become central factors in agritourism development, especially from 2011 to 2019. The increase in research on sustainability and community in agritourism development reflects changes in tourist demand and general tourism behavior, as tourists now aim for long-term values and positively impact society and the environment. It is recommended for building a development community based on co-creation, maintaining and protecting cultural heritage towards sustainable development.

Technology and communication in agritourism: Developments from 2011-2019 to 2020-2024

Over the past two decades, the world has witnessed the explosion of technology and communication, which has greatly influenced the tourism experience. Technology has become indispensable in agritourism, especially in 2011-2019 and 2020-2025. The results from Cluster 6: Technology and innovation indicate that in 2020-2024, the demand for personalized services through technology has increased sharply. The findings corroborate earlier studies about how smart technology is increasingly important in enhancing the agritourism experience, bringing convenience, personalization, and optimization of services for tourists [4, 53, 54]. In addition to technology, communication is important in raising tourists' awareness of agritourism and building strong connections between communities and tourists [48]. Effective communication strategies help promote agritourism destinations and create an image of sustainable and environmentally friendly activities. [18, 48] has shown that digital communication platforms, especially social networks, and online promotion tools, help agritourism businesses reach a wide range of potential customers and increase interaction with the community. Communication also changes tourist behavior, encouraging them to participate in socially responsible activities and protecting local cultural heritage. For businesses with an innovative communication strategy, businesses can create more meaningful and engaging tourism experiences while increasing customer loyalty and satisfaction [36, 6].

Business factors: Infrastructure and human resource development

Another important factor in developing agritourism is investment in infrastructure and human resources. Analysis of clusters and thematic evolution shows that from 2000 to 2010, agritourism businesses mainly focused on developing essential tourism products such as farm visits and

enjoying agricultural products. However, from 2011 to 2019, businesses have shifted, developing sustainable tourism models such as green and community tourism [19]. Analysis of Cluster 2: Agricultural business and production shows that the role of the human factor is very important for businesses. Previous studies [49, 55] have confirmed the role of leaders in maintaining service quality and sustainable development for tourism farms and businesses. These findings agree with the view that there is a close relationship between human resources and the sustainable development of agritourism. It is essential to develop strategies for training tourism human resources and enhancing management capacity to help improve service quality and sustainable development.

Behavior and consumption psychology

The analytical results are further reinforced by studies on consumer behavior in agritourism, showing a strong link between satisfaction and loyalty in building sustainable development strategies for destinations [36, 41]. When tourists are satisfied and attached to a destination, they not only return but also contribute to the development of the rural economy through spending on agricultural products and sustainable tourism services. It is essential to acknowledge that consumer behavior and psychology in agritourism are not only the result of emotional factors and feelings of satisfaction but are also important strategic factors that help maintain and develop this tourism industry sustainably. From a wider perspective, it can be seen that when these factors are effectively identified and exploited, they will greatly contribute to building a solid foundation for the long-term development of agritourism.

Sustainability and resilience in agritourism: Linking to long-term strategies

Analysis of clusters and thematic evolution also shows that sustainability and resilience are factors of interest from 2019 to 2025. Sustainable development is an issue the world is pursuing because it ensures the long-term development of agritourism. Previous studies have shown that businesses must develop sustainable strategies to meet tourist needs, protect natural resources, and preserve local cultural values [1, 10, 35, 49]. This was confirmed in the cluster analysis, where sustainability factors such as organic agriculture, energy efficiency, and adequate water resource management emerged as central factors in sustainable agritourism development from 2011 to the present. One significant aspect that has emerged from this research is the green tourism and sustainable perspective, emphasizing the growing demand for eco-friendly, ecotourism and sustainable practices in agritourism, becoming driving topics in 2020-2025. This is consistent with recent studies on the shift in tourist behavior towards more environmentally responsible travel choices and the increasing importance of sustainability in tourism development [19, 39, 49]. In addition, the resilience of agritourism businesses in crisis situations, such as natural disasters or pandemics, is a factor influencing sustainable development [9]. According to research by Brune et al. [56], resilience is considered to demonstrate the long-term development of a business. It is

important to consider that businesses must develop strategies to adapt to these changes, thereby maintaining long-term development and protecting the environment.

This reflects a global trend where environmental protection and resilience are essential for agritourism businesses. Building on previous discussions, this section develops a theoretical model combining supply and demand perspectives. Demand-side factors, including perceived value, community involvement, sustainability, and technology, influence tourist choices and experiences. Supply factors like physical and human resources, social networks, market access, and resilience strategies are key to meeting demand. The model clarifies the relationships between these factors, providing a foundation for optimizing sustainable agritourism strategies in specific regions.

5 Conclusion, implication and prospects

5.1 Conclusion and implications

Overall, this research provides a thorough understanding of important insights into the factors influencing the development of agritourism explored through bibliometrics and content analysis. Our research has revealed that important trends have been identified, such as the focus on sustainability, technological innovation, community engagement, and economic development, which are the key factors driving agritourism development. This study underscores the importance of resilience and sustainability in agritourism development. In addition, the study also emphasizes the role of technology and innovation in promoting rural development, preserving culture, and enhancing the value of experiences. Climate change and rapid urbanization have gradually changed the global landscape; thus, many tourists seek authentic experiences associated with rural culture and agriculture. This shift reflects changing tourist demands, shifting towards experiences aligned with values such as sustainability, participation in local culture, and environmental responsibility. Agritourism businesses must focus attention on human resource development and modern marketing strategies.

From a policy perspective, the study highlights the need for a comprehensive and flexible legal framework to support agritourism development. The role of governance systems, effective tourism policies, and investment in infrastructure are important in overcoming financial constraints, outdated technology, and the need to develop stronger marketing strategies, especially in developing countries. Furthermore, agritourism businesses need to focus on human resource development, promote innovation, and apply digital transformation to meet the increasing expectations of modern tourists. This study opens up many future research directions, especially on the application of technology, sustainable economic development and cultural preservation in agritourism, new technology in management and marketing, and the maintenance and protection of traditional cultural values of local communities. This study

underscores the importance of coping and recovery strategies with risks, natural disasters, epidemics, and global climate change. This study's implications are important for academic researchers and policymakers regarding the factors affecting agritourism development and suggest further research directions.

5.2 Limitations and future research

This study had several limitations. Firstly, the study only used data from Scopus, thus possibly ignoring valuable information from other databases. Secondly, the study focused mainly on journal articles, which may lead to omitting other important studies such as reviews, book chapters, and conference proceedings. Third, the study predominantly considered articles published in English, which may have omitted valuable research published in other languages. To overcome these limitations, future research should expand the data scope by including diverse sources and languages, complemented by a systematic review using a theoretical framework. This approach will provide deeper insights into the underlying mechanisms, leading to a more comprehensive understanding and refined conclusion.

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