Journal of Research and Rural Planning
Volume 14, No. 4, Autumn 2025, Serial No. 51, Pp. 101-120
eISSN: 2783-2007 **ISSN: 2783-2791**
http://jrrp.um.ac.ir

Original Article

Spatial Analysis of Factors Influencing the Development of Rural E-Tourism Approaches (Case Study: Tourism Destination Villages of Amol County)

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Abstract
Purpose- E-tourism serves as a transformative tool for enhancing tourism services; by providing high-quality digital experiences, it significantly contributes to tourist attraction and satisfaction. This research aims to identify the factors influencing the formation of rural e-tourism approaches and to conduct a spatial analysis of these factors across the destination villages of Amol County.
Design/methodology/approach- This study is applied in purpose and utilizes a descriptive-analytical methodology. Data collection was conducted through a combination of library research and field surveys using questionnaires. To analyze the spatial distribution and hierarchy of the sampled villages in the Larijan District, the Marcos method was employed. The dimensions of the e-tourism variable investigated include cultural acceptance, supportive-managerial policies, infrastructure, and information systems. To determine the relative importance of these dimensions, weights were assigned using the Analytic Hierarchy Process (AHP) based on expert opinions.
Findings- The results indicate that the indicators of "support for private organizations for investment in e-commerce" (final weight: 0.06), "necessary legal and regulatory frameworks" (final weight: 0.05), and "utilization of specialized and trained human resources in e-tourism" (final weight: 0.04)—all subsets of the Supportive-Managerial Policies component—ranked first to third, respectively. These are identified as the most critical indicators for sustainable rural development. Consequently, "Supportive-Managerial Policies" emerged as the most influential component (weight = 0.49), followed by "Software/Information Systems" (0.22), "Infrastructure" (0.18), and "Cultural Acceptance" (0.09). Furthermore, the spatial analysis of the Larijan District reveals that the villages of Ab-e Garm, Ab-e Ask, and Ira fall within the green spectrum of the spatial model, indicating an unfavorable status regarding e-tourism development.
Keyword: E-tourism, Tourism destination villages, Spatial analysis, Amol County.

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How to cite this article:
Anabestani, A., Hedayati, M. & Yarahmadi, Sh. (2025). Spatial analysis of factors influencing the development of rural e-tourism approaches (Case study: Tourism destination villages of Amol County). *Journal of Research & Rural Planning, 14*(4), 101-120.
http://dx.doi.org/10.22067/jrrp.v13i1.2602-1161

Date:
Received: 01-01-2026
Revised: 02-02-2026
Accepted: 27-02- 2026
Available Online: 27-02-2026

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1. Introduction

As one of the most dynamic and growing global industries, tourism has a key role in economic, social, and spatial development of countries (Burbano et al., 2022). Among various types of tourism, rural tourism has drawn special attention as a potential solution for diversifying the rural economy, reducing unemployment, preventing emigration, and strengthening social capital (Sharpley, 2002; Alibeigi & Ghasemi, 2015). In recent decades, the development of rural tourism has been strongly affected by technological changes, the development of information and communication technology (ICT), and a new paradigm known as electronic tourism (E-tourism). E-tourism refers to the use of digital technologies throughout the value chain of tourism, from marketing and reservations all the way to destination management and tourist experience (Kazandzhieva & Santana, 2019; Li & Buhalis, 2006). In a systematic review, Gretzel et al. (2022) showed that digitalizing tourism entails customer experience enhancement, destination management improvement, and progress toward sustainability, although there is a significant gap between policy narratives and practical implementation. Newer research has emphasized the role of digital technologies in improving the resilience and competitiveness of rural destinations (Zhong et al., 2024; Wu et al., 2024).

At a rural level, the concept of E-tourism refers not only to the use of digital tools in the marketing and sales of tourism services but also to digital infrastructure, smart governance, community empowerment, and institutional integration (Emerllahu & Bogataj, 2024;؛ Lin & Ye, 2025). According to the digital technology-space-actors-tourism (DSAT) framework, successful development of digital tourism in rural areas results from the simultaneous interaction of infrastructure, local actors, and spatial characteristics of the destination (Lin & Ye, 2025). Nevertheless, Yusheng et al. (2025) pointed out the conceptual and measurement gaps in the rural tourism digitalization literature and highlighted the necessity of conducting local and space-oriented studies.

Numerous studies in Iran have emphasized various dimensions of E-tourism, including the role of infrastructure and electronic readiness (Ghanbari et al., 2020; Sadeghi Pouriani et al., 2021), the importance of governmental support and workforce training (Rezaei et al., 2018), legal and managerial challenges (Kamiabi & Fadavi, 2022), and the role of governance and human capital in smart rural tourism (Anabestani and Barani Ali-Akbari, 2024, 2025). However, most of these studies were at a conceptual level or addressed only one or a few aspects and failed to present an integrated spatial analysis of the factors affecting the development of rural E-tourism at a local scale. In addition, many of these countrywide studies lack a spatial analysis and rural destination ranking and do not answer the question “which villages are at what level of preparation for E-tourism development and why?”. While international research has stressed the significance of spatiality and geographic variation in the digitalization process of tourism (Zhong et al., 2024; Gretzel et al., 2022), there is a gap in Iranian literature in this respect, especially at municipal and village levels. In this regard, the Amol county, specifically the Larijan district, has a high tourism development potential as a major rural tourism center in Northern Iran with landmark natural attractions (such as Mount Damavand and well-known hot springs and tourism destination villages) (Hesam, 2016). Nevertheless, tourism development in this area has so far been based on traditional models, with no systematic and spatial evaluation of the readiness level and status of E-tourism components in its villages. The villages in the Larijan district of the Amol county, Mazandaran Province, are among regions with considerable development of rural tourism in recent years. Due to the proximity of this county to population centers, such as Tehran, Mazandaran, and Alborz; its location on the busy Haraz road; and its possession of numerous natural attractions, it has become a popular tourist destination and has witnessed a particular growth in secondary tourism residence (Hesam, 2017). The development of technological infrastructure in this district would help the development of E-tourism and the provision of tourist facilities and services in the region. Using these technologies would help present tourists with accurate information about attractions in the region. Furthermore, E-tourism can improve the quality of services provided to tourists, thus increasing their satisfaction. Also, online advertisements in social media can assist in attracting visitors and introducing the Larijan

district. The present research aims to identify the factors affecting the development of rural E-tourism and perform a spatial analysis of these factors across the tourism destination villages in the Amol county. To this end, the following two questions must be answered:

1. What are the factors affecting the development of E-tourism in tourism destination villages in the Amol County?
2. How can the factors affecting the development of E-tourism in tourism destination villages in the Amol County be spatially analyzed?

2. Research Theoretical Literature

Rural tourism- Rural tourism is a form of tourism and socio-recreational activity that can help mitigate challenges in rural development and contribute to the dynamism of socio-economic development by reducing unemployment, creating income, and improving the standard of living of the local community (Alibeigi & Ghasemi, 2015). In this type of tourism, the cultural, natural, and historical resources of a rural area are offered as cultural tourism commodities.Rural tourism can lead to economic growth, employment diversity and stability, business and industry dynamism, and new income opportunities and markets for agricultural products (Sharpley, 2002). One important economic characteristic of rural tourism is the tendency of the private sector to invest in this area due to its small size and diversity of plans (Papoli & Saghai, 2014). With the development of fast-paced urban lifestyle in recent years, many people are interested in traveling to calm and traditional rural settings. This type of tourism is similar to ecotourism and is especially popular in Europe and North America. In rural tourism, people travel to and stay at agricultural and livestock farming sites to become familiar with the rural lifestyle. With the right facilities in place, rural tourism can evolve into a significant source of tourism income in Iran. Iran has pristine traditional villages, some of which are worthy of international fame due to their special architectural style, such as Masouleh in Gilan, Abyaneh in Kashan, and Ziarat in Gorgan (Amooali Khosroabadi, 2013).

E-tourism- E-tourism refers to the use of ICT in the tourism industry with the aim of facilitating service provision, increasing quality, and reducing costs. It also plays a key role in global competitiveness in tourism. As a type of travel-related E-commerce, it allows easy searching, comparing, and selecting of tourism services for users (Ravadrad & Mohammadi, 2010). The World Tourism Organization recognizes E-tourism as an electronic business involving all processes and value chains in the tourism, hospitality, and recreation industries, including content creation, research and development, and electronic service (E-service) provision (Seyed Naghavi, 2013). It provides services such as hotel reservation and electronic ticket purchases via Internet websites and special standards and protocols (Li & Buhalis, 2006).

E-tourism has been developed in two main forms: (1) websites and (2) mobile applications and social networks (Fodor & Werthner, 2005; Cardoso & Lange, 2007). Novel communication technologies have enabled virtual traveling and reduced the need for physical transportation by providing accurate and up-to-date information (Khoshniat, 2013; Najafi et al., 2018). The role of social networks in E-tourism models has not been paid sufficient attention despite the large influence of these networks (Yavari Gohar et al., 2020). Smart phones have become a necessity for attracting tourists due to their ability to reduce costs and improve service efficiency (Bemanian, 2008). Finally, E-tourism in rural areas can play a significant role in realizing sustainable economic, social, and environmental development and lay the grounds for an electronic revolution in rural tourism (Soleimani, 2013).

Javan (2025) considered the development of smart rural tourism to depend on a combination of digital technologies, institutional/governance capacities, and local community empowerment and presented a conceptual model for policy-making/implementation. Anabestani and Barani Ali-Akbari (2025) believe that various smart rural tourism indicators can positively and significantly affect the sustainable development of rural residences. In their study, smart rural tourism had the largest direct effect on rural sustainable development with a factor of 0.821, and the independent variable predicted 86.3% of the variance of the rural sustainable development variable. Jami and Abadi (2025) emphasized the bond between digital tourism and rural entrepreneurship (such as the role of platforms, digital marketing, and local supplier networking) and considered it useful specifically for designing

support plans at a provincial/rural level. Rezvani et al. (2024) proposed a comprehensive framework for implementing smart rural tourism and showed that the relevant literature was clustered around components such as digital/data infrastructure, governance and destination management, local community participation, smart services, and sustainability. According to Hojjat-Shamami et al. (2023), rural E-tourism can activate pathways of strengthening sustainable livelihoods. However, rural residents' perception and readiness (skills/trust/infrastructure) play a key role, and full socio-economic benefits cannot be realized without it. Anabestani & Barani Ali-Akbari (2024) reported smart governance, smart citizens, smart economy, and smart education to be the highest-ranking dimensions of smart rural tourism in terms of effectiveness. In other words, they considered digital tools to be insufficient without human and governance capacity. Ayeneh & Almasifard (2024) identified the factors affecting the design of a business model for rural E-tourism to include economic and socio-cultural factors, infrastructure, government support, electronic research and development, competitive advantage, regulations, individual factors, institutional factors, environmental factors, and new technologies.

The study by Hojjat Shamami et al. (2023) indicated that the level of access to livelihood capital can affect the perception of E-tourism by rural residents. Moreover, they concluded that rural residents understand E-tourism in such forms as visiting/promotion and marketing, online shopping, intermediary elimination, and new business emergence. According to the results of Anabestani et al. (2023), the rural residents under study recognized the arrival of commercial tourists as an effective factor in the development of rural residences and believed that further support by local authorities improves hospitality, increases participation, and strengthens local development. In another study by Anabestani et al. (2024), it was shown that smart tourism plays an important role in enhancing tourist experience and promoting economic and social development of rural areas by leveraging ICT and can increase employment and income and facilitate sustainable development of rural businesses. According to a study by Kamiabi and Fadavi (2022), although E-tourism is growing, there exist challenges such as regulatory deficiencies, lack of digital trust, and multiplicity of decision-making bodies, and structural-managerial factors play the most important role in these challenges. Sadeghi Pouriani et al. (2021) showed that E-tourism readiness can be expressed as a weighted model with various aspects such as information technology (IT) infrastructure, business readiness, and destination management organizations. Based on the results of Ghanbari et al. (2020), despite the low level of electronic readiness, there exists a positive and significant correlation between infrastructural, organizational, and service readiness and E-tourism development. Shirmohammadi and Abedi (2019) indicated that E-tourism advertisement has a positive and significant effect on the destination's mental image and that creativity, audience insight and the use of social media are effective in attracting tourists. According to the results of Rezaei et al. (2018), factors such as Internet-based services, workforce training, cultural development, government support, security, and Internet reach are among the most important E-tourism metrics affecting rural entrepreneurship.

Lin and Ye (2025) proposed the DSAT framework for explaining how sustainable development empowers rural tourism. This framework includes simultaneous interaction among infrastructure, local stakeholders, and the spatial features of the destination. Ma et al. (2025) emphasized the integration of the digitalization of rural tourism and highlighted research gaps such as the need for an accurate conceptual definition, measurement of actual consequences, and better attention to justice/people-centricity. Arman et al. (2025) mentioned seven main contexts in their analysis of digital tourism: technology evolution in the tourism experience, local community empowerment, redefinition of marketing strategies, cultural and environmental sustainability, implementation barriers, innovation and research horizons (such as gamification and metaverse), and digital identity reconstruction (via cultural branding using emerging technologies). The results of Akbarpour and Farnoudkia (2025) indicated that the behavioral factor has a larger influence on hospitality. In other words, the cognition, perception, and participation of rural residents are good predictors of creative hospitality realization. The results also showed that the highest average host acceptance rate in rural areas belonged to Shamshir, Harir, and Hajij based on geographical, environmental, and tourism

conditions. Cheng and Zhiang (2025) demonstrated that technologies such as digital payment, online reservation, social network marketing, and virtual reality tours are widespread in rural tourism and considered the effect of ICT on performance and resilience as the main question to be answered. Zhang et al. (2025) reported a random controlled experiment on marketing interventions (short videos/live/social networks) for rural business product sales.

Zhang et al. (2024) showed that ICT can improve the resilience of rural business/destination by such measures as reducing operational vulnerability and enhancing market access and tourist engagement, although its effectiveness depends on the technology absorption and integration level. According to Wu et al. (2024), hot research focus areas in digital tourism include intelligence/data, platforms, smart experience, and governance/digital dependency risks. Their findings can also be used to design digital strategies (especially in data management and platforms) in rural destinations. In a review of smart village literature, Emerllahu and Bojatag (2024) emphasized the multiple dimensions of rural smartification, including infrastructure, governance, training, community empowerment, and services, which can act as a platform for implementing digital tourism. In a study on rural mountain tourism, Hussein et al. (2024) showed that the perception of risk related to social networks can have the strongest effect on tourist behavior and that active online participation has a positive impact. Using the partial least squares (PLS) technique, Anabestani and Javanshiri (2023) indicated that, among the research metrics, "promotion and training" had the strongest direct influence on the dependent variable with a factor of 0.591. In addition, the "RICT service awareness" variable had a larger impact on the development metrics of creative villages in rural residences with a factor of 0.816, considering direct and indirect effects. Given an R2 value of 0.998, the authors concluded that RICT has a high influence on rural development metrics. Based on the results of Samanah and Polikhina (2023), the digitalization of tourism improves destination management; enhances tourist experience; reduces resource use; and contributes to economic, social, and environmental sustainable development. According to Torabi et al. (2023), the development of rural E-tourism is dependent not only on the supplier but also on the acceptance and digital experience of the tourist, which act as demand drivers. In a systematic review of IT and tourism, Gretzel et al. (2022) showed that frequent topics in the literature include visitor experience, destination management, business solutions, and sustainable smart destinations. They also highlighted the gap between management narrative and actual implementation. Based on the results of Mishva (2021), the development of E-commerce allows the customization of business strategies, improves customer relationship management, and predicts business opportunities for tourism companies. According to Rahahelah et al. (2020), enhancing the quality of electronic services and customer relationship can play a significant role in developing the tourism sector. Hasounah et al. (2020) showed that elements of the E-tourism marketing mix, such as information accuracy, price, ease of payment, and website design, considerably affect the perception and decisions of tourists. In a study by Kazandziwa and Santana (2019), E-tourism was shown to be an influential phenomenon that has led to an evolution in tourism by highlighting the necessity of digitalizing processes.

Despite the relative richness of the literature, a critical review of previous studies reveals several fundamental gaps. First, most studies have addressed one of the aspects of technology, governance, or stakeholder behavior individually, without presenting a comprehensive model capable of simultaneously analyzing cultural, institutional, infrastructural, and software aspects within an integrated framework. Second, a considerable portion of the studies has a conceptual or descriptive nature, with little attention being paid to the systematic prioritizing of metrics using multi-criteria decision-making methods. As a result, the relative importance of the factors affecting the development of E-tourism has not been made clear in numerous cases. Third, the spatial analysis of the intra-regional differences at a rural scale has received less-than-deserved attention, and most studies address national and provincial levels without explaining small-scale spatial heterogeneities. Finally, a significant gap is observed between the theoretical discourse and the actual conditions of rural areas in Iran. Specifically, while many studies have highlighted

technological potentials, they have failed to provide field evaluations of the realization of these potentials within local contexts.

The present research takes a mixed approach to these problems by extracting a comprehensive set of metrics affecting rural E-tourism, determining their relative importance using the analytic hierarchy process (AHP), and then using the "measurement alternatives and ranking according to compromise solution" (MARCOS) multi-criteria decision-making and spatial AHP tools to evaluate and rank the status of this variable at the level of the sample villages in the Amol county. As such, this research attempts to fill the gap between theoretical frameworks in digital tourism and spatial-institutional realities in rural areas in Iran and present a local and evidence-based model for analysis and policy-making in rural E-tourism.

3. Research Methodology

3.1 Geographical Scope of the Recsearch

Larijan is a district in the Amol County. This district is located in the southernmost part of the Mazandaran province, on the northern slopes of the Alborz mountain range. Mount Damavand along with its ascent routes are in Larijan, which had a population of 8684 in the latest national population and housing census in 2016. The Larijan district consists of two towns, Rineh and Gazanak, and 73 villages and settlements. It consists of the two rural districts of Bala larijan and Pain Larijan.

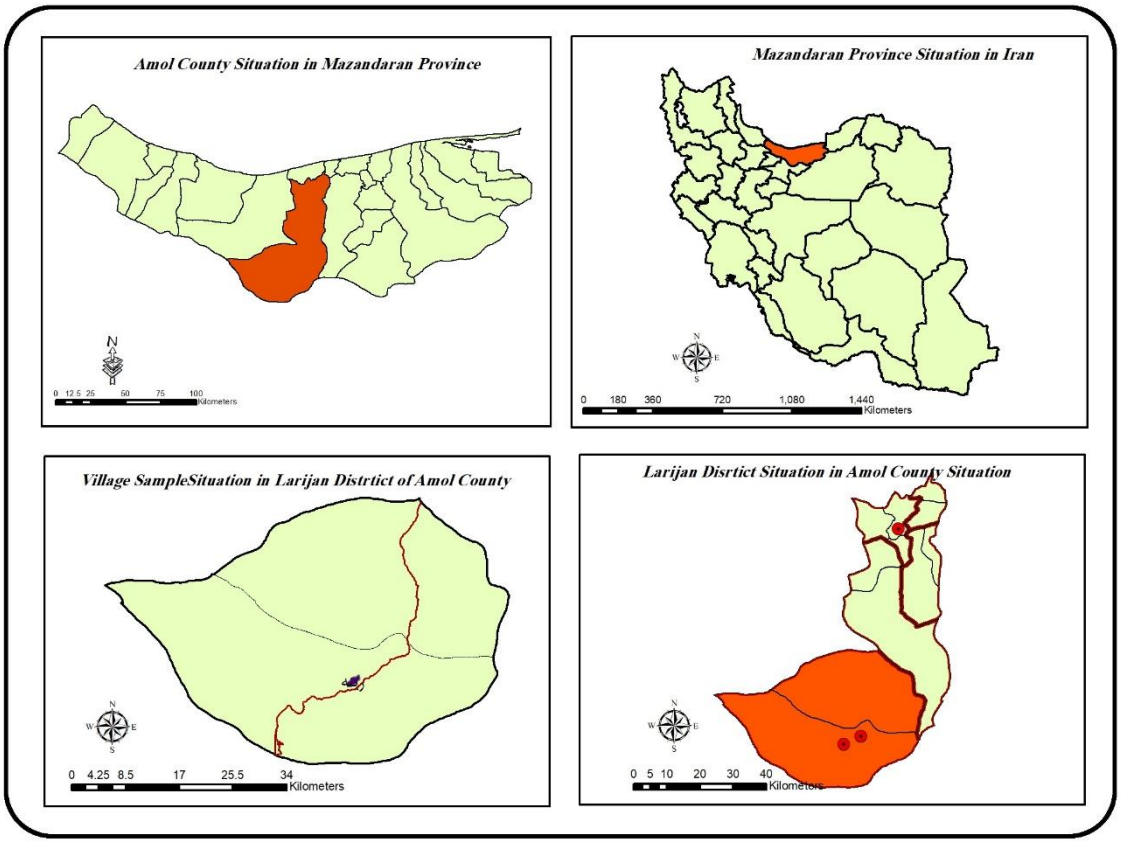

Figure 1. Location of the area under study

3.2 Research Method

This research is of the applied type in terms of objective and of the descriptive-analytical type in terms of method. The methodology is composed of referring to library sources, gathering field data via questionnaires, analyzing the data, and finally making conclusions.

Table 1. Estimate of the number of sample rural households in the area under study

Rural district	Village	Household	Population	Sample size
Bala Larijan	Polur	151	302	16
	Ab Garm	104	262	14
	Niak	61	166	12
	Shahandasht	31	69	10
	Vana	73	231	12
	Ab Ask	158	454	16
	Ira	29	69	10
	Lasem	76	199	12
	Nava	24	51	10
Pain Larijan	Abdolmanaf	38	111	11
	Namar	71	211	12
	Nosar	142	399	15
	Nandel	162	429	16
	Baijan	138	415	15
	Haft Tanan	71	203	12
Total		1329	3571	194

Source: Statistical Center of Iran (2016) and author's calculations (2025)

In order to measure the variables and metrics used in the research and analyze the data resulting from field observations, descriptive, inferential, and spatial analysis statistical methods were used via the ArcGIS and SPSS software packages. Moreover, Cronbach's alpha coefficient in SPSS software was employed to evaluate the reliability of the questionnaire. In addition, the AHP technique was utilized to rank and obtain the E-tourism components.

There are various methods for measuring the consistency, reliability, and internal homogeneity of a questionnaire. One of the most common of these is Cronbach's alpha coefficient. Given the interval/ratio scale of the dimensions and components, this research used the methods of skewness and kurtosis as well as Cronbach's alpha. As for skewness and kurtosis, statisticians prefer an interpretation of ±2 for skewness, kurtosis, or both. The following table presents the values for skewness, kurtosis, and Cronbach's alpha. As shown in the table, the skewness and kurtosis values of most of the dimensions fall between -1 and +1, with the overall values between -2 and +2. This indicates that the dimensions and components follow a normal distribution and the T-tests can be used to examine the relationships between the variables for the rural areas. The alpha value of the variables was found to be greater than 0.7, indicating that the dimensions and components of sustainable development have excellent reliability.

Table 2. Normality analysis of the E-tourism variable

Dimension	Skewness	Kurtosis	Cronbach's alpha	Result
Cultural acceptance	-0.00	-0.49	0.833	Normal
Support-management policies	0.61	-0.42	0.879	Normal
Infrastructure	0.52	-0.44	0.863	Normal
Information system	0.26	-0.69	0.928	Normal
E-tourism variable	0.471	-0.425	0.933	Normal

4. Research Findings

4.1.Personal characteristics of respondents (villagers and experts)

Villagers. Gender: Eighty-one (41.8%) of the respondents were males, and 113 (58.2%) were females. Age: Sixty-seven (34.5%) of the rural respondents were aged 31-40, 66 (34%) were aged 21-30, 32 (16.5%) were aged under 50, and 28 (14.4%) were aged above 51. Also, 1 person did not give their age. Fifty-eight respondents were single, while 136 were married. In terms of education, 1 respondent had elementary school education, 7 (3.6%) had upper elementary education, 17 (8.8%) had high-school education, 51 (26.3%) had a diploma or higher certificate, and 118 had a bachelor's degree or higher. With respect to employment, 8 respondents (4.1%) were farmers, 4 (2.1%) were livestock keepers, 60 (30.9%) were employees, 15 (7.7%) were workers, 84 (43.3%) were self-employed, and 23 (11.9%) were none of these.

Experts. The AHP questionnaire was distributed among experts in order to determine the E-tourism metrics. The personal characteristics of the respondents are shown in Table 3.

Table 3. Personal characteristics of experts

Characteristic		Frequency	%
Gender	Female	3	%60
	Male	2	%40
Age	21-30	2	%40
	31-40	0	0
	41-50	1	%20
	51 and above	2	%40
Job	Student	2	%40
	Graduate	0	0
	University professor	1	%20
	Employee	2	%40
Academic qualifications	Master's degree	3	%60
	Specialist	2	%40

4.2.A study of the impact coefficients of E-tourism components using AHP

AHP is a mathematical analytical method of determining the importance and priority of criteria in multi-criteria decision-making problems. It is especially useful in the presence of contradictory and complex criteria. By decomposing the problem into hierarchical levels and performing pairwise comparisons, this method enables the ranking and optimal selection of alternatives. Proposed by Thomas Saati in the 1970s, AHP emphasizes human reasoning to address complex fuzzy problems. It has been widely used in various scientific fields (Movahed et al., 2021).

AHP steps: AHP begins with the selection of alternatives. In this step, all the alternatives or possible answers that need evaluation are identified and listed. Then, in the problem and criteria definitions step, the main problem is decomposed into smaller portions, and the criteria and sub-criteria affecting the decision-making are specified. Subsequently, a hierarchical structure is created to establish the relationship between the objective, criteria, and alternatives in the form of a hierarchical tree. After that, pairwise comparisons are made between criteria and options to determine the relative importance of each element compared to others. In the next step, the comparison results are used to extract the relative weights of the criteria and alternatives via mathematical calculations. Next, the consistency of the judgments is assessed to ensure the rationality and reliability of the comparisons. Finally, the final scores of the alternatives are computed and the weights are summed, the alternatives are ranked, and the best alternative is selected as the outcome of the decision-making process..

Table 4. E-tourism components

Component	Cultural acceptance	Support-management policy	Infrastructure	Software	Total weight	Final weight
Cultural acceptance	1	0.25	2	0.25	0.115	0.097
Support-management policy	4	1	3	6	0.517	0.494
Infrastructure	0.5	0.333	1	0.2	0.090	0.184
Software	4	0.166	5	1	0.276	0.223
Total	9.5	1.75	11	7.45	1	1

A study of the pairwise comparisons in the 5 dimensions of E-tourism indicates that the cultural acceptance component includes 11 metrics, with the "Rural Computer and Internet Penetration Rate" metric possessing the highest importance with a score of 0.14572. The support-management policy component has 13 metrics, with the "Support for Private Sector Investment in E-Commerce" metric gaining the first rank (with a score of 0.13). The infrastructure (hardware) component has 9 metrics, with the "Internet Access for all Tourism Sector Personnel" metric exhibiting the highest importance with a score of 0.19. This indicates the critical role of personnel Internet access in improving the performance and development of E-tourism. The information system (software) component has 13 metrics, with the "Use of Electronic Banking, Credit Cards, and Money Transfer Facilities" metric achieving the highest rank with a score of 0.18667. The results for E-tourism components, presented in Table 4, show that the support-management policy component obtained the highest rank. This was followed by software and infrastructural components and cultural acceptance in order. These results represent the prioritization made by E-tourism experts in the Larijan region.

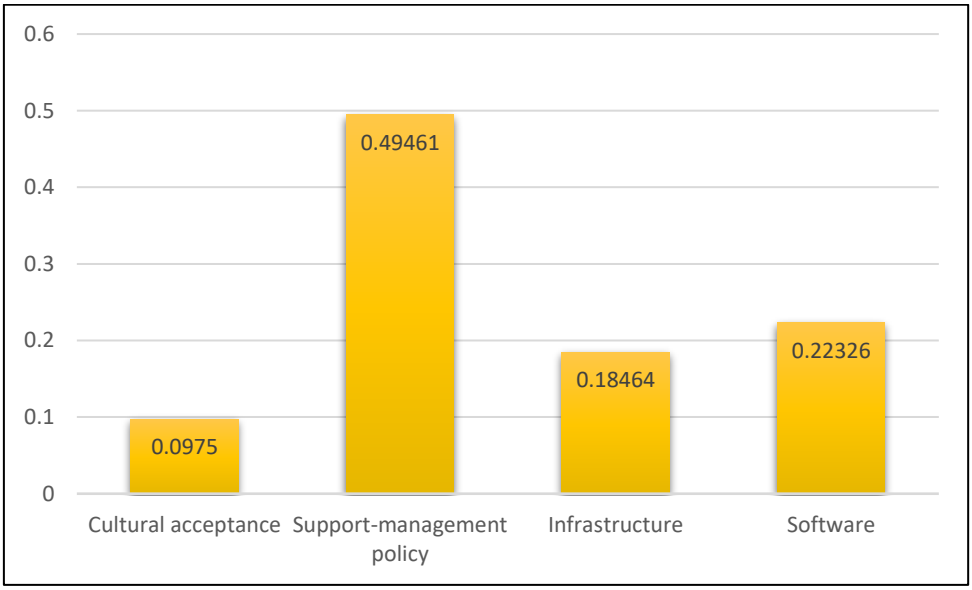

Figure 2. Final weights of E-tourism components

Table 5 presents the metric rankings. According to this table, the three metrics "Support for Private Sector Investment in E-Commerce", "Required National Regulations", and "Use of Skilled Workforce in E-Tourism" occupied the first to third ranks, respectively. All three metrics belong to the support-management policy component.

Table 5. Ranking of E-tourism metrics

Component	Indicator	Normalized final weight	Rank
Cultural acceptance	Public Familiarity with IT Benefits	0.011	34
	Increase in Tendency of Educated People to Remain in the Village	0.0065	45
	Acceptance of New Technologies by the Community	0.0107	35
	Usage of Communication Service Offices, Net Cafes, etc.	0.0067	44
	Spread of Tourism-Related Social Networks by Tourists	0.0098	37
	Planning and Implementation of Training Courses for the Use of IT in Tourism	0.0139	32
	Rural Digital Literacy	0.0098	36
	Rural Computer and Internet Penetration Rate	0.0142	30
	Increase in Tendency of Educated People to Remain in the Village	0.0063	46
	Rural Familiarity with Virtual Tourism (Virtual Visits and Tours)	0.0078	41
	Rural E-Trust Availability	0.0075	42
Support-management policy	Holding E-Tourism Courses (Regulations and Guidelines)	0.00224	20
	Public Sector Financial Support of E-Tourism Infrastructure Projects	0.0383	8
	Support from Top Managers of Relevant Organizations in E-Tourism Implementation	0.0334	12
	Use of Skilled Workforce in E-Tourism	0.0486	3
	Technology Awareness of Tourism Managers	0.0372	9
	Required National Regulations	0.0543	2
	Uniqueness of Characteristics of Tourism Products	0.0314	13
	Cooperation between IT and Tourism Sectors	0.0474	4
	Cooperation between Universities and Touristic Organizations and Companies	0.0353	11
	Financial Incentives in E-Tourism	0.0437	5
	Sufficient Advertisement of Existing E-Tourism Services	0.0244	19
	Suitability of Internet Services to Tourist Needs	0.043	6
	Support for Private Sector Investment in E-Commerce	0.0646	1
Infrastructure	Internet Speed and Bandwidth Increase in Tourism Destinations	0.0096	38
	Quality of E-Tourism Software and Available Applications	0.0067	44
	Implementation of Network Hardware Infrastructure	0.0224	21
	Budget and Facilities Dedicated to E-Tourism Projects	0.0278	15
	Development of E-Banking in E-Tourism	0.0249	18
	Existence of Software Program for Electronic Backup	0.0164	27
	Internet Access for all Tourism Sector Personnel	0.0368	10
	Rural Smart Phone Use	0.0282	14
	Homogeneity of ICT Infrastructure	0.0266	16
Software	Database Update	0.0089	40
	Correct Location of Tourist Attractions by Electronic Systems	0.0141	31
	Use of Satellite Locations Systems	0.0093	39
	Use of Decision and Planning Support Systems in Tourism	0.0154	28
	Use of Electronic Hotel, Residence, and Service Reservation Systems	0.0184	24
	Online Visa Issuance for Tourists	0.0144	29
	Tourist and Villager Access to the E-Government System	0.0213	22

Component	Indicator	Normalized final weight	Rank
	Tourist and Villager Access to Information Security	0.026	17
	Language Support in Tourism Websites	0.0182	25
	Mutual Relationship between Tourists and Touristic Site Managers	0.0206	23
	Use of Electronic Banking, Credit Cards, and Money Transfer Facilities	0.0417	7
	Online Tour Availability for Tourist Destinations and Attractions	0.018	26
	Graphical Attractiveness of Tourism Websites	0.0117	33
	Total	1	

The results of weighting the E-tourism metrics using AHP show that the highest importance belongs to the "support-management policies" component based on the 46 metrics studied under the four main components (cultural acceptance, support-management policies, infrastructure, and information systems). Based on the normalized final weights, the top three metrics are "Support for Private Sector Investment in E-Commerce" (0.0646), "Required National Regulations" (0.0543), and "Use of Skilled Workforce in E-Tourism" (0.0486). All three metrics belong to the support-management policy component. This finding shows that, from the experts' perspective, the creation and development of E-tourism requires efficient institutional, legal, and management contexts more than it needs cultural or purely technological factors. In general, the results in Table 5 indicate that the development of E-tourism in the villages of the Larijan district has an institutional-structural nature and that its main prerequisites are the strengthening of digital governance, legal frameworks, and skilled labor.

4.3. Spatial analysis of E-tourism throughout the region under study

In order to determine the status of the variables in each of the metrics, the average of the villagers' responses was compared using the one-sample T-test. The T-test is a parametric test that examines how much larger or smaller a population mean is relative to a constant value.

A comparison of the average of the respondents' responses with a theoretical median of 3 and the results of the one-sample T-test indicates that all the variable dimensions of E-tourism have values smaller than the theoretical median and are not desirable for the region under study. In addition, the T statistic for the E-tourism variable is smaller than the defined theoretical median.

Table 6. Evaluation of the E-tourism dimensions from the villagers' perspective

Dimensions	Mean	Test standard = 3					
		Value of T statistic	Degree of freedom	Significance level	Mean deviation	95% confidence interval of the difference	
						Down	Up
Cultural acceptance	2.53	-10.13	193	0.00	-0.46	-0.56	-0.37
Support-management policies	2.09	-19.05	193	0.00	-0.91	-1	-0.81
Infrastructure	2.34	-11.66	193	0.00	-0.65	-0.76	-0.54
Information system	2.27	-12.02	193	0.00	-0.72	-0.83	-0.6
E-tourism variable	2.31	-15.05	193	0.00	-0.68	-0.77	-0.59

It can be said with a confidence level of 95% that the tourism variable dimensions are not desirable throughout the sample villages.

In terms of the spatial distribution of the mean of the variable, i.e., E-tourism, the Polur, Abdolmanaf, and Lasem villages have better conditions compared to other villages with values of 2.53, 2.5, and 2.56, respectively. Furthermore, with respect to distance from town, the Polur and Lasem villages are closer to Tehran. This has caused better access to livelihood facilities for these villages. Table 7 presents the spatial distribution of the different variable dimensions of E-tourism in the villages under study.

Table 7. Spatial distribution of the mean of the variable dimensions of E-tourism for different villages

Description	Cultural acceptance	Support-management policies	Infrastructure	Information system
Anti-ideal	2.21	1.72	1.9	1.91
Ira	2.48	2.09	2.43	2.26
Ab Ask	2.49	2.19	2.28	2.31
Ab Garm	2.21	2	2.14	2.02
Baijan	2.53	1.87	2.54	2.35
Polur	2.47	2.25	2.82	2.59
Shahandasht	2.41	2.11	2.12	2.16
Abdolmanaf	2.72	2.34	2.54	2.42
Lasem	2.64	2.22	2.67	2.72
Nandel	2.51	2.14	2.36	2.47
Namar	2.47	2.07	2.45	2.19
Nava	2.81	1.72	1.96	1.92
Nosar	2.59	2.21	2.29	2.31
Niak	2.75	1.83	1.9	1.91
Haft Tanan	2.51	2.09	2.18	2.04
Vana	2.51	2.08	2.33	2.24
Anti-ideal	2.81	2.34	2.82	2.72

The Interpolation command in the ArcGIS software was used for the spatial analysis and comparison of the variables associated with E-tourism and sustainable rural development and each of the dimensions in the villages of the Larijan district. In this process, first, three common interpolation methods in GIS were used, and the most accurate method for zoning was selected by comparing the Error Mean and RMSS values.

In this section, the MARCOS method was employed to examine the spatial distribution in the sample villages in the Larijan district. The dimensions under study in the E-tourism variable include cultural acceptance, support-management policies, infrastructure, and information systems. Therefore, it is necessary to determine the importance of each of these dimensions. To this end, the weight of each dimension was specified using the AHP technique and the questionnaire answered by experts.

The MARCOS method is a novel multi-criteria decision-making technique. It was introduced by Stević and Pamučar in 2020 and is used for ranking research options.

Inputs of the method: Decision matrix, criterion weights, nature of the criteria (positive or negative)

Steps in the MARCOS method:

Step 1: Creation of the decision matrix

The first step in all multi-criteria decision-making methods, which aim to rank alternatives, is the formation of the decision matrix. The MARCOS technique, m alternatives are evaluated by considering n criteria. In this process, each alternative is given a score based on each criterion. These scores can be quantitative or qualitative. In the end, an m by n decision matrix must be created for the subsequent steps to take place.

Step 2: Determination of ideal and anti-ideal

In this step , the ideal (Al) and anti-ideal (Aal) values are determined using the following relationships. where B refers to the criteria that have a benefit nature, and C refers to the criteria that have a cost nature.

$$AI = \max_i x_{ij} \quad if\ j \in B \quad and \quad \min_i x_{ij}\ if\ j \in C$$

$$AAI = \min_i x_{ij} \quad if\ j \in B \quad and \quad \max_i x_{ij}\ if\ j \in C$$

Step 3: Normalization

In this step, the following relationships are used to normalize the the cost and benefit criteria. The output of this step is a matrix in which all the criteria are of the benefit nature. This is because the normalization method is linear in this technique.

$$n_{ij} = \frac{x_{aj}}{x_{ij}} \quad if \ j \in C$$

$$n_{ij} = \frac{x_{ij}}{x_{aj}} \quad if \ j \in B$$

Step 4: Weighting

In this step, the normal matrix is multiplied by the weights of the criteria using the equation below so as to obtain a weighted matrix. The criterion weights can be calculated by different methods. Some of the preferred new methods for criterion weighting include the SWARA or BWM.

$$V_{ij} = n_{ij} \times W_j$$

Step 5: Utility degree of the alternatives

In this step, the ideal (+K) and anti-ideal (-K) utility of the alternatives are computed using the relationships below.

$$K_i^+ = \frac{S_i}{S_{ai}}$$

$$K_i^- = \frac{S_i}{S_{aai}}$$

In the above equations, Si=(i=1, 2, 3, ...m) is the sum of elements in each row of the weighted matrix and is obtained from the following equation.

$$S_i = \sum_{j=1}^{n} V_{ij}$$

Step 6: Determination of final performance and ranking of alternatives

In this step, the utility performance of each alternative is calculated via the equation below.

$$f(K_i) = \frac{K_i^+ + K_i^-}{1 + \frac{1 - f(K_i^+)}{f(K_i^+)} + \frac{1 - f(K_i^-)}{f(K_i^-)}}$$

In the above relationship, f(k-) is the anti-ideal utility performance of the anti-ideal and f(k+) is the ideal utility performance.

$$f(K_i^-) = \frac{K_i^+}{K_i^+ + K_i^-}$$

$$f(K_i^+) = \frac{K_i^-}{K_i^+ + K_i^-}$$

Then, the ranking is performed based on the values obtained from f(k) of each alternative. The larger the f(k) value of an alternative is, the better its rank will be.

Table 8 Utility performance and final ranking of alternatives

Anti-ideal	**Si**	**K-**	**K+**	**F(K-)**	**F(K+)**	**F(K)**	**Rank**
	0.7205						
Ira	0.87195	1.210	0.872	0.419	0.581	0.670	14
Ab Ask	0.8873	1.232	0.887	0.419	0.581	0.682	13
Ab Garm	0.80458	1.117	0.805	0.419	0.581	0.618	15
Baijan	0.8425	1.169	0.842	0.419	0.581	2.012	9
Polur	0.9593	1.331	0.959	0.419	0.581	2.291	2
Shahandasht	0.8445	1.172	0.845	0.419	0.581	2.017	8
Abdolmanaf	0.9529	1.323	0.953	0.419	0.581	2.275	3
Lasem	0.9593	1.332	0.959	0.419	0.581	2.291	1
Nandel	0.8964	1.244	0.896	0.419	0.581	2.141	4
Namar	0.8628	1.198	0.863	0.419	0.581	2.060	6
Nava	0.7446	1.033	0.745	0.419	0.581	1.778	12
Nosar	0.8954	1.243	0.895	0.419	0.581	2.138	5
Niak	0.76084	1.056	0.761	0.419	0.581	1.817	11
Haft Tanan	0.83744	1.162	0.837	0.419	0.581	2.000	10
Vana	0.86234	1.197	0.862	0.419	0.581	2.059	7
Anti-ideal	1						

The MARCOS multi-criteria decision-making method was used for the spatial analysis of the status of E-tourism in the sample villages. The F(K) results indicate a significant difference between villages in terms of the level of access to E-tourism components. Based on the results presented in Table 8 and Fig. 3, Lasem (first rank), Polur (second rank), and Abdolmanaf (third rank) exhibited the highest performance levels. These villages were closer to the ideal alternative and had a better status in terms of communication infrastructure, digital services, and management conditions. The proximity of some of these villages to road networks and urban centers could have contributed to their better access to resources and facilities. In contrast, Ab Garm, Ab Ask, and Ira offered the poorest performance and had the lowest ranks in the table. These villages were also categorized in the unsuitable (green) spectrum in the spatial zoning analysis, which shows their relative weakness with respect to the four dimensions of E-tourism. Scarce management support, weak technology infrastructure, and limited access to digital resources are some of the factors contributing to this condition.

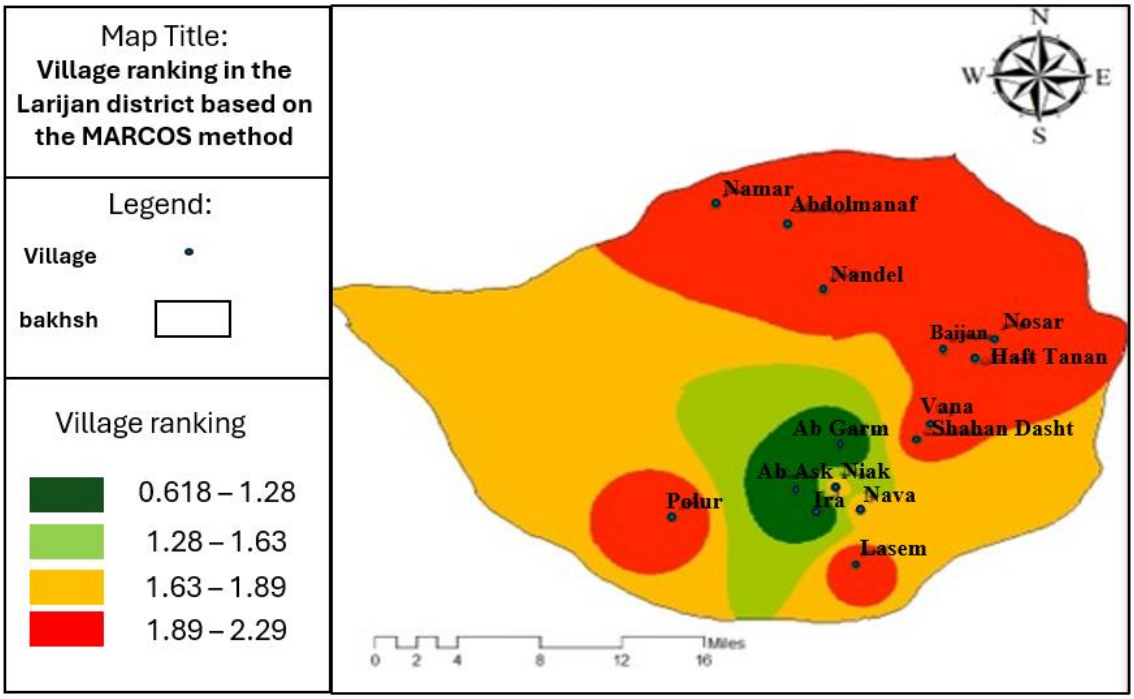

Figure 3. Spatial distribution of E-tourism in the villages of the Larijan district

5. Discussion and conclusion

The most important E-tourism components, comprising 4 dimensions and 46 components, were extracted from prior sources. The AHP method and Excel software were used to obtain their weights and ranking. The results indicate that the "Support for Private Sector Investment in E-Commerce", "Required National Regulations", and "Use of Skilled Workforce in E-Tourism" metrics obtained final weights of 0.06, 0.05, and 0.04, respectively, and obtained the first, second, and third ranks, respectively. Hence, these metrics, which belong to the support-management policies component, were found to be the most important for sustainable rural development. As a result, the most influential E-tourism component was support-management policies with a score of 0.49, followed by software with a score of 0.22, infrastructure with a score of 0.18, and cultural acceptance with a score of 0.09.

The first objective of this research was to study the components and their creation process in rural E-tourism. Based on the villager participation results, the "Support for Private Sector Investment in E-Commerce", "Required National Regulations", and "Use of Skilled Workforce in E-Tourism" metrics obtained the first to third ranks in the support-management policies component. Recent studies in Iran, including that by Ayeneh and Almasifard (2024) recognized rural E-tourism development as dependent on a set of institutional, economic, social, infrastructural, legal, and technological factors.

This multi-dimensional approach is consistent with the results of the present research. This is because the prioritization of support, legal, and management metrics in the present research highlights the role of institutional factors as the basis for other factors. As such, the study by Anabestani and Barani Ali-Akbari (2024) in smart rural tourism also emphasizes the role of governance, infrastructure, human capital, and connectivity, which is in agreement with the key role attributed to policy-making and workforce by the present research.The research by Anabestani et al. (2023) stresses the significance of support from local institutions, improvement of management, and the exploitation of technological capacities in increasing participation and socio-economic development of villages. These findings are consistent with the results of the present study, which recognizes support and management policies as the most important drivers of sustainable rural development. Hojjat Shamami et al. (2023) indicated that the perception and acceptance of E-tourism among villagers is influenced by livelihood capitals and support structures. This indirectly confirms the role of policy-making and institutional empowerment.

From a legal and institutional viewpoint, the research by Kamiabi and Fadavi (2022) emphasized the presence of the legal challenges, E-trust issues, and structural-management problems in E-tourism. These results are in agreement with the findings of the present study, which introduces legal frameworks as one of the most prominent metrics. In addition, the studies by Sadeghi Pouriani et al. (2021) and Ghanbari et al. (2020) focused on electronic readiness and highlighted the role of infrastructure and organizational and institutional readiness in E-tourism development. This can be confirmed by the high-priority achieved by the support-management policies metric in the present work.In the field of marketing and tourist relationships, the research by Shirmohammadi and Abedi (2019), Hasounah et al. (2020), and Rahahelah et al. (2020) stressed on the significance of the quality of E-services, digital advertisement, and customer relationship management. Although the focus of these studies was mostly on the operational and demand-side aspects, the realization of these functions requires legal and support frameworks and a skilled workforce, which have been recognized as major priorities in the present work. The results of Rezaei et al. (2018), which emphasized workforce training, governmental support, and digital security, are also highly consistent with the findings of the present research.At the international level, the studies by Kazandziwa and Santana (2019), Mishva (2021), and Gretzel et al. (2022) highlighted the importance of process digitalization, the role of management and policy-making, and the significance of E-business strategies in the tourism industry. Furthermore, the research by Samaana and Polikhina (2023), Amerlahu and Bojatag (2024), and Torabi et al. (2023) considered the digitalization of tourism to be a multi-faceted phenomenon that requires efficient governance, institutional support, and human resource empowerment, a conclusion that agrees with the present study.More recent research, especially that by Cheng and Zhiang (2025), Zhang et al. (2025), and Hussein et al. (2024), focused mainly on novel technology, tourist behavior and experience, and digital marketing tools. Although these studies emphasized the demand and technology aspects, they implied that these tools would have limited effectiveness without legal frameworks, institutional support, and a powerful workforce. This conclusion is also confirmed by the present work.Overall, a review of previous studies indicates that the results of the present research are consistent with a major portion of the Iranian and international studies. Furthermore, the current work fills the institutional gaps presented by previous research in a systematic and prioritized manner by focusing on support-management policies, regulations, and human capital. This consistency shows that rural E-tourism development mostly requires strong institutional, legal, and management contexts.

The following suggestions align with the findings of this research and can be translated to policy/practical implications:

1- Private sector investment incentive packages: Design of financial incentives, credit facilities, and tax exemptions to encourage private businesses to enter rural E-tourism services/platforms.

2- Reform and integration of the legal framework for E-tourism: Revision of laws related to E-tourism and E-commerce with the aim of reducing institutional overlap, resolving legal ambiguities, and increasing investor and tourist trust.

3- Empowerment of local human capital and specialization of training: Holding of professional courses in digital marketing, online business

management, content creation, and data/security literacy for rural residents and tourism stakeholders.
4- Improvement of communication infrastructure quality and stability: Development of stable and high-speed Internet, improvement of network coverage, and support for new technologies in rural as a required condition for the development of digital tourism services.
5- The creation of an innovation ecosystem for rural digital tourism: The establishment of innovation/accelerator centers and support for creative ideas (applications, virtual tours, online reservations, handicraft markets) to improve local business stability.
6- Integrated governance and cross-sectoral coordination mechanisms: The creation of an official mechanism for coordination between tourism, IT, and rural development institutions to reduce redundant efforts and increase implementation effectiveness.
7- Trust building and information security in E-tourism services: Data protection standards, authentication/secure payment mechanisms, and trust building for local users and tourists (to reduce perceived risk).
8- Institutionalization of the sustainable development approach in digital planning: Simultaneous evaluation of economic, socio-cultural, and environmental consequences in the design of rural E-tourism services and policies.

Acknowledgments
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Authors' contributions
The authors equally contributed to the preparation of this article.

Conflict of interest
The authors declare no conflict of interest.

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Journal of Research and Rural Planning
Volume 14, No. 4, Autumn 2025, Serial No. 51, Pp. 101-120
eISSN: 2783-2007 **ISSN: 2783-2791**
http://jrrp.um.ac.ir

Original Article

تحلیل فضایی عوامل موثر بر شکل‌گیری رهیافت گردشگری الکترونیک روستایی (مورد مطالعه: روستاهای مقصد گردشگری شهرستان آمل)

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چکیده مبسوط

۱. مقدمه

گردشگری الکترونیک به‌عنوان یکی از پیامدهای گسترش فناوری‌های اطلاعات و ارتباطات، تحولی بنیادین در زنجیره ارزش گردشگری ایجاد کرده و با تسهیل بازاریابی، رزرو، مدیریت مقصد و ارتقای تجربه گردشگر، به افزایش رقابت‌پذیری و پایداری مقاصد کمک می‌کند. در نواحی روستایی، این رهیافت می‌تواند با کاهش محدودیت‌های مکانی، تقویت کارآفرینی محلی، افزایش دسترسی به بازار و ارتقای تاب‌آوری اقتصادی، نقش مهمی در توسعه پایدار ایفا کند. با وجود ظرفیت‌های بالای گردشگری در روستاهای بخش لاریجان شهرستان آمل، توسعه این بخش عمدتاً مبتنی بر الگوهای سنتی بوده و ارزیابی نظام‌مند و فضایی از وضعیت و عوامل مؤثر بر شکل‌گیری گردشگری الکترونیک در این منطقه صورت نگرفته است. بر این اساس، پژوهش حاضر با هدف شناسایی و اولویت‌بندی عوامل مؤثر بر شکل‌گیری رهیافت گردشگری الکترونیک روستایی و تحلیل فضایی وضعیت آن در روستاهای مقصد گردشگری شهرستان آمل انجام شده است.

۲. مبانی نظری تحقیق

چارچوب نظری پژوهش بر ادبیات گردشگری الکترونیک، گردشگری هوشمند روستایی و توسعه پایدار استوار است. در این چارچوب، گردشگری الکترونیک صرفاً به استفاده از ابزارهای دیجیتال محدود نمی‌شود، بلکه مستلزم وجود زیرساخت‌های فناورانه، بسترهای نهادی و قانونی، سرمایه انسانی متخصص و پذیرش فرهنگی در سطح جامعه محلی است. بر اساس مرور ادبیات، چهار مؤلفه اصلی برای تبیین شکل‌گیری گردشگری الکترونیک روستایی استخراج شد: (۱) پذیرش فرهنگی، (۲) سیاست‌های حمایتی–مدیریتی، (۳) زیرساخت‌های سخت‌افزاری و ارتباطی، و (۴) سیستم‌های اطلاعاتی و نرم‌افزاری. مطالعات پیشین نشان می‌دهد که توسعه گردشگری دیجیتال پدیده‌ای چندبعدی است و بدون حکمرانی کارآمد، چارچوب‌های حقوقی شفاف و توانمندسازی نیروی انسانی، زیرساخت‌های فناورانه به تنهایی نمی‌توانند به توسعه پایدار منجر شوند. با این حال، در بسیاری از پژوهش‌های داخلی، تحلیل یکپارچه و فضایی این ابعاد در مقیاس روستایی کمتر مورد توجه قرار گرفته است؛ خلأیی که پژوهش حاضر در پی پوشش آن است.

۳. روش تحقیق

این پژوهش از نظر هدف کاربردی و از نظر روش توصیفی–تحلیلی است. داده‌ها از طریق مطالعات کتابخانه‌ای و پیمایش میدانی گردآوری شد. جامعه آماری شامل روستاییان ۱۵ روستای منتخب بخش لاریجان بود که بر اساس فرمول کوکران، ۱۹۴ پرسشنامه تکمیل گردید. همچنین برای تعیین وزن معیارها، پرسشنامه مقایسه‌های زوجی در اختیار ۵ نفر از خبرگان حوزه گردشگری و فناوری قرار گرفت. پایایی ابزار با استفاده از ضریب آلفای کرونباخ (بیش از ۰.۷ برای تمامی ابعاد) تأیید شد و توزیع داده‌ها از نظر نرمال بودن بررسی گردید. برای تعیین اهمیت نسبی مؤلفه‌ها و شاخص‌ها از فرآیند تحلیل سلسله‌مراتبی (AHP) و برای رتبه‌بندی و تحلیل فضایی روستاها از روش تصمیم‌گیری چندمعیاره مارکوس(MARCOS) و ابزارهای GIS استفاده شد. همچنین

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آزمون T تک‌نمونه‌ای برای مقایسه میانگین ابعاد با مقدار مبنا (۳) به کار رفت.

۴. یافته‌های تحقیق

نتایج AHP نشان داد که مؤلفه «سیاست‌های حمایتی–مدیریتی» با وزن ۰/۴۹ مهم‌ترین بعد گردشگری الکترونیک در منطقه است و پس از آن مؤلفه‌های «سیستم‌های اطلاعاتی/نرم‌افزاری» (۰/۲۲)، «زیرساخت» (۰/۱۸) و «پذیرش فرهنگی» (۰/۰۹) قرار دارند. در میان ۴۶ شاخص بررسی‌شده، سه شاخص «حمایت از سازمان‌های خصوصی جهت سرمایه‌گذاری در بخش تجارت الکترونیک» (۰/۰۶۴۶)، «چارچوب‌های قانونی و مقررات حقوقی لازم» (۰/۰۵۴۳) و «استفاده از نیروی انسانی متخصص و آموزش‌دیده در حوزه گردشگری الکترونیک» (۰/۰۴۸۶) بالاترین اولویت را کسب کردند که همگی در زیرمجموعه سیاست‌های حمایتی–مدیریتی قرار دارند. نتایج آزمون T تک‌نمونه‌ای نشان داد که میانگین تمامی ابعاد گردشگری الکترونیک در روستاهای مورد مطالعه کمتر از حد مطلوب (۳) است و وضعیت کلی منطقه در سطح نامناسبی قرار دارد. تحلیل فضایی با روش MARCOS نشان داد که روستاهای «لاسم»، «پلور» و «عبدالمناف» به ترتیب رتبه‌های اول تا سوم را از نظر عملکرد گردشگری الکترونیک کسب کرده‌اند و به گزینه ایده‌آل نزدیک‌تر هستند. در مقابل، روستاهای «آب‌گرم»، «آب‌اسک» و «ایرا» پایین‌ترین رتبه‌ها را به خود اختصاص داده و در پهنه نامناسب قرار گرفته‌اند که نشان‌دهنده ضعف در زیرساخت‌های ارتباطی، حمایت‌های مدیریتی و خدمات دیجیتال است. این نتایج بیانگر ناهمگونی فضایی معنادار در سطح آمادگی و توسعه گردشگری الکترونیک میان روستاهای منطقه است.

۵. بحث و نتیجه‌گیری

یافته‌های پژوهش نشان می‌دهد که شکل‌گیری گردشگری الکترونیک روستایی در بخش لاریجان بیش از آنکه تابع عوامل صرفاً فناورانه باشد، به بسترهای نهادی، حقوقی و مدیریتی وابسته است. اولویت بالای شاخص‌های مرتبط با حمایت از بخش خصوصی، چارچوب‌های قانونی و سرمایه انسانی تخصصی بیانگر آن است که توسعه این حوزه ماهیتی نهادی–ساختاری دارد. بنابراین، بدون اصلاح و یکپارچه‌سازی قوانین، ایجاد مشوق‌های سرمایه‌گذاری، تقویت حکمرانی دیجیتال و توانمندسازی نیروی انسانی محلی، توسعه زیرساخت‌های فناورانه به تنهایی نمی‌تولند منجر به تحول پایدار شود. از منظر سیاستی، پیشنهاد می‌شود بسته‌های حمایتی برای جذب سرمایه‌گذاری خصوصی در گردشگری دیجیتال روستایی طراحی شود، آموزش‌های تخصصی در حوزه بازاریابی دیجیتال و مدیریت کسب‌وکار آنلاین برای ساکنان اجرا گردد، زیرساخت اینترنت پایدار و پرسرعت در روستاها توسعه یابد و سازوکار هماهنگی بین‌بخشی میان نهادهای گردشگری و فناوری اطلاعات ایجاد شود. در مجموع، پژوهش حاضر با ارائه مدلی تلفیقی و فضامحور، ضمن اولویت‌بندی شاخص‌های مؤثر، زمینه‌ای برای تصمیم‌سازی هدفمند در راستای توسعه پایدار گردشگری الکترونیک روستایی در شهرستان آمل فراهم می‌آورد..

کلیدواژه‌ها: گردشگری الکترونیک- روستاهای مقصد گردشگری- تحلیل فضایی- شهرستان آمل.

تشکر و قدردانی

مطالعه حاضر حامی مالی نداشته و حاصل فعالیت علمی نویسنده است.

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How to cite this article:
Anabestani, A., Hedayati, M. & Yarahmadi, Sh. (2025). Spatial analysis of factors influencing the development of rural e-tourism approaches (Case study: Tourism destination villages of Amol County). *Journal of Research & Rural Planning, 14*(4), 101-120.
http://dx.doi.org/10.22067/jrrp.v13i1.2602-1161

Date:
Received: 01-01-2026
Revised: 02-02-2026
Accepted: 27-02- 2026
Available Online: 27-02-2026