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Review

Digital Platforms to Promote Sustainable and Authentic Tourism in Low-Density Territories of Southern Europe: Challenges and Opportunities

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Abstract

Tourism in low-density regions has gained increasing attention as travelers seek more sustainable and authentic tourism experiences. However, despite their cultural and environmental richness, these territories often face structural challenges such as limited visibility, fragmented promotion, and inadequate digital infrastructure. This study explores how digital platforms can support sustainable tourism development in such contexts, combining a systematic literature review with an exploratory analysis of commercial applications. The analysis focuses on academic initiatives that propose IT-based solutions for promoting tourism in sparsely populated areas of Southern Europe, while the platform analysis assesses functionalities and limitations of widely used applications. The findings reveal that most academic solutions remain at the prototype stage or have yet to be tested in real-world contexts, with limited evidence of large-scale implementation or practical validation. Accessibility for people with functional limitations is also largely neglected in both academic and commercial platforms, despite its importance for inclusive tourism. In addition, the digital landscape remains fragmented, with few solutions effectively designed to bring together diverse local stakeholders or to meaningfully enable user-generated content. The study concludes by identifying key challenges, such as fragmentation, lack of accessibility features, and limited deployment, and outlines future directions for developing scalable, inclusive, and culturally sensitive platforms tailored to the realities of low-density territories.

Keywords: digital platforms; low-density regions; tourism promotion; accessibility

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1. Introduction

Over the last decade, tourism has experienced a notable shift, marked by a growing demand for experiences that prioritize cultural engagement, interaction with local communities, and a stronger connection to nature, in the search for healthier lifestyles in smaller, less crowded environments [1,2]. This trend has brought renewed attention to rural and low-density areas, which often hold underappreciated cultural and ecological assets. These territories, previously seen as peripheral, are increasingly recognized as valuable spaces by visitors who seek more sustainable, inclusive, and authentic experiences.

Yet the potential of these regions is frequently constrained by the operational logic of dominant booking platforms such as Airbnb and Booking.com. These platforms tend to favor listings that conform to uniform expectations, from user ratings to service standards, thereby sidelining small, locally rooted businesses that offer more genuine but less mass market-optimized experiences [2]. The result is a structural invisibility that limits the reach and viability of many small operators, while also reducing the diversity and distinctiveness of the tourism offer.

Low-density territories are increasingly relevant to contemporary tourism research not only because of their growing appeal to visitors seeking authenticity and sustainability, but also due to their potential alignment with the United Nations' 2030 Agenda for Sustainable Development, particularly Goals 8 (decent work and economic growth), 11 (sustainable cities and communities), and 15 (life on land) [1,2]. These regions often combine ecological sensitivity with socio-economic vulnerability, which makes them especially susceptible to the tensions between tourism-driven economic growth and long-term environmental and cultural sustainability [3]. Studying tourism in such contexts offers a unique opportunity to explore critical issues such as visitor-carrying capacity, community-based governance, and the co-creation of authentic experiences. These dimensions remain relatively underexplored in the mainstream tourism literature, which has traditionally focused on urban or high-density destinations [4]. As such, low-density regions should not be seen as peripheral but rather as valuable testing grounds for sustainable, inclusive, and locally embedded tourism models.

In response to this gap, various strategies have emerged. Many local actors are turning to social media and digital storytelling as a means of communicating their identity, values, and unique offer directly to potential visitors [4]. While such approaches have opened new possibilities, they often remain fragmented and constrained by limited resources or digital know-how. This lack of coordination can dilute the visibility of the destination as a whole and hinder efforts to promote a coherent and compelling regional image. Also, alternative digital platforms, like Fairbnb and Socialbnb, have sought to address these imbalances by reinvesting part of their profits into host communities and prioritizing locally owned initiatives. At the same time, collaborative initiatives such as regional tourism networks or thematic clusters enabling small businesses to join forces, pool resources, and co-create more structured, culturally grounded tourism offerings.

Sustainable tourism in low-density regions is therefore much more than an economic alternative. It contributes to the preservation of cultural identity, strengthens community cohesion, and encourages responsible environmental practices. These dimensions are increasingly valued by travelers in search of contextually rich and authentic grounded experiences. These regions characterized by their relative exclusion from mass tourism flows, offer a combination of preserved natural environments, rich cultural heritage, community traditions, artisanal practices, and local know-how, which appeals to travelers in search of authenticity, reflection, and deeper connection with the territory. To unlock the potential of these shared interests and allow visitors to enjoy rich and immersive experiences rooted in the reality of each region, while also contributing to their sustainable development, IT-based approaches can play a key role. Rather than focusing solely on promoting major attractions and large-scale events, digital solutions should highlight small businesses, local traditions, cultural events, and the natural and cultural heritage of each area that are endogenous and distinctive to each region. This would enable visitors to engage in more authentic experiences, while simultaneously supporting the small enterprises that characterize these territories.

Building on this premise, it is necessary to examine the specific characteristics of low-density territories that shape the design requirements of digital platforms. The spatial dispersion of attractions, combined with limited transport connectivity, increases both search

and coordination costs for visitors. Moreover, the tourism offer in these territories tends to be highly fragmented, relying predominantly on micro-entrepreneurs, voluntary associations, and informal community networks [5]. As such, an effective digital platform must incorporate three core functionalities: (i) geospatial discovery that makes hidden attractions legible; (ii) low-threshold content management systems that enable non-specialist operators to autonomously manage and update information; and (iii) trust-building mechanisms—reviews, secure payment, real-time support—capable of compensating for the absence of large intermediaries [6,7].

Additionally, over the years, a considerable share of visitors to low-density regions has included people with disabilities or specific needs [8], seniors [9], and families with young children [10], profiles that tend to favor calm, authentic, and culturally meaningful experiences. This reflects broader societal trends, such as demographic ageing, a growing demand for meaningful and authentic experiences, and a greater sensitivity to the social and environmental impacts of tourism. A study [3] exploring senior tourism in remote parts of Europe highlights that older travelers are particularly drawn to destinations characterized by scenic landscapes, a rich cultural heritage, and a calm, restorative environment. These visitors often require reliable and detailed information regarding accessibility for individuals with functional limitations—including, for example, reduced mobility, visual or hearing impairments, and cognitive or developmental conditions—to ensure that the environments they plan to visit are suitable for safe and comfortable experiences. Access to accurate and trustworthy information about accessibility is essential when choosing which activities to include in their itinerary [11]. When such information is unclear or unreliable, the consequences can be particularly serious: in some cases, this may prevent them from participating in part, or even all, of the planned experiences [5]. As such, the provision of accessible information is not only a matter of equity but also a key factor in fostering more inclusive and socially responsible tourism practices.

Digitalization and territorial sparsity are not merely co-occurring trends, they are mutually constitutive. On the one hand, platform infrastructures that aggregate and disseminate georeferenced data help reduce information asymmetries and transaction costs that have historically disadvantaged remote areas [6]. On the other hand, the authenticity and often associated sparsity become visible and marketable primarily through digital storytelling, immersive media, and data-driven itinerary curation [12]. Empirical studies show that destinations adopting sensor-enabled trails, interactive heritage apps, or blockchain-verified supply chains foster knowledge and valorization of territorial cultural heritage, while contributing to greater local development [13,14]. Hence, the interplay between digital affordances and low-density context reshapes both demand patterns and value-capture mechanisms, warranting an integrated analysis.

Despite this potential, a clear research gap persists at the intersection of digital platform studies and tourism in low-density territories. Existing work tends to prioritize prototype descriptions, offers limited comparative metrics, and rarely triangulates platform analytics with qualitative community outcomes. Furthermore, platforms often fail to address the specific characteristics and needs of low-density regions.

This study analyzes existing digital platforms, both academic and commercial, designed to promote tourism in low-density regions of Southern Europe, with the aim of understanding how such platforms can support sustainable and authentic tourism in these areas.

To organize the information gathered from the reviewed studies and applications, and to draw clearer conclusions, the following set of research questions (RQs) was established:

RQ1: What were the underlying motivations or needs that led to the development of the application?

RQ2: What types of activities or events are promoted on the platform, and how are they created and managed within it?
RQ3: To what extent do the platforms address accessibility considerations for individuals with functional limitations in the promotion of events and activities, and how is this information communicated to users?
RQ4: How do ticket reservation strategies contribute to more effective and convenient travel planning for tourists?
RQ5: To what extent have technological solutions moved beyond the prototype phase, and what is their impact on tourism in low-density regions?

Answering these questions will result in a more informed discussion as their answers are used together to compare how the different approaches are currently being applied, assess their potential to enhance authentic and sustainable tourism in such territories, and identify key gaps and directions for future innovation.

2. Methodology

The review presented in this section adopts a qualitative approach, combining two complementary components: a systematic review and an exploratory analysis of widely used digital platforms. The aim is to identify and understand IT-based strategies that support the development of sustainable and authentic tourism in low-density regions of Southern Europe.

The first phase involved a review of the academic literature related to the use of digital platforms in the tourism sector, with a particular focus on their application in rural or low-density territories of Southern Europe. Sources were selected from major academic databases, Scopus and Web of Science, using keywords such as "tourism", "low-density" and "regions".

Secondly, an exploratory analysis of digital applications currently in use for promoting local tourism and cultural events was carried out. This included tools such as mobile apps, local event calendars, and regional tourism websites, with a focus on how these solutions communicate local identity and promote small-scale, community-based tourism initiatives grounded in authenticity and sustainability.

This dual approach enables the identification of both academic insights and practices related to digital platforms, allowing for a deeper understanding of how digital tools are used to communicate local identity and support tourism in low-density regions.

2.1. Scientific Articles

The review process of the scientific articles followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) methodology [15], with each article being described in its own dedicated subsection.

1. Identifying the purpose and objectives of the review (Section 2);
2. Search Strategy (Section 2.1.1);
3. Screening for Inclusion (Section 2.1.2);
4. Screening for Exclusion (Section 2.1.3);
5. Data Extraction (Sections 2.1.4 and 2.1.5);
6. Analysis (Section 2.1.5);
7. Discussion (Section 2.1.6).

2.1.1. Search Strategy

The search string was designed to ensure the relevance and alignment of the retrieved studies with the main objective of this research: exploring the promotion of tourism events in low-density regions through the use of digital technologies. To achieve this,

four main groups of terms were included, covering tourism, low-density regions, digital technologies, and tourism experiences.

The terms related to tourism touris * and turis * were chosen to broadly capture literature within the tourism field. Terms such as rural, low-density, and sparsely populated were used to focus the search on studies dealing specifically with areas characterized by a low population density. The inclusion of territory * and region * helped emphasize the territorial and regional aspects of tourism development and promotion.

The group containing web *, platform, software, and digital targeted studies addressing the use of digital technologies, an essential dimension of the research. Finally, terms like promo *, experiences, visit *, event, and activity were included to ensure that the search captured work related to the actual promotion of events and visitor experiences.

To this end, the following search string was used—refined to ensure alignment with the research objectives:

(touris * OR turis *) AND (rural OR low-density OR sparsely-populated) AND (territory * OR region *) AND (web * OR platform OR software OR digital) AND (promo * OR experiences OR visit * OR event OR activity)

The literature search was conducted in the Scopus and Web of Science databases. This decision to use Scopus and Web of Science as the primary databases was based on their wide recognition for quality and their comprehensive coverage of peer-reviewed academic literature.

The temporal filter restricting the review to studies published from 2014 onward reflects the intention to capture the most recent and relevant trends in the application of digital technologies to the tourism sector, particularly given the rapid evolution of such tools in recent years.

The search was carried out on 9 October 2024, thus covering articles published from 2014 up to that date, yielding 117 results in the Web of Science database and 232 in Scopus, for a combined total of 349 records. Duplicate entries appearing in both databases were subsequently removed, resulting in a final set of 254 documents.

2.1.2. Screening for Inclusion

The 254 documents obtained during the research phase were reviewed, and those deemed relevant to the scope of the study were selected. The initial screening involved an analysis of the titles and abstracts. Articles were included if they met the following criteria: (1) reference to the use of digital platforms in the promotion of tourism in low-density areas of Southern Europe and (2) mention the development of a digital platform for that purpose. After applying these criteria, 12 articles were retained for further analysis.

2.1.3. Screening for Exclusion

Each of the 12 previously selected articles was read in full in order to assess, in detail, their objectives, strategies, and results. At this stage, three articles [16–18] were excluded because they did not provide sufficient information on the development of a digital solution specifically aimed at promoting tourism in sparsely populated areas. Although they mentioned the potential of digital tools to support tourism in low-density regions, among other measures, they did not present the creation or implementation of a concrete application for that purpose.

Article [19] was also excluded due to its significant overlap with article [20]. Despite being different publications with different abstracts, their content was largely similar. As such, only the more recent article, [20], was retained. Likewise, articles [21] and [22] were found to report on the same project, albeit published in different venues. Therefore, only the more recent publication, article [22], was selected for analysis.

2.1.4. Summary of the Article Selection Process

Figure 1 presents a summary of the article selection process. A total of 349 documents were obtained and after removing 95 duplicates, a total of 254 were left. After applying the inclusion criteria identified in Section 2.1.2 "Inclusion criteria", 242 documents were excluded, resulting in a total of 12 documents. Then, applying the "exclusion criteria" described in 2.1.3, five documents were removed.

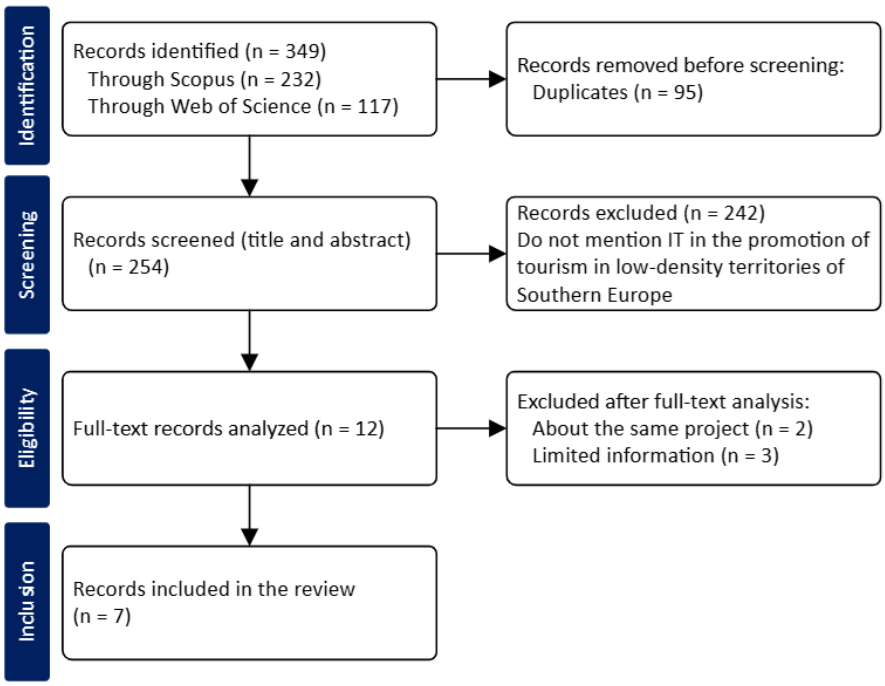

Figure 1. Article selection process (adapted from the PRISMA 2020 flow diagram) [15].

The seven studies included in the analysis were published between 2019 and 2024 and were conducted in Portugal (four studies), Spain (two), and Italy (one). All of them involved the development of digital applications aimed at promoting tourism in sparsely populated areas of Southern Europe.

2.1.5. Results

Table 1 presents a synthesis of key characteristics of the studies included in the analysis.

Table 1. Summary of articles selected for analysis.

Ref	Year	Type of Events	Platform Type	Accessibility Issues	Implementation Status	Tickets and/or Reservations	Event Creator
[6]	2024	Pilgrimage routes	Web/Mobile	Yes	Beta Version	Yes	Administrators
[7]	2019	Various tourist events	Web	No	Prototype	Yes	Operators, tourists, and customers *
[20]	2019	Intangible cultural heritage	Web/Mobile	No	Prototype	Yes	Administrators
[13]	2024	Archaeological heritage	Web	No	Implemented	No	Administrators
[12]	2020	Geotourism	Web/Mobile	Yes	Implemented	No	Administrators
[22]	2022	Tourist points of interest	Web/Mobile/IoT	Yes	Prototype not fully functional	Yes	Tour operators
[14]	2022	Tourist points of interest/tourist routes	Web	Yes	Prototype	No	Administrators

* Customers can create offer requests and negotiate offers.

Each study included in Table 1 is summarized below, with a focus on the problem addressed, the proposed digital solution, the implementation process, and the reported outcomes. This analysis supports the interpretation of how digital strategies are being applied in the context of low-density tourism.

A dashboard to enable new opportunities for rural development by overcoming the dominant segmentation of European pilgrimage routes [6] addresses the existence of under-visited points of interest in areas adjacent to major European pilgrimage routes. The authors argue that rural regions along these routes have the potential to enhance the experience of both pilgrims and tourists. To unlock this potential, they propose the development of an IT platform to support the planning of individual journeys, integrating information on lesser-known points of interest.

The platform is presented as a key tool to map thousands of such locations and to position pilgrimage routes as catalysts for local development. The study reports on work carried out during 2021 and 2022 across four main pilgrimage routes: the Camino de Santiago (in Spain and Portugal); the Via Francigena, Via Romea Strata, and Via Romea Germanica (from Northern Europe to Rome); St. Olav's Way (in Norway); and the Way of Mary (in Slovakia, Hungary, and Romania). Originally, the platform was designed for three user profiles: pilgrims/tourists, promoters of points of interest, and administrators responsible for creating and approving content and managing offers. However, the authors later identified the need for a fourth interface—a dashboard for local decision-makers—aimed at supporting the development of infrastructure and services for visitors. This dashboard was intended to guide public authorities in promoting sustainable and coordinated interventions along the routes.

The authors note challenges during the project's implementation, particularly in designing itineraries capable of attracting visitors to surrounding territories. They acknowledge the project's potential but also its geographical limitations. A beta version of the application was released, and future work is expected to focus on further development of the dashboard for local governance.

An electronic negotiation platform for tourism in low-density regions was proposed in the study [7]. According to the authors' analysis, traditional platforms tend to replicate the logic of physical stores in digital form, where products and services are displayed with fixed prices and no room for prior negotiation. This model, they argue, is ill-suited to the context of low-density regions such as the Douro Valley, where visibility and market access are limited, and the promotion of tourism products and services faces significant challenges.

To address this issue, they propose the development of an electronic negotiation platform specifically for the tourism sector in the Douro region. Unlike conventional platforms, this solution enables users not only to explore available offers but also to negotiate terms or, if no suitable option is found, to submit their own proposals. Tourism service providers can then review and respond to these proposals, establishing a process of mutual adjustment between supply and demand. The aim is to create a more dynamic interaction between tourists and tour operators, better aligned with visitors' preferences and the region's specific context. The prototype developed consists of a web-based platform, representing an initial step toward validating a bidirectional e-commerce paradigm for tourism in sparsely populated areas. The platform also supports direct communication between customers and suppliers, reinforcing its interactive and participatory nature. As part of future developments, the authors plan to conduct testing involving both local tour operators and tourist groups in the Douro Valley, to assess the level of acceptance and to evaluate how well the platform meets the needs of key stakeholders.

The Viv@vó Project [20] addresses the progressive erosion of intangible cultural heritage in rural communities. These regions preserve a wealth of traditional knowledge and

practices that are at risk of disappearing, largely because such knowledge is predominantly held by the elderly. The authors argue that digitalization can serve as a crucial tool for safeguarding and transmitting this heritage to future generations. They also highlight the growing interest in what they call experiential tourism, where visitors seek authentic, culturally immersive experiences. Within this context, rural areas are identified as holding significant, yet largely untapped, potential for the development of this tourism segment.

To bridge the gap between traditional knowledge and tourist demand, the project proposes the development of a digital platform entitled Viv@vó—Living in Grandma's House. The platform is designed to support the identification, selection, and dissemination of local intangible heritage, offering visitors the opportunity to engage in genuine cultural experiences, such as listening to personal stories while sharing a meal in a grandmother's home.

The solution comprises a web application for event promotion and a mobile application for Android devices, tailored to support visitor needs. The web application, built using the Laravel framework, manages a database that includes information on events, participating grandmothers, and local points of interest. The mobile application incorporates location-based notifications, social media authentication, event and participant listings, and mapping functionalities. In parallel, a digital repository of oral testimonies from the grandmothers was created, with the aim of preserving these valuable narratives and traditions. The implementation of the project followed several key stages: an ethnographic survey, the definition of criteria for participant selection, and the organization of pilot tourism experiences. The authors contend that the creation of a digital repository of intangible cultural knowledge represents a meaningful contribution to the preservation of rural cultural heritage. Furthermore, the platform provides an innovative means of promoting and marketing authentic cultural experiences, with the potential to stimulate tourism demand in low-density regions. From a social perspective, the project has also contributed to the recognition of older adults as vital custodians of knowledge, while helping to combat social isolation in rural settings.

The VIDA-HTL web application [13] affirms the need to reactivate vulnerable areas through the promotion of archaeological heritage. The authors state that one of the most appropriate strategies for promoting this heritage is the creation of routes that contain these points of interest.

To improve the appreciation of this cultural heritage, the authors suggest the creation of an application that integrates the geolocation of these archaeological assets and that allows the creation of flexible itineraries around the Guadalquivir River valley, in Spain. The solution implemented involves the creation of a web application called VIDA-HTL, in which the user can search for points of interest by location and historical period, among other criteria. The application also allows users to create personalized itineraries that can be traveled on foot or by motorized vehicle even when the user is offline. The app also includes a hub that allows users to share personalized maps and events, aiming to encourage interaction between users. Registered users can also rate points of interest and itineraries. According to the authors, more than 900 points of interest have been georeferenced, and 49 itineraries are proposed in the application.

The authors claim that the application helped to promote knowledge and appreciation of the region's cultural heritage, contributed to local development, and was effective in promoting sustainable tourism.

MoGeo, is a mobile application to promote geotourism in the Molise Region (Southern Italy) [12]. Convinced that mobile applications can strongly support the promotion of geotourism, especially in rural and inland areas, less urbanized, the authors of this article propose the development of a mobile application that aims to provide diverse information

on geotourism. Their aim is not only to promote the sites but also to provide information on their accessibility and safety.

The application is described by its creators as having been developed with the aim of promoting places of geological interest and itineraries and places of cultural interest and natural beauty. To this end, the application presents "cards" with the description of selected places of geological interest, a glossary of scientific terms, a simple lithological map of the region, itineraries, and other places of cultural interest and natural beauty. Each "card" contains information about a place that allows the tourist to understand and visit it independently. One of the concerns of the creators of the application was the safety of tourists due to possible dangers and geological instabilities. This information was also included on the cards of each site. The application was developed with a web and a mobile version.

The application was tested in the prototype phase and received a positive evaluation from a group of users without training in geology. The usability, fluidity of the application, and the fact that it is intuitive were highlighted as strong points. The authors highlighted that there were improvements that needed to be made to the application, particularly regarding the low resolution of images on mobile devices.

The article Remote management of visits to points of interest in low-density rural territories [22] explores the challenges associated with managing tourist visits in areas with a low population density.

To address these challenges, the authors propose the development of a digital platform that enables tour operators to register and describe points of interest, while allowing tourists to consult, book, and access these locations autonomously. In order to facilitate access without requiring on-site staff, the solution includes the use of IoT devices to monitor, authorize, and control tourist access remotely.

The prototype comprises both a web application and a mobile application. The web portal enables operators to register and characterize points of interest and provides access to statistical data on visitation. Each site is equipped with IoT devices, connected via GSM/3G and incorporating relays and electronic locks, thereby allowing tourists to gain access independently. The mobile application enables tourists to search for sites, make reservations, and use their mobile device as a digital key for entry. The article also reports that user testing was conducted to evaluate the platform, during which several suggestions for improvement were gathered.

The article Tourism information platform for low-density territories: the Douro region [14] highlights the challenges faced by tourists who wish to visit multiple points of interest within a limited timeframe. According to the authors, the geographical dispersion of attractions in the Douro region, combined with varying opening hours, makes it difficult to plan efficient travel routes. In addition, tourists often encounter difficulties in accessing reliable and consolidated information about these sites.

To address these issues, the authors propose the development of a centralized platform that aggregates data on points of interest, events, and tourist routes, and leverages this information to support the optimization of travel itineraries. The proposed solution involves the creation of a database containing detailed information on tourist attractions, alongside a web application that allows tour operators to access, update, and manage this content. The platform also enables end users to consult the data and generate optimized routes according to their preferences and constraints.

At the time of publication, the project remains in the prototype stage. The authors acknowledge several limitations, including the lack of multilingual support, which may restrict the platform's accessibility to international users. This limitation arises from the fact that the data collected from tourism service providers' websites are predominantly in English and Portuguese. Addressing this issue through the inclusion of additional

language options is identified as a key area for improvement. Looking ahead, the authors outline several directions for future development, including the integration of technologies such as augmented reality, the use of QR codes, and the implementation of visitor flow monitoring systems.

2.1.6. Discussion

The selected articles generally provide relevant insights in response to the proposed research question. All studies clearly define the problems they seek to address and the specific types of tourist attractions they aim to promote, often grounded in the cultural, historical, or natural heritage of low-density regions. However, it is important to note that the majority of the applications described remain at the prototype stage and have not been fully implemented or evaluated in real-world contexts. This significantly limits the ability to assess their actual impact on tourism promotion and regional development.

Based on the analysis of the seven articles included in the review, the five research questions (RQ1–RQ5) are addressed as follows:

Regarding RQ1, which seeks to understand the motivation behind the creation of digital applications to promote tourism in low-density territories, all of the studies analyzed share a common objective: to foster sustainable tourism development in low-density and often overlooked regions. A common motivation identified across the seven articles is the imperative to enhance both the visibility and the economic sustainability of these areas by leveraging digital platforms to highlight their distinct cultural, historical, and natural assets. In several cases, these tools also aim to facilitate communication between visitors and local service providers.

For instance, the study presented in [6] seeks to reposition lesser-known segments of pilgrimage routes as integral elements within a broader tourism strategy. In Ref. [20], the emphasis lies on preserving intangible cultural heritage through immersive, intergenerational experiences. Similarly, Refs. [15,17] focus on the valorization of archaeological and geological heritage, respectively, to stimulate rural revitalization. The motivation in [7] stems from the need to foster a more dynamic interaction between tourism supply and demand by proposing negotiation-based offerings tailored to the specific context of the Douro Valley. Meanwhile, works such as [14,22] underscore the role of smart technologies and route optimization in improving tourist flow efficiency and access to dispersed points of interest.

Across all cases, these initiatives reflect a strategic intent to promote regional development, diversify local economies, and cultivate more inclusive, authentic, and contextually grounded tourism experiences.

The analysis of the seven articles shows a variety of activities and events being promoted (RQ2), all aimed at supporting tourism in low-density regions. These range from cultural and heritage experiences [20], archaeological and geological heritage [12,13], to pilgrimage trails [6]. The analysis also suggests that most of the studies analyzed tend to focus on a specific type of tourism experience, often favoring either cultural heritage, nature-based activities, or iconic routes. While these are important elements, this narrow focus limits the ability of visitors to plan more diverse and enriching itineraries that reflect the full spectrum of what low-density regions have to offer. In most studies, both the regional tourism operators and the platform administrators are responsible for inserting the tourist experiences, as well as for their maintenance. In some cases, administrators use databases or other types of information available in the geographic areas where they propose to promote these events. In one [7] of the studies, it is even possible for customers to propose personalized experiences. These experiences are then negotiated by the tourism promoters. There is concern among some of the authors about giving autonomy to

application users so that they can create personalized routes based on different points of interest.

With respect to RQ3, which examines the extent to which platforms consider accessibility for individuals with functional limitations—including reduced mobility, sensory impairments, and cognitive or developmental conditions—in the promotion of events and activities, accessibility stands out as the least developed aspect in the studies analyzed. Only four of the seven articles reviewed [6,12,14,22] make any reference to accessibility concerns. However, none of these provide detailed information on how accessibility features are implemented within the platforms, nor do they explain how such information is communicated to users. In the remaining studies, accessibility is not mentioned at all. This points to a significant gap in current digital tourism strategies, particularly considering the increasing emphasis on inclusive and accessible tourism experiences. There remains a pressing need to place greater emphasis on the promotion of truly inclusive tourism. It is essential that more platforms prioritize accessibility and ensure that all individuals, regardless of their specific needs, are able to participate in and benefit from the tourism experiences being offered.

The analysis of the seven studies offers several insights into how ticket reservation strategies can enhance the convenience and effectiveness of travel planning, particularly in low-density areas where infrastructure and human resources are often limited. Among the seven platforms reviewed, six [6,7,20–23] incorporate some form of ticketing or reservation functionality. In certain cases, users are able to explore attractions and purchase tickets directly through the application. Other solutions, such as the one presented in [22], integrate reservation systems with IoT technology, allowing visitors to book and access remote sites independently. This not only facilitates smoother travel planning but also addresses the logistical constraints typical of sparsely populated regions, where on-site staff may not always be available to manage access.

The platform described in [7] takes a different approach, offering a more interactive model. Rather than booking pre-defined experiences, users can submit their own proposals and negotiate directly with tourism operators. While this does not constitute a conventional reservation system, it promotes a more flexible mode of travel planning, more closely aligned with individual preferences.

Overall, although the implementation of such features is still at different stages of development, and in some instances limited to the prototype stage, the examples discussed demonstrate how reservation strategies can reduce uncertainty, enhance autonomy, and provide practical tools to support more efficient and confident travel planning. However, strategies that enable users to browse and book tourism experiences in an integrated manner, as part of a specific interest, itinerary, or regional plan, could contribute to a richer experience, more closely tailored to each visitor's profile.

The review of the seven selected studies indicates that most technological solutions aimed at promoting tourism in low-density regions have not yet progressed beyond the prototype phase. Only a few platforms, such as VIDA-HTL [13], are reported as implemented, while others, like rurAllure [6] and MoGeo [12], have been developed and tested but remain either in beta form or lack evidence of continued public deployment.

This limited progression constrains the assessment of their real-world impact. None of the articles offer quantitative data on the platforms' influence on tourist flows or regional economic development. Nevertheless, the proposed solutions reflect a clear awareness of the structural constraints typical of sparsely populated areas and offer innovative responses. Even in their early stages, these applications point to valuable directions for future development. They suggest that digital tools can enhance visibility, support the autonomous exploration of local heritage, and promote more adaptive and participatory tourism models. However, the lack of mature implementations and longitudinal data

makes it difficult to draw firm conclusions about their sustained impact on tourism in low-density regions.

2.2. Applications

To complement the findings from the literature review, an analysis was conducted of existing digital applications currently used to promote events and activities. The objective was to identify core functionalities and evaluate their potential relevance for the design of a platform specifically aimed at supporting tourism in low-density regions. Given that many of the academic solutions remain at the prototype stage, examining widely used commercial platforms provides practical insights into established features, user interaction models, and functional limitations that may inform future development.

2.2.1. Search Strategy

Searches were conducted in November 2024 and supplemented in June 2025 using the Google search engine, based on the following expressions: events near me, promotion and dissemination of cultural events, and experiences, activities, and attractions.

In the search conducted in November 2024, from each of the three searches, we reviewed the top three results. This resulted in a pool of nine applications, from which we selected four that offered the broadest variety of events and categories. This process led to the identification of four platforms for analysis: Facebook Events (https://www.facebook.com/events/, accessed on 12 March 2025), Booking (https://www.booking.com) (attractions section), Viral Agenda (https://www.viralagenda.com/), and Coolture (https://www.coolture.pt/).

In the second round of searches, conducted in June 2025, we extended our review to include the ten most relevant results for each query, resulting in a total of eight applications. The newly considered platforms were Visit Portugal (https://www.visitportugal.com/), Tripadvisor (https://www.tripadvisor.com) (Things to Do section), Get Your Guide (https://www.getyourguide.com/), and Airbnb (https://www.airbnb.com/) (Experiences section). Since we were looking for applications that offered a wide variety of event types, rich in information and covering multiple geographic locations—one of the aspects we aimed to understand was how event search functionality was handled—we discarded those that featured only a limited range of events or were restricted to just a few locations.

Although this approach did not follow a systematic mapping protocol, it was aligned with our objective of identifying examples rich in both content diversity and event types.

2.2.2. Results

The analysis focused on assessing the platforms' capacity to support event discovery, user engagement, and logistical planning, with particular attention to functionalities such as ticketing, geolocation, content creation, and accessibility. The discussion that follows offers a comparative overview of their features and explores their potential relevance for the development of digital tools aimed at enhancing tourism in low-density territories. Table 2 presents the main features offered by each of the applications.

Table 2. Summary of core functionalities available in each application.

Functionalities	Facebook Events	Booking—Activities	Viral Agenda	Coolture	Visit Portugal	Trip Advisor—Things to Do	Get Your Guide	Airbnb Experiences
User-created events	Yes	No	Yes	No	No	Yes	No	Yes
Event requires admin approval	No	No	No	No	-	Yes	-	Yes
Ticket purchase	No	Yes	No	No	No	Yes	Yes	Yes

Event ratings	No	Yes	No	No	No	Yes	Yes	Yes
Wishlist	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Event description photos	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Event description videos	No	No	No	No	No	No	No	No
Free cancellation	-	Depends on the event	-	-	-	Depends on the event	Depends on the event	Depends on the event
Textual event description	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Event date and time	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geolocation map	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Contact event organizer	Yes	No	No	No	No	Yes	No	Yes
Event sharing among users	Yes	No	No	No	No	No	No	No
Language switch	No	Yes	Yes	No	Yes	Yes	Yes	Yes
Accessibility information	No	No	No	No	-	Yes	-	No
Event highlighting	No	No	Yes	No	-	Yes	-	No
Search by popularity	Yes	Yes	No	No	Yes	No	Yes	Yes
Search by geographic area	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Search for the best reviews	No	Yes	No	No	No	No	Yes	No
Map-based Search	No	Yes	No	No	No	No	No	No
Recurring events	Yes	-	No	No	-	Yes	-	Yes

All of the analyzed applications provided a textual description, along with the date, time, and photographic representation of the event. Only Facebook Events and Airbnb offered the possibility to contact the event organizer directly through the platform. And only Facebook Events provided the option to share events among users (other apps allow sharing only via event links), enhancing social interaction and event visibility. Most platforms included precise geolocation features to help users locate events, with the exception of Coolture, which did not offer integrated map-based navigation.

In terms of accessibility, only Tripadvisor and Get Your Guide included information about accessibility features in the event descriptions —an aspect that is crucial for the participation of individuals with mobility or other functional limitations. This was verified by analyzing the events on each platform, and in the cases where platforms allowed users to create events, there was no option to add accessibility features—except on Tripadvisor, which did offer this functionality.

What follows is a more detailed overview of each application and its core functionalities.

The Events feature on Facebook enable users to browse, create, and promote events within the platform. Leveraging its foundation as a social network, Facebook facilitates widespread dissemination and sharing of events among users. Any user with an account can easily generate an event, making the process highly accessible. Additionally, users can indicate their interest in attending without a formal commitment, functioning similarly to a wish list, while simultaneously providing event organizers with a rough estimate of potential attendance. Each event listing typically includes a textual description,

accompanying image, and the scheduled date and time. Event locations are integrated with Facebook's geolocation system, and users can filter and search for events by popularity or geographic proximity. Organizers also have the option to duplicate events, streamlining the promotion of recurring activities. It is worth noting, however, that when creating an event, there are no designated fields for accessibility information for individuals with functional limitations—for example, whether the events are suitable for people with reduced mobility, visual or hearing impairments, or cognitive and developmental conditions. As such, while Facebook offers a low-barrier, flexible platform for event promotion, it falls short in accommodating users with specific accessibility needs.

Booking.com is one of the most widely recognized platforms for reserving hotel accommodation. In addition to lodging, it offers a dedicated section for booking tickets to activities and experiences. These activities are created and managed by third-party service providers, with Booking acting as an intermediary. The platform supports purchasing tickets directly through the website and includes functionality for user reviews and ratings. In many cases, free cancellation is available, depending on the specific conditions of each activity. Each listing typically includes images, a detailed textual description, scheduled time, and precise geolocation. Users can switch between multiple language options and apply filters such as popularity, user ratings, or geographical areas to refine their search. Additionally, certain activities are featured or highlighted by the platform, potentially increasing their visibility.

Viral Agenda is a platform dedicated to the promotion of cultural events, offering users the ability to both browse and create events. The platform includes features such as a wish list, as well as the option to add events to personal digital calendars, including integration with services like Google Calendar. However, it does not support direct ticket purchases, limiting its functionality in terms of event monetization and logistical planning. Each event listing typically includes an image, textual description, and event timing, along with a map-based geolocation feature to assist users in identifying the event's physical location. Viral Agenda supports multiple language options and allows users to search for events by geographic region. Additionally, event creators have the option to highlight specific events to increase their visibility on the platform. Notably, accessibility information is neither required nor consistently provided, representing a gap in inclusivity.

The Coolture platform focuses on promoting cultural, artistic, and gastronomic events with the aim of bridging the gap between event organizers and the public. Among the platforms reviewed, Coolture is the least feature rich. It does not permit user-generated content, as all events are created and added by the platform administrators. Each listing provides an image, textual description, event schedule, and price, but does not allow ticket purchases directly through the platform. Furthermore, geolocation features are absent, limiting users' ability to search for or map event locations effectively. As with other platforms, no accessibility information is included in the event descriptions reviewed.

The VisitPortugal platform, promoted by Turismo de Portugal, allows users to browse cultural and touristic events. However, it does not offer advanced interactive search features, and users cannot create events directly. Ticket purchases are also not available through the platform. Event listings include a textual description, images, and date/time information, but no videos. Geolocation is integrated, allowing users to view event locations on a map. The platform offers search filters by popularity and geographic area, but not by user ratings. Events cannot be shared within the platform, and there is no option to contact the event organizer. Overall, the platform functions primarily as an informative directory.

Tripadvisor allows users to create events, although these must be approved before being published on the platform. In many cases, ticket purchases are available. Event

descriptions typically include text, images, location, date, and time. The platform supports geolocation and provides filters by geographic area. It also supports language switching for event descriptions. Users can contact event organizers via phone or email, depending on the listing. Events cannot be shared within the platform itself but can be shared via external links. Tripadvisor is the only platform that allows accessibility information to be included when creating an event. Events can be recurring, and there is a wish list feature.

Get Your Guide acts as an intermediary platform for tourist experiences and events, allowing users to purchase tickets directly. Events are created by verified providers, not by general users. Each listing includes a textual description, images, location, and schedule. Free cancellation is available depending on the event. Geolocation is integrated, and users can search by popularity, geographic area, and reviews. Accessibility information is included in the event descriptions. There is no option to contact the event organizer, and events cannot be shared within the platform. A wish list feature is available, and language switching is supported for event descriptions.

In addition to accommodation, Airbnb features an "Experiences" section that allows users to purchase tickets for activities created by other users. Event creation requires platform approval. Listings include text, images, date and time, geolocation, reviews, and often offer free cancellation depending on the experience. Users can filter experiences by popularity and geographic area. Recurring events can be created, and a wish list feature is available. Although Airbnb does not provide structured accessibility fields during event creation, it allows users to contact the organizer directly to inquire about accessibility. Language switching for descriptions is supported. Events cannot be shared within the platform interface or searched via drawn map areas. Events also cannot be highlighted by their creators.

In addition, there are also digital platforms—typically in the form of web applications—managed and promoted by regional entities such as tourism boards and intermunicipal communities. One example is the Beira Baixa Tour (https://www.beirabaixatour.pt/) web portal, managed by the Intermunicipal Community of Beira Baixa, Portugal.

These platforms are designed to highlight places of interest and promote tourism experiences within their respective territories. They commonly suggest sites to visit, including cultural heritage landmarks, thematic experiences, and walking or cycling routes. While some of these platforms offer reservation functionalities, their primary purpose is usually to promote and recommend activities that visitors can explore during their stay. Despite containing potentially valuable information, these platforms are often limited in terms of the audiences they can reach and the level of support they provide to users throughout their visit. Moreover, being regionally focused, their use often presupposes that potential visitors are already aware of the platform, an assumption that may not hold true, especially for first-time visitors or those exploring multiple regions, who would, in turn, need to consult several different applications.

2.2.3. Discussion

Although conducted in a concise manner, the analysis of the four applications provides a basis for addressing each of the five research questions.

Regarding RQ1, the applications analyzed are commercial and as such, their primary motivation is typically commercial and financial, seeking to attract more users, increase advertising reach, and maximizing financial returns. Nevertheless, it is reasonable to assume that they also aim to facilitate the promotion and discovery of cultural events and activities. Although these platforms were not specifically created for low-density regions, their widespread use and accessibility render them valuable models for event dissemination. Their functionalities are driven by the need for visibility, convenience, and user

engagement in tourism-related services. The analysis suggests that these applications can inform the design of more context-specific platforms, particularly in regions underserved by mainstream tourism technologies.

There are no limitations or restrictions regarding the types of events or activities promoted on these platforms (RQ2). The types of events promoted include cultural, artistic, gastronomic, and entertainment activities. However, on some platforms, there is a tendency to promote major attractions and large-scale events. This focus, while understandable from a promotional standpoint, often overlooks smaller, community-driven experiences that are central to the authenticity of low-density territories. As a result, the richness and diversity of local tourism offerings remain underrepresented. This approach may limit visitors' opportunities to engage with the genuine cultural and social life of the region. Platforms such as Facebook Events, Viral Agenda, Tripadvisor, and Airbnb allow user-generated content, enabling any user to create and promote events with minimal restrictions. In contrast, Booking, Coolture, Visit Portugal, and Get Your Guide rely on content typically added by service providers or administrators. Event management functionalities vary: Facebook emphasizes social sharing and engagement, while Booking focuses on commercial activities with integrated ticket purchasing and review systems. Tripadvisor and Airbnb, in particular, promote user-created events and support ticket sales directly through their platforms.

In relation to RQ3, which examines the extent to which platforms address accessibility considerations in the promotion of events and activities, as well as how this information is communicated to users, the findings reveal significant limitations in current practices. The majority of the applications do not systematically incorporate accessibility information into event descriptions, nor do they offer dedicated filters or fields to communicate accessibility features to users. However, Get Your Guide includes accessibility information in event descriptions, and Tripadvisor allows users to add accessibility details when creating an event, which are then displayed in the event listings. Additionally, Airbnb provides an option for users to contact the event organizer directly to inquire about accessibility during the search process. Booking shows some evidence of addressing accessibility, albeit minimally. This shortfall highlights a clear opportunity to expand and standardize accessibility-related features across platforms—particularly in the context of inclusive tourism for low-density or rural areas.

Regarding RQ4, ticket reservation features are present in Booking, Tripadvisor, Get Your Guide, and Airbnb, which allow users to browse, purchase, and cancel tickets for events and experiences. This contributes to streamlined planning, particularly by offering integrated geolocation and filtering options. The other platforms analyzed do not offer ticket purchasing functionalities, limiting their usefulness for tourists seeking a one-stop solution for itinerary management. The findings indicate that reservation systems enhance user autonomy and planning efficiency, especially relevant in geographically dispersed or infrastructure-limited regions.

In relation to RQ5, all platforms analyzed are fully operational and widely adopted, in contrast to the academic solutions discussed in Section 2.1, many of which remain at the prototype stage. While these commercial platforms are not tailored specifically to low-density regions, their functionality demonstrates the potential for scalable, adaptable systems. However, their lack of localization, limited focus on authenticity, and minimal inclusion of accessibility and community-based content reduce their impact in addressing the specific challenges of low-density tourism. Therefore, while these platforms have moved beyond the prototype phase, their effectiveness in supporting sustainable tourism in peripheral areas remains limited by design.

3. Research Challenges and Future Directions

Despite the growing interest in leveraging digital solutions to promote sustainable and authentic tourism in low-density territories of Southern Europe, the analysis reveals that several critical challenges remain either insufficiently addressed, superficially examined, or entirely overlooked. While additional issues could be identified, this section focuses on three key challenges: the fragmentation of existing digital solutions; the inadequate integration of accessibility features; and the limited large-scale deployment of platforms, compounded by a lack of real-world validation and comprehensive monitoring and evaluation frameworks.

One persistent challenge in the promotion of tourism in low-density territories of Southern Europe is the significant fragmentation of digital solutions. This fragmentation manifests both in the diversity of approaches adopted and in the limited geographical scope of each solution. Many existing digital tools have been developed by regional stakeholders to reflect localized interests and development agendas. This fragmented digital landscape creates significant barriers for both tourists and local stakeholders. Visitors must navigate multiple disconnected platforms to assemble a coherent travel itinerary, while local promoters face challenges in coordinating their activities and effectively communicating with potential audiences.

Most global solutions tend to focus on high-visibility events and well-known attractions typically located in urban centers, thereby overlooking smaller, community-based activities that are central to tourism in less populated areas. Such a tendency marginalizes one of the most distinctive characteristics of tourism in low-density regions: its strong community-based foundation. This form of tourism is frequently organized by small-scale operators, informal associations, or even individuals, and is marked by micro-initiatives rooted in local culture and everyday practices. However, these actors often do not have the digital skills or resources to access and use most global tourism platforms effectively. Consequently, existing global digital platforms do not adequately reflect the full diversity and richness of the tourism offer in these territories, nor do they support the specific needs of local providers.

This context highlights the need to develop more inclusive digital platforms, supported by collaborative governance models and enhanced interoperability among public and private actors. Such platforms should be capable of intuitively integrating a wide range of tourism experiences and must be scalable in terms of both event types and geographical coverage. Furthermore, they should allow decentralized content management by local stakeholders, such as small businesses, cultural associations, and municipal authorities, while respecting and preserving the cultural identity and diversity of each territory.

Another key issue that remains insufficiently addressed in the development of digital solutions for tourism in low-density regions of Southern Europe is the insufficient attention given to accessibility. Although inclusive tourism is increasingly recognized as a fundamental component of sustainable development, most digital platforms, whether academic prototypes or commercial applications, tend to either overlook this dimension entirely or treat it superficially. In many cases, accessibility features are either not fully implemented or poorly communicated, which makes it hard for users to determine whether a given experience or place suits their needs.

This oversight is particularly problematic when considering the growing importance of senior and family tourism in low-density territories. Unlike mass tourism, which tends to be seasonal, tourism involving seniors and families often occurs year-round, offering a more stable and continuous contribution to the local economy. Moreover, these visitors typically seek meaningful experiences rooted in nature, cultural heritage, and the authenticity of local traditions, elements that are abundant in rural and low-density areas.

However, many of these tourists may also face some form of physical or sensory limitation, which makes access to reliable and clear information about the accessibility of tourist experiences essential. The lack of such information can create unnecessary barriers and ultimately discourage travel, even when the destination itself is potentially suitable.

It is therefore crucial that digital platforms integrate accessibility as a central concern from the outset. This means not only ensuring that digital interfaces are designed to be inclusive, but also that the content provided, particularly in relation to events and tourism experiences, clearly indicates what accessibility conditions are available.

Another limitation identified stems from the fact that most of the platforms discussed, particularly those presented in the scientific literature and focused on low-density regions of Southern Europe, remain at the prototype stage, with limited evidence of large-scale deployment or real-world validation.

This significantly constrains the ability to evaluate their long-term effectiveness, scalability, and actual impact on regional tourism dynamics. Without data from practical implementation, it is difficult to assess how these platforms influence user behavior, local engagement, and cross-sector collaboration in the territories they aim to support. The lack of real-world testing limits the opportunity for iterative development based on user feedback, which is essential for ensuring that the platforms are tailored to the specific needs of both visitors and local stakeholders.

To overcome these limitations, future research should prioritize the adoption of scalable pilot implementations, enabling real-world testing across diverse stakeholders and incorporating iterative design improvements based on empirical feedback. In addition, interdisciplinary collaboration, bringing together expertise from tourism studies, computer science, and sociology, is essential for developing context-sensitive, culturally informed, and technologically resilient platforms. Furthermore, the establishment of comprehensive monitoring frameworks is needed. These should move beyond purely economic indicators to assess the social, cultural, and environmental dimensions of digital tourism initiatives, particularly in low-density and rural regions.

4. Strengths and Limitations of This Study

One of the main strengths of this analysis lies in its dual methodological approach, which combines a systematic literature review with an exploratory assessment of real-world digital platforms. This strategy provides a balanced perspective by offering insights drawn from academic research alongside a practical understanding based on the functionality of widely used applications. Another strength is the specific focus on low-density regions, a context often overlooked in mainstream tourism and ICT research. By concentrating on this niche, the study contributes to addressing knowledge gaps and highlights the potential of digital platforms to foster sustainable tourism in underrepresented areas.

However, the analysis also presents limitations. First, many of the digital solutions identified in the scientific articles remain in the prototype phase and have not been implemented at scale. This restricts the ability to assess their real-world impact, particularly in terms of long-term viability, user adoption, or measurable outcomes related to tourism development. Second, the number of scientific studies included in the review is relatively limited. Although the search string was carefully developed and validated to ensure both relevance and comprehensiveness, the final selection comprised only seven studies. This relatively small number may constrain the generalizability of the findings and highlights the need for further research in this field. Third, the studies primarily focus on the Southern European context, particularly Portugal, Spain, and Italy. Although this regional focus is consistent with the context-specific objectives of the research, it may constrain the applicability of the findings to other low-density territories characterized by different socio-economic or cultural frameworks. Finally, the exploratory analysis of commercial

platforms, while useful in highlighting functional gaps and best practices, was based on a limited sample and did not involve direct interaction with users or tourism operators, which might have offered richer contextual understanding.

5. Conclusions

This study set out to explore how digital platforms can support sustainable and authentic tourism in low-density territories of Southern Europe, areas that are often left out of mainstream tourism development strategies. By combining a review of the academic literature with an exploratory analysis of commercial applications, the research brings together conceptual perspectives and practical observations on how digital tools are currently being developed and applied in these contexts.

The analysis shows that, while innovative efforts are clearly emerging, particularly in academic and experimental contexts, most initiatives have yet to progress beyond the early stages, and there is little indication that they have been tested or adopted in real-world scenarios over time. Across the platforms reviewed, recurring gaps emerged—especially in terms of accessibility, scalability, and user-centered design—each of which is essential for ensuring that digital tools lead to inclusive and lasting impact in tourism development.

Commercial platforms, though better established and functionally more complete, tend to prioritize broad market appeal and financial performance over local relevance and inclusivity. As a result, they often overlook the diversity, authenticity, and community-based character that define tourism in low-density regions. Even so, their structure and features can offer valuable insights for the design of future platforms tailored to these unique settings.

To unlock the full potential of digital technologies in rural and low-density areas, future initiatives must move beyond isolated prototypes and toward collaborative, scalable, and inclusive platforms. Instead, what is needed are collaborative, adaptable, and inclusive platforms that are developed with the active involvement of local stakeholders, from small tourism operators to municipal actors and community organizations. More than a technological upgrade, digital innovation in this space should be seen as a chance to rethink how tourism can reinforce cultural identity, support local economies, and promote more balanced territorial development. Addressing the key challenges identified in this study, fragmentation, accessibility, and large-scale implementation and validation, will be central to realizing that vision.

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References

1. Osti, L. Cultural and environmental assets in rural destination competitiveness. In *Destination und Lebensraum: Perspektiven touristischer Entwicklung*; Pechlaner, H., Ed.; Springer Fachmedien Wiesbaden GmbH: Wiesbaden, Germany, 2019; pp. 73–82. https://doi.org/10.1007/978-3-658-28110-6_6.

2. Heleno, N.; Brandão, F.; Breda, Z. Community-Based Tourism and the Sustainable Development of Rural Territories. In *Handbook of Research on the Role of Tourism in Achieving Sustainable Development Goals*; Brandão, F., Breda, Z., Costa, R., Costa, C., Eds.; IGI Global: Hershey, PA, USA, 2021; pp. 193–213. https://doi.org/10.4018/978-1-7998-5691-7.ch011.
3. Zielińska-Szczepkowska, J. What Are the Needs of Senior Tourists? Evidence from Remote Regions of Europe. *Economies* **2021**, *9*, 148. https://doi.org/10.3390/economies9040148.
4. Bhatt, S.; Dani, R. Social Media and Community Engagement: Empowering Local Voices in Regenerative Tourism. In *Examining Tourist Behaviors and Community Involvement in Destination Rejuvenation*; Tyagi, P.K., Nadda, V., Kankaew, K., Dube, K., Eds.; IGI Global: Hershey, PA, USA, 2024; pp. 113–122. https://doi.org/10.4018/979-8-3693-6819-0.ch009.
5. Ribeiro, F.R.; Silva, A.; Metrôlho, J.C.; Silva, A.P.; Barbosa, F.S. A new framework for accessible tourism mobile application development. *Int. J. Mob. Comput. Multimed. Commun.* **2018**, *9*, 31–46. https://doi.org/10.4018/IJMCMC.2018040103.
6. López-Nores, M.; Arcay-Mallo, S.; Martínez-Portela, R.; Pazos-Arias, J.J.; Gil-Solla, A.; Estévez-Gómez, R. A Dashboard to Enable New Opportunities for Rural Development by Overcoming the Dominant Segmentation of European Pilgrimage Routes. In *Information Systems and Technologies*; Rocha, A., Adeli, H., Dzemyda, G., Moreira, F., Colla, V., Eds.; Springer Nature: Cham, Switzerland, 2024; pp. 228–236.
7. Cardoso, L.; Martins, J.; Gonçalves, R.; Branco, F.; Moreira, F.; Au-Yong-Oliveira, M. A Proposal for an Electronic Negotiation Platform for Tourism in Low-Density Regions: Characterizing a Functional Analysis and Prototype for the Douro Valley. In *Trends and Applications in Software Engineering*; Mejia, J., Muñoz, M., Rocha, Á., Peña, A., Pérez-Cisneros, M., Eds.; Springer International Publishing: Cham, Switzerland, 2019; pp. 280–292.
8. UNWTO. UN Tourism: Accessible Travel 'A Game Changer' for Destinations and Businesses. Available online: https://www.unwto.org/news/un-tourism-accessible-travel-a-game-changer-for-destinations-and-businesses (accessed on 23 May 2025).
9. Kežman, M.; Goriup, J. Factors Affecting Tourism Activity Selection among Silver Hair Tourists. *Acad. Tur.* **2022**, *15*, 381–395. https://doi.org/10.26493/2335-4194.15.381-395.
10. Patel, D. *Agro Rural Tourism Market—Global Industry Analysis, Growth, Share, Size, Trends, and Forecast 2025–2033*; DataIntelo: Pune, India, 2024.
11. UNWTO. *Recommendations on Accessible Information in Tourism*; World Tourism Organization: Madrid, Spain, 2016. https://doi.org/10.18111/9789284417896.
12. Filocamo, F.; Di Paola, G.; Mastrobuono, L.; Rosskopf, C.M. MoGeo, a Mobile Application to Promote Geotourism in Molise Region (Southern Italy). *Resources* **2020**, *9*, 31. https://doi.org/10.3390/resources9030031.
13. Hidalgo-Sánchez, F.M.; Merino-del-Río, R.; Mascort-Albea, E.J.; Ruiz-Moreno, I.; Linares-GómezDelPulgar, M.; Tejedor-Cabrera, A. Digital reactivation of territories through geospatial cultural itineraries: The VIDA-HTL web application. *Herit. Sci.* **2024**, *12*, 56. https://doi.org/10.1186/s40494-024-01173-w.
14. Vieira, I.; Gama, R.; Fernandes, D.; Oliveira, I.; Mota, M. Tourism information platform for low-density territories: The Douro region. *Int. J. Tour. Policy* **2022**, *12*, 223–241. https://doi.org/10.1504/IJTP.2022.10046336.
15. Page, M.J.; McKenzie, J.E.; Bossuyt, P.M.; Boutron, I.; Hoffmann, T.C.; Mulrow, C.D.; Shamseer, L.; Tetzlaff, J.M.; Akl, E.A.; Brennan, S.E.; et al. The PRISMA 2020 Statement: An Updated Guideline for Reporting Systematic Reviews. *BMJ* **2021**, *372*, n71. https://doi.org/10.1136/BMJ.N71.
16. Costantino, C.; Mantini, N.; Benedetti, A.C.; Bartolomei, C.; Predari, G. Digital and Territorial Trails System for Developing Sustainable Tourism and Enhancing Cultural Heritage in Rural Areas: The Case of San Giovanni Lipioni, Italy. *Sustainability* **2022**, *14*, 13982. https://doi.org/10.3390/su142113982.
17. Pongsuppat, U.; Jantarat, P.; Kamhangwong, D.; Wicha, S. Enhancing Local Tourism Sustainability through a Digital Local Tourism Management System (DLTMS). In Proceedings of the 8th International Conference on Digital Arts, Media and Technology (DAMT), Phuket, Thailand, 22–25 March 2023.
18. von Bennewitz Álvarez, E.; Aliaga, P.; Díaz, X.Q.; Bravo, J.P.H.; Madariaga, V.M.M. Vitrina Campesina: Contribution of ICT to Agritourism Development in the Maule Region, Chile. In In Proceedings of the X International Conference on Applied Business Research, Brno, Czech Republic, 14–18 September 2015.
19. Cunha, C.R.; Carvalho, A.; Afonso, L.; Fernandes, P.O. An ICT Platform to Support Cultural Heritage in Rural Communities: The Viv@vó—Living in the Grandma's House Case Study. In Proceedings of the 33rd International Business Information Management Association Conference (IBIMA), Granada, Spain, 10–11 April 2019.
20. Cunha, C.R.; Carvalho, A.; Afonso, L.; Fernandes, P.O. Boosting Cultural Heritage in Rural Communities Through an ICT Platform: The Viv@vó Project. *IBIMA Bus. Rev.* **2019**, *2019*, 608133. https://doi.org/10.5171/2019.608133.

21. Ribeiro, F.; Metrôlho, J.; Cabral, S. IoT Technologies to Promote Tourism Experiences in Low-Density Territories. In Proceedings of the 17th Iberian Conference on Information Systems and Technologies (CISTI), Madrid, Spain, 22–25 June 2022.
22. Cabral, S.; Ribeiro, F.; Metrôlho, J.; Farinha, L. Remote Management of Visits to Points of Interest in Low-Density Rural Territories. In *Information Systems and Technologies*; WorldCIST 2022, LNNS 470; Springer Nature: Cham, Switzerland, 2022; pp. 263–272. https://doi.org/10.1007/978-3-031-04829-6_23.
23. Hartatik; Putri, Y.A.; Firdaus, N.; Purbayu, A.; Hartono, R.; A'la, F.Y. Driving Digital Tourism through Tourism Village Mobile Application 'Go-Ticketing' for Ticket Management. In Proceedings of the 1st International Conference on Smart Technology, Applied Informatics, and Engineering (APICS), Surakarta, Indonesia, 23–24 August 2022. https://doi.org/10.1109/APICS56469.2022.9918785.