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Address: Faculty of Letters & Humanities Ferdowsi University Campus Azadi Sq. Mashhad-Iran

Post code: 9177948883 Tel: (+98 51) 38806724 Fax: (+98 51) 38796840
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Original Article

Evaluating the Delivery and Quality of Rural Tourism Services in Eco-Lodges of Guilan Province

Mina Alizadeh[1], Ali Hajinejad*[2], Majid Yasouri[3]

1. MSc. in Geography & Rural Planning, University of Guilan, Rasht, Iran
2. Associate Prof. in Geography & Rural Planning, University of Guilan, Rasht, Iran
2. Full Prof. in Geography & Rural Planning, University of Guilan, Rasht, Iran

Abstract

Purpose- This study aims to examine the delivery and quality of rural tourism services from the perspective of managers of eco-lodges in Guilan Province, Iran. It also seeks to identify the key reasons behind the lack of adoption of service quality standards by these managers. The significance of the topic lies in its contribution to sustainable tourism development, enhancement of rural residents' quality of life, and improvement of tourist satisfaction.

Design/methodology/approach- This applied research employed a descriptive-analytical approach. Data were collected through both library and field methods. The statistical population included all licensed eco-lodges in Guilan Province (126 units), which were studied using a census method. Data collection was carried out using the standard SERVQUAL questionnaire. The data were analyzed using SPSS version 26 through descriptive statistics, one-sample t-tests, factor analysis, and the Friedman test.

Findings- The results revealed a significant gap between the current quality of services and the desired standards in the eco-lodges of Guilan. Most managers perceived the official service quality standards as inefficient or impractical. The primary reasons cited included inadequate infrastructure, insufficient training, and weak supervisory systems.

Research limitations/implications- The study is limited to a single province and reflects solely the managers' viewpoints. Future research is recommended to include the perspectives of tourists and regulatory authorities. Additionally, developing and localizing service quality assessment models tailored to the characteristics of rural accommodations is suggested.

Practical implications- To enhance service quality, the study recommends providing training programs for managers, improving tourism infrastructure, revising service quality indicators, and strengthening monitoring and evaluation systems. Showcasing successful models from other regions can also help increase the efficiency of eco-lodges.

Originality/ value- By focusing on the perspectives of service providers as key stakeholders, this study offers a novel contribution and can serve as a reference for policymakers, tourism practitioners, and investors aiming to improve rural tourism service quality.

Keywords- Eco-lodge, Rural tourism, Service quality, Service standards, Guilan Province

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Corresponding Author:
Hajinizhad, Ali, Ph.D.
Address: Department of Geography & Urban Planning, Faculty of Human Sciences, University of Guilan, Rasht, Iran.
Tel: +989121156908
E-Mail: ahajinejad@guilan.ac.ir

1. Introduction

In recent decades, the tourism industry has emerged as one of the largest service sectors globally, contributing significantly to the gross domestic product (GDP) of many countries and becoming a key pillar of sustainable economic, social, and cultural development (Ranjpour et al., 2011). With its diverse capacities, particularly in developing societies, tourism can serve as an effective tool for income redistribution, job creation, and the empowerment of local communities (Mirzadeh Kouhshani & Dehghani, 2016). Covering a wide range of activities and services, tourism is regarded as one of the most critical service sectors in today's world, and it is projected to become the most profitable economic sector in the near future (Najafi-Kani et al., 2009). Among its various forms, rural tourism has gained particular importance, especially in countries like Iran that possess abundant natural, historical, and cultural resources. This form of tourism is recognized as a means for developing underprivileged areas, increasing rural household incomes, promoting indigenous culture, and preserving natural resources and cultural heritage (Badri et al., 2009; Rezvani, 2008). The World Tourism Organization (UNWTO, 2017) also emphasizes rural tourism as a significant model for fostering community participation. In this context, eco-lodges have become a vital infrastructural component of rural tourism, playing a major role in attracting tourists, enhancing the quality of travel experiences, and creating economic opportunities. Over the past decade, eco-lodges in Iran have experienced substantial growth, and Guilan Province, known for its natural and cultural richness, has been a prominent part of this trend (Alaoddini & Aminzadeh, 2014). According to the Guilan Provincial Department of Cultural Heritage, Tourism, and Handicrafts, by the end of 2022, a total of 126 licensed eco-lodges were operating in the province, reflecting strong interest from investors and tourism authorities in community-based tourism development. Despite this quantitative growth, there is growing evidence of serious challenges concerning the delivery and quality of services in these accommodations. Many managers and operators of eco-lodges consider the formal service quality standards issued by governmental agencies to be unrealistic or difficult to implement (Bazrafshan, 2017). Under such conditions, the expansion of eco-lodges, without effective monitoring systems and without addressing the necessary supporting infrastructure such as human resource training, transportation, marketing, and quality management, may not lead to improved tourist satisfaction. On the contrary, it may result in a decline in travel experience quality and growing distrust among tourists (Firoozi, 2019; Madanian & Shokrchizadeh, 2019).

Previous studies have primarily focused on tourist satisfaction (Soliman Fallah, 2022), customer loyalty (Modoodi Arkhoudi et al., 2020), the socio-economic impacts of eco-lodges (Annabestani et al., 2018; Saghafi-Asl, 2022), and the empowerment of rural women (Bozorjomehri et al., 2019). However, the perspectives of eco-lodge managers, as the primary actors in the delivery of tourism services, especially within a localized and regional framework such as Guilan Province, have been largely overlooked. The main innovation of the present study lies in addressing this research gap—namely, a comprehensive and systematic investigation of the experiences and perspectives of eco-lodge managers in Guilan regarding service quality, the challenges they face, and the reasons behind their reluctance to adopt formal service quality standards. This study adopts the well-established SERVQUAL model (Parasuraman et al., 1988), a validated tool for measuring service quality gaps from the viewpoint of both consumers and providers. Through field-based data analysis, the research aims to portray a realistic picture of the current state of service quality in rural eco-lodges and to offer actionable recommendations for standardization, training, and policymaking.

Accordingly, this study seeks to examine the delivery and quality of rural tourism services from the perspective of eco-lodge managers in Guilan Province, aiming to answer the central question: What are the key barriers to the effective implementation of formal service quality standards in these establishments, and how can the overall service quality be enhanced? The findings are expected to contribute significantly to the reform

of rural tourism policies, improvement of tourist satisfaction, increase in return visits, and ultimately, the economic sustainability of eco-lodges in the region.

2. Research Theoretical Literature

The present study is grounded in a conceptual framework encompassing key notions such as rural tourism, eco-lodges, tourism services, service quality, and models of quality assessment. This section aims to elucidate the theoretical underpinnings and relevant conceptual constructs related to service quality in rural eco-lodging.

2.1. Rural Tourism and Its Role in Local Development

Rural tourism, as an emerging form of sustainable tourism, serves multiple functions across economic, social, cultural, and environmental domains. It generates employment opportunities, reduces rural outmigration, increases household income, and promotes the conservation of cultural and natural heritage (UNWTO, 2017; Badri et al., 2009). As this type of tourism operates in close interaction with the local community, the design and delivery of its services and infrastructure must be adapted to the specific cultural and environmental context (Rezvani, 2008; Bazrafshan, 2017).

2.2. Eco-Lodges as a Key Infrastructure of Rural Tourism

Eco-lodges represent a core infrastructural element of rural tourism. By leveraging local resources, traditional architecture, and family-based management models, they offer visitors an authentic and immersive experience (Alaeddini & Aminzadeh, 2014). Due to their direct integration into the daily lives of host communities, these lodges serve not only as accommodation facilities but also as platforms for cultural and educational exchange.

According to Goldner and Ritchie (2013), eco-lodges create memorable and unique experiences by aligning local elements with tourists' needs. Rooted in natural environments, their facilities are designed to be sustainable, contributing to the conservation of ecologically sensitive areas while generating income for local residents. They provide an interactive and meaningful encounter with both nature and culture, with planning, design, and operation that consciously address environmental and cultural sensitivities (Borouj, 2012).

Eco-lodges offer nature enthusiasts a unique and memorable experience worth exploring. They also create substantial opportunities for small and family-run businesses, whose success is often influenced by the quality of host-guest interactions within a homestay setting. The active participation of rural families plays a critical role in shaping tourist satisfaction and achieving sustainable local development.

The expansion of eco-lodges can serve as a model for sustainable ecotourism development, fostering community empowerment and attracting local investment. By creating new employment opportunities in rural areas, they contribute to improving livelihoods and curbing the excessive migration toward urban centers.

2.3. Quality of Tourism Services

The concept of service quality is recognized as one of the most influential factors affecting tourist satisfaction, customer loyalty, and the competitiveness of tourism businesses (Parasuraman et al., 1988; Uzunboylu, 2016). Service quality is commonly defined as *"the degree of conformity between a customer's perception of the delivered service and their expectations"* (Gronroos, 2000). In today's dynamic and competitive market environment, where rapid changes and increasing customer demands prevail, service quality has evolved into a critical and strategic asset. Accordingly, numerous tools and models have been developed to assess it. These tools vary in terms of their definitions, content, and measurement approaches. Some have been introduced as conceptual models, designed to evaluate different dimensions of service performance. Overall, the most widely recognized tools for measuring service quality, identified through comprehensive studies (Seth et al., 2005), are summarized in Table 1.

Table 1. Service Quality Measurement Models.
(Source: Seth et al., 2005)

	Model name	Author(s)	Year	Method of measuring service quality
1	E-Service Quality Model	Santos	2003	Through dimensions of activities and incubatory
2	IT-Based Model	Zhu et al.	2002	SERVQUAL dimensions based only on perceptions
3	Perceived Value Retail Service Quality Model	Sweeney et al.	1997	Functional quality through five SERVQUAL dimensions and technical quality through one SERV dimension
4	PCP Attributes Model	Philip & Hazlett	1997	Core, central (middle), and peripheral features
5	IT Linkage Model	Berkley & Gupta	1994	– (no description)
6	Performance-Based Model	Cronin & Taylor	1992	Based on 22 SERVQUAL items but only performance-based
7	Combined Service Quality Model	Brogowicz et al.	1990	Functional and technical quality based on traditional management activities (planning, implementation, control)
8	Gap Model	Parasuraman et al.	1988	Ten dimensions of service quality
9	Functional–Technical Quality Model	Gronroos	1984	Functional and technical quality

In the tourism sector, service quality not only influences tourists' overall experiences but also plays a pivotal role in promoting the sustainable development of host regions and empowering local communities (Martín-Cejas, 2006; Haghkhah et al., 2011). Domestic studies have also emphasized the importance of service quality in enhancing tourist satisfaction, and a positive and significant correlation has been reported between service quality and customer loyalty (Modoodi Arkhoudi et al., 2020; Khatibzadeh et al., 2012).

2.4. Challenges of Service Quality in Eco-Lodges

Despite the quantitative growth of eco-lodges, numerous challenges persist in the domain of service quality. Among the most critical challenges are: the lack of trained personnel, absence of localized standardization systems, inadequate supportive infrastructure, and the inefficiency of monitoring and evaluation mechanisms (Firoozi, 2019; Bazrafshan, 2017). Many eco-lodge managers, due to the experiential nature of their work, have limited familiarity with formal service quality requirements. In some cases, they even perceive such requirements as contradictory to local and indigenous conditions (Guilan Cultural Heritage Office, 2022).

2.5. Service Quality Measurement Models

Several models have been developed to assess service quality, among which the SERVQUAL model—introduced by Parasuraman et al. (1988)—has gained widespread acceptance. This model evaluates service quality across five key dimensions: tangibility, reliability, responsiveness, assurance, and empathy. SERVQUAL serves as a diagnostic tool for identifying gaps between customer expectations and their perceptions of delivered services. It has been widely applied in tourism-related research (Seth et al., 2005; Loke et al., 2011). In the present study, the SERVQUAL model is employed to assess the quality of services offered by eco-lodges in Guilan Province from the perspective of lodge managers. Based on the model's output, the existing gaps between expected standards and actual performance have been analyzed and are illustrated in Figure 1.

3. Research Methodology

3.1 Geographical Scope of the Research

The spatial scope of this research encompasses Guilan Province, located in northern Iran. Known for its diverse and unique characteristics, including various natural, historical, and cultural attractions alongside high biodiversity, Guilan possesses considerable potential for the development of multiple types of tourism. Since 1965 (1344 in the Iranian calendar), Guilan has been officially recognized as an independent province within Iran's administrative divisions. According to the latest administrative delineations, Guilan Province comprises 17 counties (see Figure 2), 52 cities, 43 districts, 109 rural districts, and 2,583 inhabited villages. The counties of Guilan Province, listed alphabetically, are: Astara, Astaneh-ye Ashrafiyeh, Amlash, Bandar Anzali, Talesh, Khomam, Rasht, Rezvanshahr, Rudbar, Rudsar, Siahkal, Shaft,

Somesara, Fuman, Lahijan, Langarud, and Masal. Bandar Anzali is the smallest county in terms of area, whereas Rudbar is the largest in the province. Unlike many other provinces with relatively low rural populations, Guilan has a significant rural population of 927,660 individuals, accounting for 37% of the province's total population. This considerable proportion of rural inhabitants has facilitated rural tourism as one of the accessible and prominent tourism types in the region. Among the common services in rural tourism are eco-lodges, which are widely distributed throughout Guilan's rural areas, as shown in Table 2. Given the spatial distribution of eco-lodges across rural regions of Guilan, rural tourism represents a key tourism model in the province, capable of attracting a substantial number of tourists annually with the primary objective of staying in these eco-lodges.

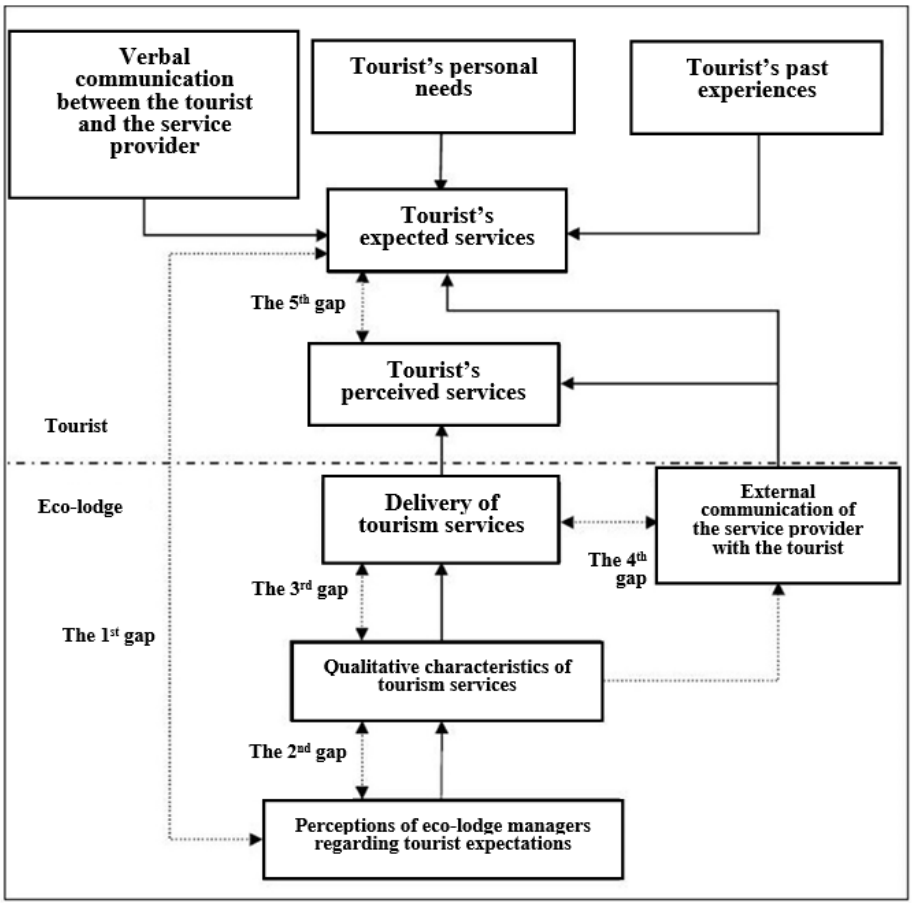

Figure 1. Gaps in the SERVQUAL Model Based on Tourism Services with Summaries and Additions.

Table 2. Number of Eco-lodges in Guilan Province by County (in Alphabetical Order)
(Source: Guilan Provincial Office of Cultural Heritage, Handicrafts and Tourism, Winter 2023)

	County	Number of Licensed Eco-lodges
1	Astara	1
2	Astaneh-ye Ashrafiyeh	3
3	Amlash	3
4	Bandar-e Anzali	0
5	Talesh	13
6	Khomam	5
7	Rasht	15
8	Rezvanshahr	9

	County	Number of Licensed Eco-lodges
9	Rudbar	16
10	Rudsar	11
11	Siahkal	7
12	Shaft	12
13	Someh Sara	5
14	Fuman	9
15	Lahijan	8
16	Langarud	5
17	Masal	4
Total		**126**

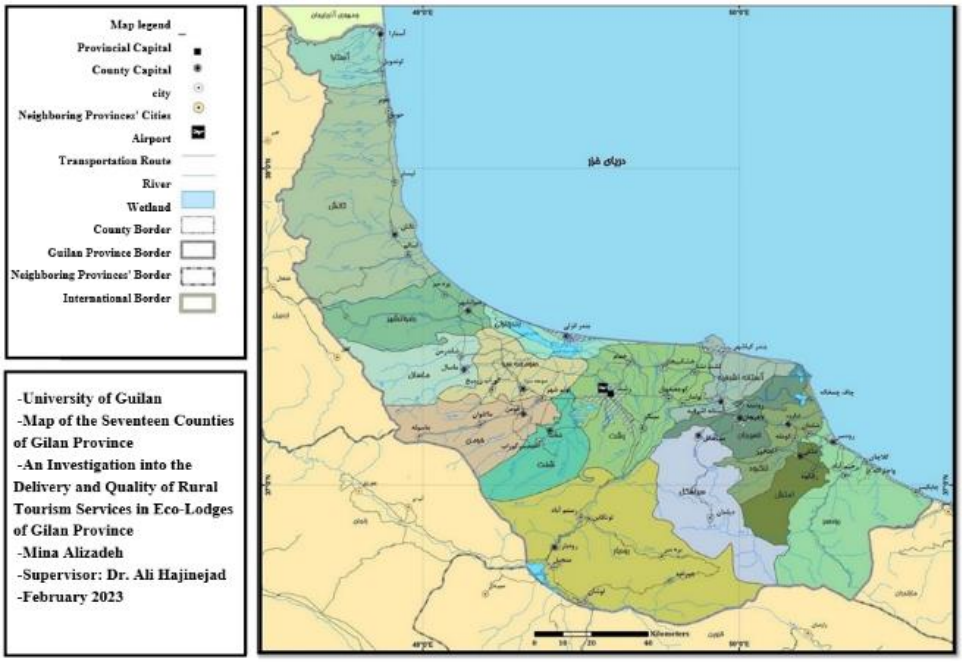

Figure 2. Map of the 17 Counties of Guilan Province.
(Source: Research Findings, 2024)

According to Table 2, Rudbar County—with a total of 16 eco-lodges—has the highest number of rural ecolodging facilities in Guilan Province, while Astara County, with only one eco-lodge, ranks the lowest in this regard. Notably, Bandar Anzali County has no registered eco-lodges. Given the variety and diversity of tourist attractions, the geographical and altitudinal dispersion of eco-lodges, and the relatively easy access to tourism infrastructure, it can be argued that part of the pathway and infrastructure necessary for tourism development in the province has already been established. Consequently, the lack of comprehensive tourism growth may be attributed to other limiting factors, such as the quality of tourism services.

3.2. Methodology

The present study adopts an applied and descriptive-analytical approach, aiming to assess the delivery and quality of rural tourism services from the perspective of eco-lodge managers in Guilan Province. The research seeks to identify existing service quality gaps and offer practical recommendations for improving rural tourism services. In terms of purpose, the research is applied; in terms of methodology, it is descriptive-analytical. The descriptive component was employed to understand and characterize the managers' perceptions regarding service delivery and quality, while the analytical component was used to explore relationships among variables and analyze service quality gaps. Data collection was

conducted through both library and field methods. In the documentary phase, relevant theoretical frameworks and previous research were compiled by reviewing books, academic articles, theses, reports, and reputable databases. The fieldwork involved the use of the standardized SERVQUAL questionnaire along with semi-structured interviews conducted with eco-lodge managers.

The statistical population of the study comprised all officially licensed eco-lodge managers in Guilan Province. According to the latest data provided by the Guilan Provincial Department of Cultural Heritage, Tourism, and Handicrafts, the total number of licensed eco-lodges as of winter 2022 was 126. Given the limited size of the population, a census method was employed, aiming to collect data from all members of the target population.

The primary instrument for data collection was the SERVQUAL questionnaire, which measures service quality across five dimensions: tangibility, reliability, responsiveness, assurance, and empathy. The questionnaire was adapted to reflect the specific conditions of rural tourism in Guilan and utilized a five-point Likert scale (ranging from "strongly disagree" to "strongly agree"). To complement the questionnaire data and gain deeper insights into the reasons behind managers' disagreement with certain service standards, semi-structured follow-up interviews were conducted. These interviews were designed based on the responses obtained from the questionnaires. Content validity of the questionnaire was established through expert review by tourism professionals and academic faculty. Reliability of the instrument was assessed using Cronbach's alpha test, the results of which confirmed the acceptable reliability of the data collection tool.

Table 3. Results Obtained from the Cronbach's Alpha Test

	Five SERVQUAL Dimensions	Alpha / Reliability Coefficient
1	Tangibility Index (Questions 1 to 4)	0.664
2	Reliability Index (Questions 5 to 9)	0.513
	Responsiveness Index (Questions 10 to 13)	0.500
4	Assurance Index (Questions 14 to 17)	0.689
5	Empathy Index (Questions 18 to 22)	0.726

The collected data were analyzed using SPSS software version 26. The statistical methods employed included: Descriptive statistics, such as mean, standard deviation, and frequency distribution tables, to describe the demographic characteristics of the respondents; One-sample t-test, to compare the mean responses with a reference level; Factor analysis, to identify key components of service quality from the perspective of eco-lodge managers; Friedman ranking test, to determine the relative importance of the service quality dimensions.

To facilitate access to managers operating in remote rural areas, data collection was conducted through online (electronic) questionnaires. Furthermore, during the semi-structured interviews, research ethics principles were observed, ensuring the confidentiality and anonymity of the participants.

Addressing the issue of tourism service quality and gaining a precise understanding of the associated challenges significantly contributes to enhancing the overall level of service delivery in the tourism sector. Based on the theoretical framework and relevant literature, a comprehensive assessment of the five SERVQUAL dimensions and their sub-components was deemed necessary to evaluate the current status of rural tourism service quality in Guilan Province from the managers' perspectives. Accordingly, the conceptual model of the research is presented in Figure 3.

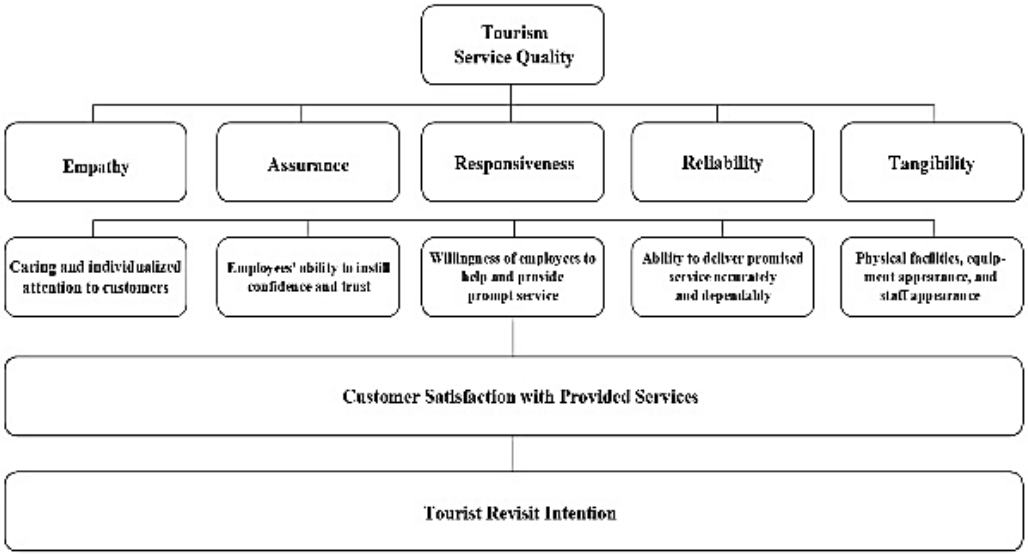

Figure 3. Conceptual Research Model Based on SERVQUAL Dimensions.

4. Research Findings

4.1. Descriptive Statistics of the Study Population

To analyze the demographic and professional characteristics of eco-lodge managers, six variables were examined: gender, age, educational attainment, place of birth (local or non-local), eco-lodge operational status (active or inactive), and years of operation. According to the data in Table 4, the majority of respondents were male. Out of the 58 participants, 39 individuals (67.2%) were male, and 19 individuals (32.8%) were female, indicating a relatively higher male presence in the management of eco-lodges in Guilan Province. The largest share of respondents belonged to the age group of 40–54 years (39.43%), followed by those aged 25–39 years (37.9%), while the smallest proportion belonged to the 55–69 age group (22.3%). This distribution suggests that most eco-lodge managers are middle-aged. In terms of education, bachelor's degree holders accounted for 39.7% (23 individuals), followed by master's degree holders at 27.6% (16 individuals). The least frequent educational level was doctoral degree, held by only 2 individuals (4.3%). The majority of the managers were local to Guilan Province, with 50 individuals (86.2%) identifying as local and only 8 individuals (13.8%) being non-local. This highlights the predominance of local stakeholders in the management of rural eco-lodges. Of the 58 eco-lodges surveyed, 51 (87.9%) were operational, while 7 (12.1%) were inactive, indicating that most facilities were active during the study period. Additionally, 45 eco-lodges (77.6%) had been operating for less than five years, while 13 (22.4%) had between five to ten years of experience, suggesting that the majority of lodges are relatively newly established and are currently in their growth phase.

Table 4. Frequency Distribution of Respondents by Demographic Characteristics

Variable	Category	Frequency	Percentage	Cumulative Percentage
Gender	Female	19	32.8%	32.8%
	Male	39	67.2%	100%
Age	25-39	22	37.9%	37.9%
	40-54	23	39.43%	77.33%
	55-69	13	22.3%	100%
Education	Dropout	3	5.2%	5.2%

Variable	Category	Frequency	Percentage	Cumulative Percentage
	Diploma	9	15.5%	20.7%
	Associate degree	5	6.8%	29.3%
	Bachelor's degree	23	39.7%	69%
	Master's degree	16	27.6%	96.6%
	Doctorate (PhD)	2	3.4%	100%
Place of Birth	Native	50	56.2%	86.2%
	Non-native	8	13.8%	100%
Accommodation Operation Status	Active	51	87.9%	87.9%
	Inactive	7	12.1%	100%
Work Experience	> 5 years	45	77.6%	77.6%
	5-10 years	13	22.4%	100%

This section analyzes managers' responses to items measuring service quality across the five SERVQUAL dimensions: Tangibility, Reliability, Responsiveness, Assurance, and Empathy. Table 5 presents the distribution of agreement levels for each statement. In the Tangibility dimension, over 70% of respondents agreed or strongly agreed with statements such as "staff are neat and well-groomed" and "the physical appearance of facilities matches the type of service provided." This reflects managers' sensitivity to the physical appearance of eco-lodges. In the Reliability dimension, high levels of agreement were observed—up to 91% on certain items—regarding trust, commitment to promises, and effective response. These findings indicate a strong emphasis on honesty and accountability among respondents. For the Responsiveness dimension, a high percentage of managers disagreed with statements suggesting that expectations of staff responsiveness are unrealistic, highlighting the importance placed on prompt response and guest support. In the Assurance dimension, more than 90% of respondents agreed with the necessity of employee support and providing a sense of security for guests. In terms of Empathy, most managers emphasized the importance of personalized attention to customers. However, a portion of the responses revealed uncertainty or operational constraints in fully meeting this expectation.

Table 5. Frequency Distribution of Respondents Based on Demographic Characteristics

Indicator	Items		Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
Tangibility	Eco-lodges should have up-to-date and modern equipment.	n.	5	5	5	1	21	7	14
		(%)	8.6	8.6	8.6	1.7	36.2	12.1	24.1
	Eco-lodges should have significant physical facilities.	n.	0	5	1	10	16	19	7
		(%)	0	8.6	1.7	17.2	27.6	13.8	12.1
	Eco-lodge staff should appear clean and well-groomed.	n.	1	1	0	1	1	13	41
		(%)	1.7	1.7	0	1.7	1.7	22.4	70.7
	The physical appearance of the facilities should match the type of services provided.	n.	1	0	2	1	4	28	22
		(%)	1.7	0	3.4	1.7	6.9	48.3	37.9
R e		n.	1	0	0	0	1	13	43

Indicator	Items		Strongly disagree	Disagree	Slightly disagree	Neutral	Slightly agree	Agree	Strongly agree
	When eco-lodges promise to do something, they should follow through.	(%)	1.7	0	0	0	1.7	22.4	74.1
	Eco-lodges should show genuine interest in solving guests' problems.	n.	0	1	0	2	3	10	42
		(%)	0	1.7	0	3.4	5.2	17.2	72.4
	Eco-lodges should be dependable.	n.	0	0	0	1	1	3	53
		(%)	0	0	0	1.7	1.7	5.2	91.4
	Eco-lodges should deliver their services at the promised time.	n.	0	0	0	0	2	16	40
		(%)	0	0	0	0	3.4	27.6	69.0
	Eco-lodges should keep accurate records.	n.	0	1	0	6	4	17	30
		(%)	0	1.7	0	10.3	6.9	29.3	51.7
Responsiveness	Guests should not expect eco-lodges to inform them of the exact time services will be performed.	n.	15	20	4	2	7	6	4
		(%)	25.9	34.5	6.9	3.4	12.1	10.3	9.6
	It is unrealistic for guests to expect excellent service from the staff of these eco-lodges.	n.	25	13	7	4	4	4	1
		(%)	43.1	22.4	12.1	6.9	6.9	6.9	1.7
	Staff at eco-lodges should not always be expected to be willing to help guests.	n.	17	20	10	1	5	5	0
		(%)	29.3	34.5	17.2	1.7	8.6	8.6	0
	Eco-lodge staff should respond promptly to guests' requests.	n.	1	0	0	0	6	28	23
		(%)	1.7	0	0	0	10.3	48.3	39.7
Assurance	Guests should be able to trust the staff of these eco-lodges.	n.	1	0	0	1	1	20	35
		(%)	1.7	0	0	1.7	1.7	34.5	60.3
	Guests should feel safe in their transactions with eco-lodge staff.	n.	0	0	0	0	2	17	39
		(%)	0	0	0	0	3.4	29.3	67.2
	Eco-lodge staff should be courteous.	n.	0	0	0	0	1	12	45
		(%)	0	0	0	0	1.7	20.7	77.6
	Staff should be adequately supported by the eco-lodge managers to do their jobs properly.	n.	0	0	0	0	0	18	40
		(%)	0	0	0	0	0	31.0	69.0
Empathy	Eco-lodges should not be expected to give individual attention to guests.	n.	5	8	1	2	8	21	13
		(%)	8.6	13.8	1.7	3.4	13.8	36.2	22.4
	Staff at these eco-lodges cannot be expected to provide personal attention to guests.	n.	5	3	3	5	8	24	10
		(%)	8.6	5.2	5.2	8.6	13.8	41.4	17.2
	It is unrealistic to expect the staff to understand guests' specific needs.	n.	7	15	4	9	6	13	4
		(%)	12.1	25.9	6.9	15.5	10.3	22.4	6.9
	It is unrealistic to expect these eco-lodges to act in the best interests of their guests.	n.	7	7	10	5	17	12	0
		(%)	12.1	12.1	17.2	8.6	29.3	20.7	0
	These eco-lodges should not be expected to operate during hours convenient to all guests.	n.	8	6	5	2	13	21	3
		(%)	13.8	10.3	8.6	3.4	22.4	36.2	5.2

4.2. Descriptive Statistics of the Study Population

To analyze the collected data, one-sample t-test, factor analysis, and Friedman ranking test were employed. These statistical methods are discussed in the following subsections.

In this section, the quality status of service dimensions provided in eco-lodges was examined based on the SERVQUAL model by analyzing the mean and standard deviation of its indicators. According to Table 6, the "Assurance" dimension achieved the highest mean score (6.293) among all service quality dimensions. In contrast, the "Responsiveness" dimension received the lowest evaluation, with a mean score of 1.758. These results indicate that although the level of assurance was assessed relatively favorably, rapid and effective responsiveness remains a critical area requiring improvement.

Table 6. Mean and Standard Deviation of the Indicators

Indicators	Population	Mean	Standard Deviation	Standard Error
Tangibility	58	4.310	1.788	0.234
Reliability	58	5.741	1.370	0.180
Responsiveness	58	1.758	1.128	0.148
Assurance	58	6.293	0.973	0.127
Empathy	58	2.775	1.665	0.218

The one-sample t-test was conducted to determine whether the mean scores of the indicators significantly differed from a neutral benchmark value of 5, based on the 7-point Likert scale used in the questionnaire (Test Value = 5). According to the test rule, if both the lower and upper bounds of the confidence interval are positive, the variable's mean is significantly greater than the test value. Conversely, if both bounds are negative, the mean is significantly lower than the test value.

As shown in Table 7, the dimensions of Reliability and Assurance have both lower and upper bounds of the confidence interval above zero, indicating that their mean values are significantly higher than the test value. On the other hand, the dimensions of Tangibility, Responsiveness, and Empathy have both bounds below zero, indicating significantly lower mean values compared to the test value.

Table 7. Findings from the T-test and Significance Level

Indicators	T statistic	Degrees of freedom	Significance level	Lower limit	Upper limit
Tangibility	-2.936	57	0.005	-1.160	-0.219
Reliability	4.119	57	0.000	0.380	1.101
Responsiveness	-21.870	57	0.000	-3.538	-2.944
Assurance	10.116	57	0.000	1.037	1.589
Empathy	-10.171	57	0.000	-2.662	-1.781

To determine the relative importance and prioritization of the study indicators, the Friedman ranking test was used. This test identified the perspectives of eco-lodge managers in Guilan Province regarding the importance and priority of each SERVQUAL dimension. According to the results presented in Table 8, the "Assurance," "Reliability," and "Tangibility" dimensions were assigned the highest ranks in terms of priority.

Table 8. Friedman Ranking Test of the Indicators

Indicators	Mean rank
Tangibility	2.92
Reliability	3.99
Responsiveness	1.46
Assurance	4.41
Empathy	2.22

Table 8 confirms the statistical significance of these rankings with a p-value less than 0.05, justifying the use of the Friedman test.

Table 9. Significance Level of the Friedman Ranking Test of the Indicators

Total number of observations	Test statistic	Degrees of freedom	Significance level
58	155.977	4	0.000

Based on the results of the Friedman ranking test, the first dimension, Tangibility, is prioritized with higher importance for the items presented in Table 10, specifically Item 3: "Eco-lodge staff should be clean and well-groomed in appearance." and Item 2: "Eco-lodges should have notable physical facilities."

Table 10. Friedman ranking test for the first indicator: Tangibility

Item	Tangibility	Mean rank
1	Eco-lodges should have up-to-date and modern equipment, including amenities such as cooling, heating, beds, etc.	1.93
2	Eco-lodges should have significant physical facilities.	1.94
3	Staff at eco-lodges should be clean and well-groomed in appearance.	3.29
4	The appearance of the physical facilities of eco-lodges should be appropriate to the type of services offered.	2.84

The significance level was below 0.05, indicating that the Friedman test is appropriate for ranking these indicators.

Table 11. Significance level of the Friedman ranking test for the first indicator: Tangibility

Total number of observations	Test statistic	Degrees of freedom	Significance level
58	66.150	3	0.000

For the second dimension, Reliability, as shown in Table 11, the following items received higher priority, Item 8: "Eco-lodges should deliver their services exactly at the promised time." and Item 7: "Eco-lodges should be dependable."

Table 12. Friedman ranking test for the second indicator: Reliability

Item	Reliability	Mean rank
5	When eco-lodges promise to provide a service, they must fulfill it.	3.09
6	The staff of eco-lodges should show genuine interest in resolving guests' problems.	2.97
7	Eco-lodges must be reliable.	3.47
8	Eco-lodges should deliver their services exactly at the promised time.	3.98
9	Eco-lodges must properly maintain the records of their guests.	2.47

According to Table 12, the significance level was less than 0.05, supporting the validity of the Friedman ranking.

Table 13. Significance level of Friedman test for the second indicator, Reliability

Total number of observations	Test statistic	Degrees of freedom	Significance level
58	30.175	4	0.000

Regarding the third dimension, Responsiveness, Table 13 shows that the prioritized items are: Item 13: "Eco-lodge staff should promptly respond to guests' requests." and Item 10: "It is not reasonable to expect eco-lodges to specify the exact time of service delivery to guests."

Table 14. Friedman test for the third indicator, Responsiveness

Item	Responsiveness	Mean rank
10	It should not be expected from eco-lodges to inform guests of the exact timing of their services.	2.35
11	It is unrealistic for guests to expect good and excellent services from eco-lodges.	1.88
12	Staff of eco-lodges should not always be expected to be willing to help guests.	2.01
13	Staff of eco-lodges must respond to guests' requests promptly.	3.76

Table 14 confirms that the significance level is below 0.05, validating the use of the Friedman test for these rankings.

Table 15. Significance level of Friedman test for the third indicator, Responsiveness

Total number of observations	Test statistic	Degrees of freedom	Significance level
58	96.482	3	0.000

For the fourth dimension, Assurance, as detailed in Table 15, the following items hold higher priority: Item 16: "Eco-lodge staff should be polite." and Item 15: "Guests should feel secure in their transactions with eco-lodge personnel."

Table 16. Friedman test for the fourth indicator, Assurance

Item	Assurance	Mean rank
14	Guests should be able to trust the staff of eco-lodges.	2.29
15	Guests should feel secure in their interactions with the staff of eco-lodges.	2.48
16	The staff of eco-lodges should be polite.	2.68
17	Staff should receive sufficient support from eco-lodge managers to perform their duties properly.	2.54

Table 16 shows a significance level under 0.05, confirming the appropriateness of the Friedman ranking test.

Table 17. Significance level of Friedman test for the fourth indicator, Assurance

Total number of observations	Test statistic	Degrees of freedom	Significance level
58	10.673	3	0.014

Finally, for the fifth dimension, Empathy, Table 17 indicates that the following items are of higher importance: Item 19: "It is not expected for eco-lodge staff to provide personalized attention to customers." and Item 18: "One should not expect eco-lodges to offer individual attention to guests."

Table 18 – Friedman test for the fifth indicator, Empathy

Item	Assurance	Mean rank
18	Eco-lodges should not be expected to provide individual attention to customers.	3.55
19	It is unreasonable to expect the staff of eco-lodges to offer personal attention to customers.	3.56
20	It is unrealistic to expect eco-lodges to seek the best interests of customers.	2.40
21	It is unrealistic to expect staff to understand all the needs of customers.	2.41
22	Eco-lodges should not be expected to serve customers at all hours.	3.09

According to Table 18, the significance level is below 0.05, confirming the use of Friedman test for ranking these items.

Table 19. Significance level of Friedman test for the fifth indicator, Empathy

Total number of observations	Test statistic	Degrees of freedom	Significance level
58	43.362	4	0.000

4.3. Factor Analysis

To identify the main factors affecting the quality of rural tourism services in eco-lodges, factor analysis was employed. Prior to conducting the factor analysis, it is necessary to ensure the adequacy of the sample size. For this purpose, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were utilized.

The KMO index is used to determine sampling adequacy and ranges between 0 and 1. If the KMO value is at least 0.6, the data is considered suitable for factor analysis. Otherwise, the factor analysis results may not be valid. In this study, the KMO value was 0.6, indicating that the data are appropriate for factor analysis. Furthermore, the significance level of Bartlett's test was less than 0.05, confirming the suitability of the factor analysis for identifying the underlying structure.

Table 20. Bartlett's test and KMO index for assessing sample adequacy

Statistical value of the KMO	Significance level
0.6	0.002

Table 20 presents the correlation of each variable with itself.

Table 21. Correlation matrix between variables

Indicators	Tangibility	Reliability	Responsiveness	Assurance	Empathy
Tangibility	1.000	0.119	-0.214	0.199	-0.100
Reliability	0.119	1.000	-0.075	0.216	-0.110
Responsiveness	-0.214	-0.075	1.000	-0.222	0.531
Assurance	0.199	0.216	-0.222	1.000	-0.110
Empathy	-0.100	-0.110	0.531	-0.110	1.000

Table 21 shows the initial communalities and extracted communalities. The first column represents the communalities before extraction; hence all initial communalities are equal to one. In the second column, higher extracted communalities indicate that the extracted factors better represent the variables. Variables with extracted communalities less than 0.5 are not prioritized and may be removed. The variables Assurance, Reliability, and Tangibility were considered prioritized indicators.

Table 22. Initial and extracted communalities of indicators

Indicators	Initial communalities	extracted communalities
Tangibility	1.000	0.673
Reliability	1.000	0.754
Responsiveness	1.000	0.537
Assurance	1.000	0.767
Empathy	1.000	0.598

The gap analysis results yield three possible states: First, when customers' perceptions exceed their expectations, the quality is considered excellent; second, when customers' perceptions match their expectations, the quality is regarded as good; third, when customers' perceptions fall below their expectations or do not meet them, the quality is considered poor.

Table 23. Gap between expectations and perceptions regarding service quality based on respondents' opinions and standard criteria

	Items	Perceptions	Expectations	Gap	Service Quality
1	Eco-lodges should have up-to-date and modern equipment.	4.8	4.3	0.5	Excellent
2	Eco-lodges should have significant physical facilities.	5.1	6.6	-1.5	Poor
3	Eco-lodge staff should appear clean and well-groomed.	6.5	7	-0.5	Poor
4	The physical appearance of the facilities should match the type of services provided.	6.1	6.3	-0.2	Poor
5	When eco-lodges promise to do something, they should follow through.	6.6	6.7	-0.1	Poor
6	Eco-lodges should show genuine interest in solving guests' problems.	5.6	5.7	0.8	Excellent
7	Eco-lodges should be dependable.	6.9	7	-0.1	Poor
8	Eco-lodges should deliver their services at the promised time.	6.7	5.5	1.2	Excellent
9	Eco-lodges should keep accurate records.	6.2	7	-0.8	Poor
10	Guests should not expect eco-lodges to inform them of the exact time services will be performed.	3.0	5.5	-2.5	Poor
11	It is unrealistic for guests to expect excellent service from the staff of these eco-lodges.	2.4	1.3	1.1	Excellent
12	Staff at eco-lodges should not always be expected to be willing to help guests.	2.5	2.5	0.0	Good
13	Eco-lodge staff should respond promptly to guests' requests.	6.2	6.2	0.0	Good
14	Guests should be able to trust the staff of these eco-lodges.	6.5	6.5	0.0	Good
15	Guests should feel safe in their transactions with eco-lodge staff.	6.6	5.8	0.8	Excellent
16	Eco-lodge staff should be courteous.	6.8	7	-0.2	Poor
17	Staff should be adequately supported by the eco-lodge managers to do their jobs properly.	6.7	5.8	0.9	Excellent
18	Eco-lodges should not be expected to give individual attention to guests.	5.0	4.8	0.2	Excellent
19	Staff at these eco-lodges cannot be expected to provide personal attention to guests.	5.1	4.8	0.3	Excellent
20	It is unrealistic to expect the staff to understand guests' specific needs.	3.8	2.5	1.3	Excellent
21	It is unrealistic to expect these eco-lodges to act in the best interests of their guests.	3.9	3.4	0.5	Excellent
22	These eco-lodges should not be expected to operate during hours convenient to all guests.	4.4	6	-1.6	Poor

Table 23 presents the gaps between expectations and perceptions regarding service quality, categorized according to the three states mentioned above.

Table 24 shows the gaps between expectations and perceptions of service quality based on the mean scores of each dimension. According to the results, the largest gap was observed in the Responsiveness dimension, while the smallest gap was in the Tangibility dimension.

Table 24. Gap between expectations and perceptions regarding service quality based on the average questions of each indicator

	Indicators	Mean	Service quality
1	Tangibility	0.4	Excellent
2	Reliability	0.0	Good
3	Responsiveness	-0.3	Poor
4	Assurance	0.4	Excellent
5	Empathy	0.1	Excellent

5. Discussion and Conclusion

Considering that quality is precisely what tourists demand at the time-of-service delivery, understanding the perspectives of service providers and the underlying reasons for their service delivery approach is of great importance. The SERVQUAL method can effectively assist in this regard and facilitate more effective future planning. Using this tool, service quality was examined across five dimensions: tangibility, reliability, responsiveness, assurance, and empathy. Focusing on the research questions and objectives, this study concentrated on managers of eco-lodges as a subset of rural tourism service providers. According to the findings, 67.2% of respondents were male, and the largest age group (39.43%) fell within the 40–54 years range. Among respondents, 39.7% held a bachelor's degree. Notably, based on the respondents' educational level, the minimum requirement for participating in the Facility Management Course—which is a prerequisite for obtaining an eco-lodge license (Ministry of Cultural Heritage, Tourism and Handicrafts, 2019), is a bachelor's degree. According to Table 4, 27.5% (i.e., 17 out of 58 participants) did not meet the educational requirements for holding an eco-lodge license. Furthermore, 86.2% of respondents were native to the province. One important criterion for issuing an operation license for eco-lodges is local residency; however, 13.8% (8 out of 58 participants) were non-native. Additionally, 87.9% of respondents were currently active in eco-lodge operations, while 12.1% were inactive due to reasons such as the seasonal nature of their business or non-residency. Regarding experience, 77.6% of respondents had less than five years of work experience, while 22.4% had between five to ten years. The first eco-lodge in Guilan Province was established in 2015, and by mid-2019, the number of eco-lodges registered by the provincial Department of Cultural Heritage, Tourism, and Handicrafts was 27 units. Despite the COVID-19 pandemic and the World Tourism Organization's recommendations to postpone travel until after the pandemic, the issuance of eco-lodge licenses in Guilan increased. This growth may largely be attributed to low-interest loans (single-digit rates) granted to applicants. While quantitative growth in eco-lodge numbers aims to diversify and multi-facet rural employment, creating an exceptional opportunity to strengthen the rural economy, the main concern is the ongoing increase without adequate control or sustainable monitoring processes. This situation adversely affects the quality of rural tourism-related businesses. To rank the quality dimensions, the Friedman test was employed. According to respondents, among the five dimensions (tangibility, reliability, responsiveness, assurance, and empathy), assurance, reliability, and tangibility had higher priority. To determine service quality levels, the SERVQUAL gap model was used. Results based on the gap between expectations and perceptions indicated that among the 22 tourism products evaluated, 10 were of excellent quality, 3 were of good quality, and 9 were of poor quality. Examining the mean gap scores for each dimension

revealed that among the five dimensions, three demonstrated excellent quality, one exhibited good quality, and one showed poor quality. Specifically, tangibility and assurance had a positive gap of 0.4, empathy scored 0.1, reliability was neutral at 0.0, and responsiveness showed a negative gap of -0.3. Thus, the largest gaps between expectations and perceptions were observed in the responsiveness and reliability dimensions, indicating that service delivery scored lowest in customer satisfaction.

The results obtained from data analysis revealed that managers of eco-lodges hold diverse and sometimes conflicting views regarding service quality standards. In some cases, their perspectives markedly diverge from official regulations, a discrepancy evident across various dimensions of the SERVQUAL model. In the tangibility dimension, although the majority of managers emphasized the importance of staff cleanliness, appropriate appearance of facilities, and availability of suitable equipment, a group expressed opposition to the use of modern equipment, considering it inconsistent with the traditional nature of eco-lodges. This viewpoint reflects a desire among some managers to preserve the authenticity of the environment and provide tourists with a genuine local experience. Regarding reliability, most respondents stressed the necessity of trust, timely service delivery, and maintaining records. Only a few opposed these aspects due to concerns about unpredictable conditions or personal considerations. In terms of responsiveness, a significant portion of managers believed that eco-lodges should promptly respond to tourists' needs, asserting that high responsiveness directly correlates with customer satisfaction and the continuity of lodge operations. In the assurance dimension, virtually no opposition to the proposed indicators was observed. Managers highlighted that polite behavior, ensuring a sense of security, and supporting staff are indispensable requirements in managing eco-lodges. Concerning empathy, while some managers argued that equal attention should be given to all tourists, most acknowledged the importance of understanding individual customer needs. However, lack of adequate training and human resource shortages were cited as primary barriers to realizing this dimension effectively.

The findings of this study provide a realistic picture of the challenges and capacities related to service quality in Guilan Province's eco-lodges from the managers' perspective. Consistent with Latifian et al. (2020), who reported that assurance and reliability were highly significant and relatively well-evaluated in Golestan Province eco-lodges, the responsiveness dimension emerged as a weakness in both studies, highlighting a widespread challenge in delivering swift and effective services across rural eco-lodges nationwide. Similarly, Reisinejad et al. (2022) found in Mazandaran Province that insufficient training and a shortage of specialized human resources are major obstacles to achieving quality in the empathy and responsiveness dimensions—issues also emphasized in the present study. Managers recognized the importance of understanding tourists' individual needs but identified resource and training deficiencies as critical challenges. Based on the findings, although most managers emphasize the necessity of improving service quality, they express critical and sometimes opposing views toward official standards. These oppositions mainly stem from three key factors: the misalignment of standards with local realities, lack of resources and training, and weaknesses in supervisory structures. Comparing these results with global experiences—particularly those presented at the 1995 International Ecotourism Conference in Costa Rica—eco-lodges in other countries operate with a clearer understanding of tourism and its products, and regard compliance with service quality standards as part of their professional identity. In contrast, many eco-lodge managers in Guilan Province, and broadly in Iran, are unfamiliar with the concept of service quality as an intangible tourism product or perceive it as conflicting with the simplicity, locality, and self-management of their lodges. Previous studies such as Alaeddini & Aminzadeh (2014) and Firoozi (2019) have similarly emphasized that the absence of professional training, lack of systematic evaluation frameworks, and the scarcity of specialized institutions in the ecotourism sector have led eco-

lodges to rely more on individual experiences and managerial preferences rather than scientific and standardized frameworks. Given the expansion of ecotourism as a forward-looking and sustainable approach in the tourism industry, attention to service quality is not only a professional necessity but also a fundamental condition for the survival and development of these units in competition with other forms of tourism. As highlighted, service quality should be regarded not merely as a formal obligation but as a value respecting tourists' rights, enhancing travel experiences, and fostering sustainable local development.

Based on the findings, the following recommendations are proposed:

- Conduct thorough assessments of the conditions and challenges faced by eco-lodges to inform decisions on non-renewal of licenses.
- Revise the licensing criteria for eco-lodges, particularly by removing the mandatory requirement of holding a bachelor's degree.
- Review the curriculum of facility management courses and differentiate the specific training needed for eco-lodge managers from the general facility management training programs.
- Develop and implement targeted training programs to increase awareness among managers and staff regarding regulations and classification standards for eco-lodges.
- Organize consultation sessions tailored to the profile and circumstances of each eco-lodge.
- Establish continuous and periodic evaluations of eco-lodge operations using participatory approaches.
- Initiate research and academic projects independent of government agencies to promote the improvement of tourism service quality in eco-lodges.
- Motivate staff to respond promptly to tourists' issues by enhancing incentive systems through the activation of reward mechanisms.
- Foster a supportive environment to strengthen empathy among managers and employees.
- Encourage staff to deliver services within the promised timeframes.

Ultimately, the development of ecotourism cannot be achieved solely through quantitative growth in the number of eco-lodges. Adherence to quality principles, respect for local culture, strengthening infrastructure, and providing specialized training are essential to steer this sector towards sustainability and genuine growth.

Throughout various stages of the research, numerous limitations and challenges were encountered. The most significant ones are as follows:

- The COVID-19 pandemic severely affected the tourism sector. According to estimates by the World Tourism Organization, global tourism is not expected to fully recover to pre-pandemic levels (i.e., 2019) until the end of 2024, under the most optimistic scenarios.
- According to data on Iranian tourism, the most adversely affected occupations during the pandemic were tour guides and eco-lodge operators. This has led to a noticeable decline in motivation among these two target groups to remain active in the tourism sector.
- Some respondents were unwilling to complete the questionnaire due to a lack of trust in the Guilan Provincial Office of Cultural Heritage, Tourism, and Handicrafts.
- Some respondents declined participation because of grievances over the non-renewal of their operating licenses by the same office.
- Another factor for reluctance to respond was the requirement to attend training courses as a condition for license renewal, which was perceived as burdensome.
- A number of eco-lodge managers were not interested in attending training sessions, either due to lacking the required educational qualifications or because the institutions authorized to conduct such courses were not recognized or trusted by them.
- Distrust towards academic research projects was also evident. Many managers believed that the Guilan Provincial Office of Cultural Heritage, Tourism, and Handicrafts had, in recent years, made several unfulfilled promises to encourage participation in research, resulting in both financial and non-financial burdens for participants.
- A lack of familiarity with tourism and the specific concepts addressed in the questionnaire was another issue, with some respondents stating that managing an eco-lodge was not their primary occupation.
- Some managers lacked the literacy and background knowledge needed to complete the questionnaire,

as several did not possess even a high school diploma.

- Limited access to social media also posed a challenge. Consequently, the questionnaire was distributed via SMS to all 126 eco-lodge managers, and follow-up phone calls were made to ensure its receipt.
- Inadequate internet access prevented some participants from responding to the online questionnaire.

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The authors declare no conflict of interest.

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Original Article

بررسی نحوه ارائه و کیفیت خدمات گردشگری روستایی در اقامتگاه‌های بوم‌گردی استان گیلان

مینا علیزاده[۱]، علی حاجی‌نژاد*[۲]، مجید یاسوری[۳]

۱. کارشناسی ارشد جغرافیا و برنامه‌ریزی روستایی، دانشگاه گیلان، رشت، ایران.
۲. دانشیار جغرافیا و برنامه‌ریزی روستایی، دانشگاه گیلان، رشت، ایران.
۳. استاد جغرافیا و برنامه‌ریزی روستایی، دانشگاه گیلان، رشت، ایران.

چکیده مبسوط

۱. مقدمه

پژوهش حاضر با هدف بررسی نحوه ارائه و کیفیت خدمات گردشگری روستایی از منظر مدیران اقامتگاه‌های بوم‌گردی استان گیلان انجام شده است. امروزه گردشگری به‌عنوان یکی از ارکان اصلی توسعه پایدار، نقش مهمی در اقتصاد، اشتغال‌زایی و تقویت هویت فرهنگی ایفا می‌کند. در این میان، گردشگری روستایی به‌ویژه از طریق اقامتگاه‌های بوم‌گردی، به ابزاری کارآمد برای توانمندسازی جوامع محلی، کاهش مهاجرت و حفظ میراث طبیعی و فرهنگی تبدیل شده است. استان گیلان با توجه به برخورداری از منابع طبیعی و فرهنگی غنی، به یکی از مهم‌ترین مقاصد گردشگری کشور بدل شده و تعداد اقامتگاه‌های بوم‌گردی آن در سال‌های اخیر رشد چشمگیری داشته است. با این حال، افزایش کمّی این واحدها، لزوما به ارتقای کیفیت خدمات منجر نشده و این موضوع به یکی از چالش‌های جدی در مسیر توسعه پایدار گردشگری در استان بدل شده است.

۲. روش تحقیق

این پژوهش با روش توصیفی–تحلیلی و با رویکرد کاربردی انجام شده است. جامعه آماری تحقیق شامل کلیه اقامتگاه‌های بوم‌گردی دارای مجوز در استان گیلان (۱۲۶ واحد) بود که به روش سرشماری بررسی شدند. برای گردآوری داده‌ها از پرسشنامه استاندارد SERVQUAL استفاده شد که پنج بعد ملموسات، قابلیت اطمینان، پاسخگویی، اعتماد و همدلی را می‌سنجد. علاوه بر پرسشنامه، مصاحبه‌های نیمه‌ساختاریافته با مدیران اقامتگاه‌ها نیز انجام شد تا داده‌های کیفی برای تفسیر بهتر نتایج فراهم گردد. داده‌ها با استفاده از نرم‌افزار SPSS نسخه ۲۶ و آزمون‌های آماری Tتک‌نمونه‌ای، تحلیل عاملی و آزمون فریدمن تحلیل شدند.

۳. یافته‌های تحقیق

یافته‌های پژوهش نشان داد که بین کیفیت خدمات ارائه‌شده و انتظارات موجود بر اساس استانداردهای ملی شکاف معناداری وجود دارد. در این میان، شاخص «اعتماد» بالاترین میانگین را در بین پنج بعد مدل SERVQUALداشت، در حالی که شاخص «پاسخگویی» پایین‌ترین سطح رضایت را از دیدگاه مدیران به خود اختصاص داد. این امر نشان می‌دهد که اگرچه مدیران اقامتگاه‌ها در ایجاد حس اعتماد و امنیت برای مهمانان موفق بوده‌اند، اما در پاسخگویی سریع و به‌موقع به نیازها و درخواست‌های گردشگران ضعف‌هایی وجود دارد که نیاز به توجه جدی دارد. بررسی دقیق‌تر هر شاخص نشان داد که در زمینه ملموسات، ظاهر فیزیکی اقامتگاه‌ها و آراستگی کارکنان نسبتا مطلوب ارزیابی شده، اما تجهیزات مدرن و امکانات رفاهی متناسب با استانداردهای خدمات کمتر از سطح انتظار بوده است. تحلیل داده‌های جمعیت‌شناختی پاسخ‌دهندگان نیز حاوی نکات قابل‌توجهی است. اکثریت مدیران شرکت‌کننده در پژوهش مرد بودند (۶۷/۲ درصد) و بیش‌ترین فراوانی مربوط به گروه سنی ۴۰ تا ۵۴ سال بود. حدود ۴۰ درصد پاسخ‌دهندگان دارای مدرک کارشناسی و بیش از ۸۶ درصد آن‌ها بومی استان گیلان بودند. همچنین، بیش از ۷۷ درصد از اقامتگاه‌ها سابقه فعالیت زیر پنج سال داشتند که نشان از جدیدالتأسیس بودن بسیاری از این واحدها دارد. این ترکیب جمعیتی می‌تواند به‌عنوان فرصتی برای آموزش و توانمندسازی نسل جدید مدیران اقامتگاه‌ها تلقی شود.

بر اساس نتایج تحلیل عاملی، شاخص‌های اعتماد، قابلیت اطمینان و ملموسات بیش‌ترین میزان واریانس تبیین‌شده را داشتند. همچنین آزمون فریدمن نیز نشان داد که این سه شاخص از اولویت بیش‌تر از دیدگاه مدیران برخوردارند. در مقابل، پاسخگویی و همدلی، کم‌ترین

*. نویسندهٔ مسئول:
دکتر علی حاجی‌نژاد
آدرس: گروه جغرافیا و برنامه‌ریزی شهری، دانشکده علوم انسانی، دانشگاه گیلان، رشت، ایران
پست الکترونیکی: Email: ahajinejad@guilan.ac.ir

اهمیت را در ذهن مدیران داشتند. این یافته نشان می‌دهد که تمرکز مدیران بیش‌تر بر جنبه‌های فیزیکی و ملموس خدمات و ایجاد حس اعتماد بوده و به ابعاد نرم‌تر و بین‌فردی مانند همدلی و پاسخگویی توجه کمتری شده است. از این رو، لازم است در برنامه‌های آموزشی و استانداردسازی، بر تقویت ابعاد پاسخگویی و همدلی نیز تأکید شود.

از جمله نکات قابل‌تأمل در نتایج کیفی تحقیق، دلایل عدم پذیرش کامل استانداردهای کیفیت خدمات توسط مدیران اقامتگاه‌هاست. بیشتر مدیران معتقد بودند که استانداردهای رسمی اغلب با شرایط واقعی اقامتگاه‌ها و بافت فرهنگی و اقتصادی روستاها همخوانی ندارد. به‌طور مشخص، مشکلاتی مانند نبود زیرساخت‌های لازم، کمبود نیروی انسانی آموزش‌دیده، ضعف در آموزش‌های تخصصی، ناهماهنگی استانداردها با شرایط بومی، و ناپایداری درآمد ناشی از فصلی بودن گردشگری، به‌عنوان موانع کلیدی در اجرای صحیح استانداردهای کیفیت عنوان شدند. برخی از مدیران حتی استانداردها را بیش از حد نظری و غیرقابل اجرا ارزیابی کرده‌اند.

۴. بحث و نتیجه‌گیری

بر این اساس، پژوهش حاضر پیشنهاد می‌دهد که برای ارتقاء کیفیت خدمات گردشگری در اقامتگاه‌های بوم‌گردی، رویکردی مشارکتی در تدوین و اجرای استانداردها اتخاذ شود؛ به‌گونه‌ای که مدیران اقامتگاه‌ها، کارشناسان محلی، و نهادهای نظارتی به‌صورت مشترک در تدوین شاخص‌ها مشارکت کنند. همچنین، برنامه‌های آموزشی برای مدیران و کارکنان اقامتگاه‌ها باید به‌صورت کاربردی و مبتنی بر نیازهای واقعی طراحی شود. توسعه زیرساخت‌ها، به‌ویژه در حوزه حمل‌ونقل و فناوری اطلاعات، می‌تواند بستر مناسبی برای بهبود کیفیت خدمات فراهم کند.

از سوی دیگر، لازم است نظام ارزیابی و نظارت خدمات گردشگری نیز بازنگری شود. به‌جای تمرکز صرف بر کنترل و جریمه، باید نظامی تعاملی و مبتنی بر یادگیری ایجاد شود تا اقامتگاه‌ها در مسیر بهبود مستمر قرار گیرند. همچنین معرفی و الگوسازی از اقامتگاه‌های موفق در سطح ملی و منطقه‌ای می‌تواند انگیزه و راهنمای عمل برای دیگر واحدها فراهم کند. در کنار آن، استفاده از فناوری‌های نوین برای رزرواسیون، مدیریت ارتباط با مشتری و بازخوردگیری، می‌تواند کیفیت تجربه گردشگران را به‌طور محسوسی افزایش دهد.

در جمع‌بندی، این پژوهش بر پایه دیدگاه‌های مدیران اقامتگاه‌های بوم‌گردی، تصویری واقعی از وضعیت کیفیت خدمات در استان گیلان ارائه می‌دهد. این دیدگاه‌ها می‌توانند به‌عنوان منابع ارزشمند برای سیاست‌گذاران، برنامه‌ریزان و فعالان صنعت گردشگری روستایی مورد استفاده قرار گیرند. با توجه به اهمیت فزاینده گردشگری روستایی در توسعه مناطق کمتر برخوردار، توجه به کیفیت خدمات و ایجاد چارچوب‌هایی بومی، منعطف و قابل‌اجرا، ضرورتی انکارناپذیر است. یافته‌های این پژوهش می‌تواند به طراحی نظام‌های مؤثر ارزیابی، آموزش هدفمند و تدوین دستورالعمل‌های واقع‌گرایانه کمک کند و نقش مؤثری در ارتقاء رضایت گردشگران، افزایش بازدید مجدد و تحقق توسعه پایدار در مناطق روستایی کشور ایفا نماید.

کلیدواژه‌ها: اقامتگاه بوم‌گردی، گردشگری روستایی، کیفیت خدمات، استاندارد خدمات، استان گیلان.

تشکر و قدردانی

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Review Article

Bibliometric Analysis of Pro-Environmental Tourist Behavior in Rural Tourism Studies

Zabih-Allah Torabi[†] [1], Mohammad Reza Rezvani[2], Hosna Ahmadi[3], Pantea Davani[4]

1. Assistant Prof. in Geography and Rural Planning, Tarbiat Modares University, Tehran, Iran
2. Full Prof. in Geography and Rural Planning, University of Tehran, Tehran, Iran.
3. Ph.D. Candidate in Geography and Rural Planning, Tarbiat Modares University, Tehran, Iran
4. MSc. in Geography and Tourism Planning, University of Tehran, Tehran, Iran

Abstract

Purpose- This research aims to provide a comprehensive and systematic review of the knowledge structure and dominant trends in the literature concerning pro-environmental tourist behavior within rural tourism studies. The study seeks to identify research gaps and map the intellectual landscape of the field for future researchers.

Methodology- This study employs a scientometric approach, combining systematic review and bibliometric analysis. A total of 1,020 eligible articles published between 1985 and 2024 were identified through the Scopus database and analyzed using VOSviewer software. Co-authorship, co-citation, and keyword co-occurrence networks were used to analyze the knowledge structure.

Findings- The results reveal that China, the United States, Australia, the United Kingdom, and South Korea have the highest publication output in this field. Linnaeus University (Sweden), Sejong University (South Korea), and Lund University (Sweden) are among the most influential institutions. Keyword analysis identified three primary clusters: ecotourism, ecosystem and environmental protection, and tourism economy and market. According to the Theory of Planned Behavior, factors such as attitude, subjective and social norms, perceived behavioral control, and environmental awareness are the most significant predictors of tourists' pro-environmental behavior.

Practical Implications- The findings provide valuable insights for destination managers and policymakers in developing effective strategies for sustainable tourism management. The results can serve as a basis for designing behavioral interventions and formulating evidence-based policies to promote responsible behaviors among tourists in rural destinations.

Originality/Value- This study contributes to the existing body of knowledge by providing a comprehensive and dynamic map of the knowledge structure and prevailing trends in pro-environmental behavior in rural tourism. By filling the gaps of previous studies, this research identifies novel research opportunities for future scholars.

Keywords- Pro-environmental tourist behavior, Rural tourism, Scientometrics, Sustainability, Theory of planned behavior, Environmental.

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Corresponding Author:
Torabi, Zabih-Allah, Ph.D.
Address: Department of Geography and Planning, Faculty of Human Sciences, Tarbiat Modares University, Tehran, Iran.
Tel: +989365552675
E-Mail: Zabih.torabi@modares.ac.ir

†

1. Introduction

Rural tourism is recognized as one of rural areas' most crucial pillars of sustainable development. This form of tourism, with an emphasis on leveraging the cultural and natural attractions of rural regions, plays a vital role in creating employment and income opportunities for local communities while also preserving rural heritage and enhancing the quality of life for residents(Torabi, Khavarian-Garmsir, et al., 2023). However, unsustainable and unplanned tourism development in these areas can lead to adverse environmental consequences and the degradation of valuable natural resources (Ghaderi & Henderson, 2012). Therefore, gaining a deeper understanding of tourists' environmental behaviors and identifying the factors influencing the formation of their responsible behaviors towards the environment has been proposed as a fundamental prerequisite for the planning and sustainable management of rural tourism destinations (Gao et al., 2017; Torabi et al., 2024). In this regard, recent decades have witnessed a remarkable growth in the volume of scientific research on the topic of environmentally responsible behavior of tourists in the context of rural areas. By employing diverse theoretical approaches and methodologies, researchers have delved into various dimensions of this complex and multifaceted concept, and have identified a wide range of antecedents and consequences of these behaviors(Torabi, Rezvani, et al., 2022). Nevertheless, the vastness and dispersion of studies in this field have made it challenging to integrate and systematically summarize the findings of these investigations, and to attain a comprehensive understanding of the current state of knowledge in this domain (Juvan & Dolnicar, 2016). Moreover, the diversity and lack of consensus in the use of key concepts and terminologies among the studies in this field have further compounded the complexity of conducting a thorough literature review(Badri et al., 2015; Torabi, Rezvani, et al., 2022).In response to these challenges, in recent years, numerous bibliometric studies have been conducted to map the knowledge structure and unveil the focal points and research trends in various domains of tourism knowledge(Fu et al., 2020; Z. Xu et al., 2023). By employing quantitative indicators and analyzing citation networks, co-authorship, and keyword co-occurrence, these studies have been able to provide comprehensive and objective maps of the main knowledge flows, thematic clusters, and interactions among key players in different areas of tourism research (Badri et al., 2015)

However, despite the growing importance of research on environmentally responsible behavior of tourists in rural areas, thus far, few studies have systematically and bibliometrically investigated the structure and dynamics of knowledge in this specific domain(Qiu et al., 2022; S. Xu & Hu, 2024; Zhao et al., 2020). In one of the rare attempts, by analyzing 759 articles published during the period from 1990 to 2019, identified the most important themes and research trends in the field of environmentally responsible behavior of tourists in natural destinations. Based on the findings of this study, topics such as environmental norms and values, destination attachment, service quality, and tourist experience have been at the center of attention of researchers in this field. Nonetheless, the focus of the aforementioned study solely on nature-based destinations and the lack of full coverage of the wide range of research related to rural areas have limited the possibility of obtaining a comprehensive and complete picture of the knowledge structure in this specific domain. A cursory glance at other related bibliometric studies also reveals that researchers have primarily focused on examining the general status of sustainable tourism research and have paid little attention to more specialized areas such as the environmentally responsible behavior of rural tourists(D'Arco et al., 2023; Steg & Vlek, 2009). Most of these studies have also confined themselves to using general performance metrics such as the number of publications and citations and identifying top authors and journals, and have addressed the content and conceptual aspects of knowledge less. Furthermore, these studies have predominantly focused on a specific database, which makes it difficult to fully cover the diverse range of publications in this field (Cooper & Hall, 2024; Ghaderi et al., 2022).

The main concern of the present study is to address the significant knowledge gaps and methodological shortcomings identified in previous analyses of the research on pro-environmental tourist behavior in rural areas. Despite a considerable volume of publications, the field lacks a comprehensive and systematic understanding of its thematic focus areas, the network of relationships among key

concepts, patterns of scientific collaboration, and the evolutionary trends of knowledge within this specific domain. Prior bibliometric studies have often been limited in scope, focusing on broader categories like sustainable or nature-based tourism, or have confined themselves to general performance metrics without delving into the conceptual structure of the literature. To overcome these limitations, this study adopts a comprehensive scientometric approach to deeply analyze the field's intellectual structure and create a detailed knowledge map. Spanning a wide timeframe from 1985 to 2024, this research moves beyond simple rankings of authors and journals to provide a dynamic and multi-layered map of knowledge clusters and the interaction patterns among concepts and thinkers. This will be achieved by analyzing co-authorship, co-citation, and keyword co-occurrence networks, supplemented by a content analysis of keywords from titles, abstracts, and author-selected keywords to ensure a precise identification of thematic priorities and emerging research trends. Ultimately, it is anticipated that the findings will not only fill the existing knowledge gaps but also significantly assist future researchers in identifying new capacities and novel research opportunities, while providing tourism policymakers and planners with the evidence-based insights needed to design effective behavioral interventions and promote sustainable practices in rural destinations.

2. Research Theoretical Literature

Since few researchers have discussed the environmentally responsible behavior (ERB) of tourists in tourism destinations, more research is needed to address the impact of the interaction between tourists and residents on tourists' environmentally responsible behavior (Han et al., 2023a; Oh & Ki, 2023), as the influence of residents' behavior has been overlooked in the tourism literature.Previous research has analyzed how tourism facilities, perceived destination image, and perceived destination attachment impact tourists' environmentally responsible behavior(Aziz & Niazi, 2023; S. Xu & Hu, 2024). Studies have also explored the influence of residents' attitudes, culture, and religion on tourists' revisit intention, destination attachment, post-visit behavior, and perceived destination image. Nonetheless, the socio-emotional dimensions of the interaction between residents and tourists have not been thoroughly studied in the context of rural tourism (Z. Xu et al., 2023). The socio-emotional dimensions of interaction refer to the tourist's emotional bond and contact with residents(Oh & Ki, 2023). Earlier literature has failed to consider the emotional attachment of tourists to residents and the impact of residents' environmentally-related behaviors on tourists' environmentally responsible behavio(Oh & Ki, 2023; Souza-Neto et al., 2023).

An individual's perspective and attitude towards a behavior determines whether they will engage in it. If a person holds a positive attitude towards a behavior, they are more likely to act upon it. Conversely, if they hold a negative attitude, they will not engage in it (Nowacki et al., 2023; Torabi, Pourtaheri, et al., 2023). The theory of planned behavior states that an individual's attitude is a predictive factor of behavioral intention. This means that it can predict and explain the occurrence of a behavior. According to the TPB, behavioral intention is influenced by three factors: attitude, subjective norms, and perceived behavioral control (Ajzen, 1991). Attitude towards environmentally responsible behavior refers to a positive or negative evaluation of an individual performing a specific action. This evaluation can support or oppose the action (Han et al., 2023a; Powell & Ham, 2008). If an individual has a positive attitude towards a behavior, they are more likely to have a strong intention to perform that behavior (Han et al., 2023b). On the other hand, if an individual has a negative attitude towards that behavior, they are more likely to have a strong intention not to perform that behavior. Based on the theoretical framework of the TPB, attitude towards environmentally responsible behavior is an effective predictive variable of behavioral intention that can explain and predict intention (Ajzen, 1991; Panwanitdumrong & Chen, 2021).

At least one factor must be present for responsible behavior to occur in individuals. Among these, social psychological theory has focused on finding factors that lead to individuals' participation in environmental behaviors. Ajuhari et al. (2016), in an article titled "Promoting Pro-environmental Behavior in Ecotourism Destination," examined the socio-psychological structures effective in environmental behavior. They divided these

structures into two categories. The first category focused on social motivations and used the norm activation model and the value-belief-norm theory. The second category included personal benefit motivations and used the TPB(Ajuhari et al., 2016; S. S. Lee et al., 2023). Therefore, the description of the formation of tourists' environmentally responsible behavior aligns with the TPB, which evaluates the factors affecting individuals' behavioral intentions.

Subjective norms are the social pressures exerted on an individual to perform or not perform a behavior (Ajzen, 1991). These social pressures are often imposed on the individual through important people such as parents, teachers, friends, colleagues, and other influential close individuals referred to as referents. Subjective norms positively affect individuals' behavioral intentions in various contexts (Panwanitdumrong & Chen, 2021). These norms suggest that if a tourist assesses what behavior a referent expects from them when encountering natural areas and the environment, they are likely to exhibit that behavior.

Perceived behavioral control is an individuals' perception of the ease or difficulty of performing a desired action, according to Ajzen (1991). The presence of control factors, such as skills and abilities, the availability of time and money, and cooperation with others, are related to PBC (Ajzen, 1991). If an individual feels they lack the resources or opportunity to perform an action, even if they hold a positive attitude towards it and believe another important person is willing to perform it, they will not have strong intentions to engage in that behavior. PBC can also directly predict environmental behavior, as studies have shown that tourists' PBC predicts their behavioral intentions and actual behavior (Panwanitdumrong & Chen, 2021; C. Wang et al., 2019). Some studies have even suggested that PBC is the most important predictor of behavior, followed by subjective norms (Mejías et al., 2021). Environmental behavior is influenced by an individual's environmental activities, such as their perception of the severity of pollution, which is in turn influenced by environmental awareness (Z. Xu et al., 2023). However, while environmental awareness is a key factor in improving environmental behavior, it may not directly stimulate individuals to engage in environmental behaviors (Fu et al., 2020), and instead may lead to environmental behavior through its impact on other factors.

In the development of the Theory of Planned Behavior model, many researchers have considered environmental background factors to be effective in the occurrence of environmental behaviors (Ajuhari et al., 2016; Panwanitdumrong & Chen, 2021). Environmental background refers to an individual's perception of the physical characteristics of a destination, such as natural scenery, cleanliness of main streets, and cleanliness of public places (C. Wang et al., 2019). In the context of tourism, when tourists are in a good environment, they appreciate their surroundings, leading them to exhibit appropriate behavior. In this regard, Wang et al. (2019), in a study conducted in mountainous areas, confirmed that the environmental background of mountainous regions is a positive moderating factor in the occurrence of responsible behavior among tourists.On the other hand, moral norms strongly predict the effects of perceived behavioral control and subjective norms, where social pressures and positive self-perception are still largely influenced by moral values. Therefore, accepting positive moral feelings such as empathy and gratitude can be widely used in creating environmental conservation behavior (De Groot & Steg, 2009).

Social norms are often seen as a significant influence on pro-environmental behavior in pro-environmental behavior research (Han HeeSup, 2015). Nonetheless, some studies have revealed that social norms alone do not directly impact tourists' pro-environmental behaviors (Farrow et al., 2017). Tourists may prioritize emotional satisfaction, mental peace, and physical pleasure during their travels, which could be why social norms do not significantly affect their pro-environmental behavior (Han HeeSup, 2015). When traveling, tourists tend to break free from the social norms they adhere to in their daily lives, completely liberate themselves, and enjoy their time(Alcock et al., 2017). They are more likely to value the pleasure and peace they obtain during travel and underestimate the importance of social norms (Miao & Wei, 2013). Personal norms play a central role in predicting environmentally responsible behavior and are an individual's sense of moral obligation to take specific actions for environmentally responsible tourism(D'Arco et al.,

2023). Personal norms are a crucial concept in both the Norm Activation Theory and the Value-Belief-Norm Theory, both of which posit that personal norms are activated when an individual becomes aware of the negative consequences for others or the environment (Gao et al., 2017). It is believed that tourists engage in environmentally responsible behaviors due to a sense of moral responsibility to reduce negative environmental impacts.

While the body of literature on pro-environmental tourist behavior is extensive, bibliometric analyses that systematically map this specific field remain scarce. Previous scientometric studies have typically focused on broader themes, such as sustainable tourism in general or ecotourism, without a dedicated focus on the unique context of rural areas. Furthermore, many existing reviews have been confined to general performance metrics, such as publication and citation counts, while paying less attention to the underlying conceptual structure and thematic evolution of the field. This study distinguishes itself by addressing these gaps. It is similar to previous works in its use of quantitative scientometric methods, but it differs fundamentally in its specific focus on pro-environmental behavior within the rural tourism context over an extended period (1985-2024). Therefore, the roadmap for the current research is as follows: first, to systematically collect and screen the relevant literature from the Scopus database; second, to apply a multi-faceted bibliometric analysis including co-authorship, keyword co-occurrence, and co-citation networks to identify the key contributors, primary research clusters, and foundational intellectual pillars of the field; and finally, to synthesize these findings to provide a comprehensive map of the knowledge structure, thereby revealing critical insights and clear directions for future research.

3. Research Methodology

This research employs a combined approach based on systematic review and scientometric analysis to comprehensively analyze the knowledge structure and research trends in the field of environmentally responsible behavior in rural tourism. In the first step, using the systematic review technique, a systematic process for searching, screening, and selecting articles related to the research topic was designed and implemented in the Scopus database. Scopus was chosen as the primary data source, considering its extensive coverage, high comprehensiveness in indexing reputable international scientific journals, and powerful citation analysis tools. The inclusion criteria for articles in the study encompassed publication within the timeframe of 1985 to 2024, thematic focus on factors affecting environmentally responsible behavior in the context of rural tourism, and access to the full text of the article. Conversely, other types of publications apart from research articles, such as editorials, conference papers, and notes, were excluded from the review process. The search for articles was conducted using a comprehensive strategy based on the intelligent combination of the main research keywords in the form of Boolean operators in the title, abstract, and keyword fields. After removing duplicates and carefully screening titles and abstracts, a final set of 1020 eligible articles was selected for the final analysis.

In the second step, relying on the scientometric analysis approach, quantitative indicators and network analyses were applied to map the knowledge structure and identify focal points and emerging thematic trends in the selected body of literature. Based on advanced mathematical, statistical, and visualization techniques, Scientometric analysis enables mapping concepts, thematic clusters, and patterns of hidden interactions within vast scientific information). For this purpose, utilizing the specialized network analysis software VOSviewer, co-authorship, co-citation, and keyword co-occurrence networks were constructed and analyzed in the studied dataset. The advanced capabilities of VOSviewer software in the field of cluster analysis and knowledge mapping allowed the researcher to identify the main knowledge clusters and central research topics by automatically grouping the nodes present in the conceptual networks. Moreover, by relying on the visualization capabilities of this tool, the structure of relationships among concepts, thematic clusters, and key players was intuitively and comprehensibly depicted. Additionally, by conducting content analysis of keywords at different layers of texts, including titles, abstracts, and author-selected keywords, and monitoring their frequency and co-occurrence, the possibility of more precise identification of emerging trends

and focal points in more specialized areas was provided. Thus, by creatively combining systematic review techniques and scientometric analysis based on the most advanced network analysis and knowledge visualization tools, the present study has provided the opportunity to offer a comprehensive and dynamic map of the knowledge structure and dynamics in the field of environmentally responsible behavior in rural tourism. The findings derived from these big data-driven analyses are expected to not only fill existing knowledge gaps but also lead to the identification of novel research opportunities and challenges facing researchers and policymakers in this arena

In summary, the research was executed through a structured, multi-stage workflow to ensure methodological rigor and replicability. The first stage involved data identification and retrieval, where a systematic search was conducted within the Scopus database, chosen for its extensive coverage of peer-reviewed literature. The search query was meticulously constructed using Boolean operators to combine keywords related to the core concepts. The search strategy targeted terms such as *(for instance, "pro-environmental behavior," "environmentally responsible behavior," "sustainable behavior")* in conjunction with context-specific terms like *(for instance, "rural tourism," "agritourism," "countryside tourism")* within the title, abstract, and keyword fields of the documents. In the second stage, the retrieved results underwent a rigorous screening process. They were filtered based on pre-defined inclusion criteria, such as publication type (research articles only) and timeframe (1985-2024), while excluding non-relevant documents like editorials and notes. After removing duplicates, this process yielded the final dataset of 1,020 articles for analysis. The third and final stage involved the scientometric analysis. The full bibliographic data from the final article set was imported into VOSviewer software, which was used to construct and visualize various networks. Specifically, co-authorship analysis was performed to map scientific collaborations ; keyword co-occurrence analysis was used to identify dominant thematic clusters and research trends ; and co-citation analysis was applied to sources, authors, and journals to uncover the intellectual cornerstones of the field. This systematic, step-by-step procedure provides a transparent and verifiable foundation for the comprehensive knowledge map presented in the results.

4. Research Findings

4.1. Co-authorship Network

Collaborative research networks can be uncovered using co-authorship networks. Scientists establish social networks and relationships with co-authors over time, forming the basis of the co-authorship network among researchers. Therefore, the analysis of co-authorship networks is the most effective way to identify connections among researchers who have a significant impact in a particular field (Biscaro & Giupponi, 2014).

Figure 1 illustrates the collaboration network among authors, which was constructed using the VOSviewer software. In this analysis, the minimum number of documents per author was set to 1, and a total of 1020 documents met this criterion. The lines present in the network represent the collaborative links established between co-authors over time, with the thickness of each line indicating the strength of the collaboration relationship between the two authors. In this network, 23 prominent authors are categorized into eight distinct clusters. The yellow cluster consists of 5 authors, the red cluster has 7 authors, the dark blue cluster contains 5 authors, the light purple cluster has 2 authors, the orange cluster includes 3 authors, the dark purple cluster comprises 5 authors, the light blue cluster has 3 authors, and the green cluster includes 6 authors. Notably, the yellow cluster with 5 authors is positioned at the center of the network and acts as the main hub of connections with other researchers (Figure 1).

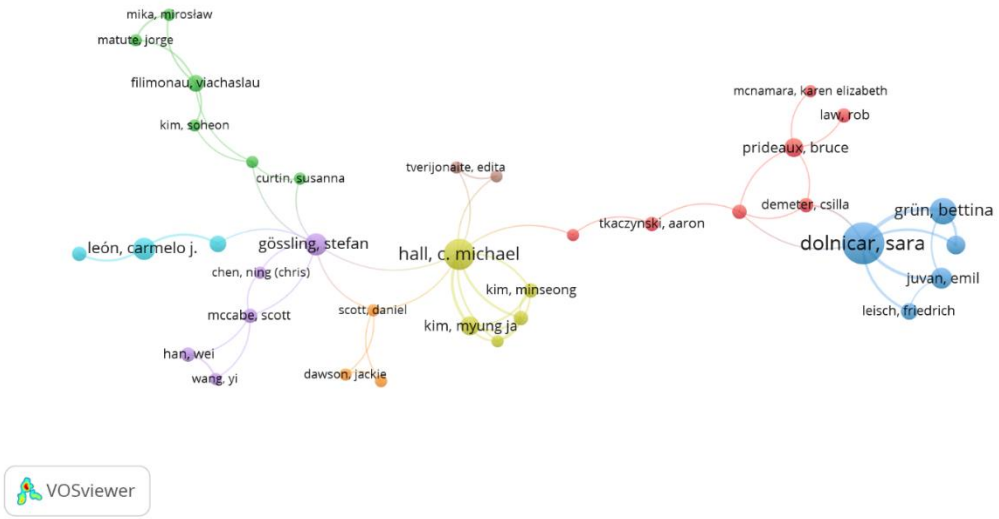

Figure 1. Co-authorship Network

4.2. Analysis of Leading Research Countries

The total number of articles published from a particular country indicates that country's influence. The top five countries examined were China, the United States, the United Kingdom, Australia, and South Korea.

In terms of total publications, 89 countries were identified, of which 49 countries had a minimum of 5 citations. These 49 countries can be categorized into 9 clusters. China ranked first among all countries with a total of 193 publications and ranked fourth in total citations (3916). The United States ranked second with a total of 156 published articles and ranked second based on the total number of citations with 7464 articles. In terms of average citations per article, Australia reached the highest position with 8939, while China ranked fourth among the top 5 countries. Articles from Australia demonstrate high scientific prowess in this research field**.**

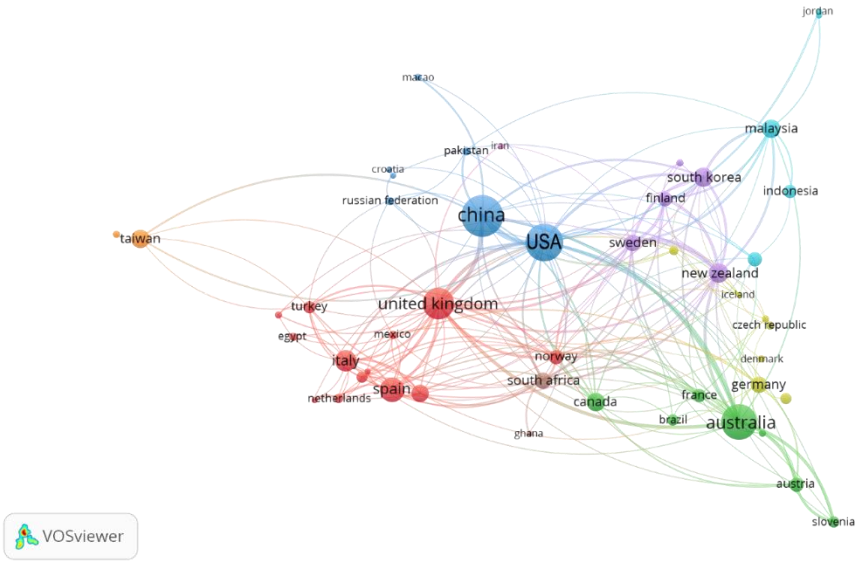

Figure 2. Leading countries (from developed and developing countries) in terms of total publications

Using VOSviewer, we created a collaboration map for the top countries, as shown in Figure 2. A minimum of 5 documents per country was required to qualify, and 49 out of 89 countries met this threshold. The map displays the connection status between two countries through a connecting line, with the circle size representing the number of publications. The thickness of the line indicates the level of collaboration within countries. However, the degree of collaboration varies across countries. There are four clusters with strong connections in total, with the United Kingdom, the United States, Australia, China, and New Zealand showing high levels of collaboration and interaction in the field of environmental behavior in rural tourism. These countries also received relatively high citation counts. Developed countries dominated this research field in terms of scientific publications, citations, and collaborations.

Developed countries focus more on examining the influential factors in shaping environmental conservation behavior in rural tourism on a larger scale. Factors affecting the environmental behavior of rural tourists, such as social responsibility, sense of belonging to the destination, social interaction, and neighborhood satisfaction, have the highest priority level in developed countries, but this is not the case in developing countries . On the other hand, developing countries have high economic growth rates but do not strongly emphasize responsible environmental conservation behavior in rural tourism.

4.3. Analysis of Research Institutions

To analyze the performance of scientific institutions in the field of rural tourism environmental behavior studies, a research study examined 2240 institutions from the years 1985 to 2024. The institutions were ranked based on the number of publications they produced with a threshold of at least 3 published articles. As a result, the study identified and ranked 27 top institutions, which are listed in Table 1. The top institution in the ranking was the School of Business and Economics at Linnaeus University in Sweden, which had the highest number of publications. Sejong University's College of Hospitality and Tourism Management in South Korea ranked second with 6 articles and 138 citations, but it had relatively weak performance in terms of scientific collaboration links. Finally, the Department of Service Management and Service Studies at Lund University in Sweden ranked third by publishing 6 articles and achieving a score of 23 in the strength of scientific collaborations index (Figure 3 and Table 1).

An overview of the findings in this section reveals that the majority of influential institutions in this field are affiliated with developed countries, and the share of institutions from developing countries in advancing the frontiers of knowledge related to the environmental behavior of rural tourists has been very limited. This finding aligns with the results of other bibliometric studies in the field of sustainable tourism and the environment and confirms the deep knowledge and research gap between developed and developing countries in this area .

The higher concentration of leading institutions in developed countries can be explained in light of various factors, such as having stronger institutional and financial infrastructures, substantial investments in research and innovation, and deeper concerns about environmental and tourism sustainability. On the other hand, the requirements of economic development and livelihood provision have placed strategic attention to the tourism sector at the top of the macro-policy priorities of many developing countries. This issue, alongside limitations in financial and human resources, can justify the minimal share of institutions from these countries in research related to the environmental behavior of tourists .

This research gap, considering the growing trend of tourism in rural areas of developing countries and the environmental sensitivity of these regions, can be a serious alarm for the long-term sustainability of tourism destinations. Accordingly, strengthening the research capacity of universities and scientific centers in developing countries in this field and encouraging their scientific collaborations with influential international institutions are among the essential necessities for bridging the knowledge gap and providing more favorable responses to the needs of sustainable rural tourism development in these regions.

Table 1. Top research institutes in the field of environmental behavior in rural tourism

total link strength	Number of referrals	Related documents	Institute	rank
22	680	11	school of business and economics, linnaeus university, kalmar, sweden	1
0	138	6	college of hospitality and tourism management, sejong university, seoul, south korea	2
23	28	6	department of service management and service studies, lund university, helsingborg, sweden	3
23	28	6	geography research unit, university of oulu, oulu, finland	4
7	235	5	department of geography, university of oulu, oulu, finland	5
4	214	5	institute of geographic sciences and natural resources research, chinese academy of sciences, beijing, 100101, china	6
4	215	5	university of chinese academy of sciences, beijing, 100049, china	7
12	85	4	college of hotel & tourism management, kyung hee university, seoul, south korea	8
0	31	4	college of tourism and service management, nankai university, tianjin, china	9
8	128	4	department of management, marketing and entrepreneurship, university of canterbury, christchurch, new zealand	10

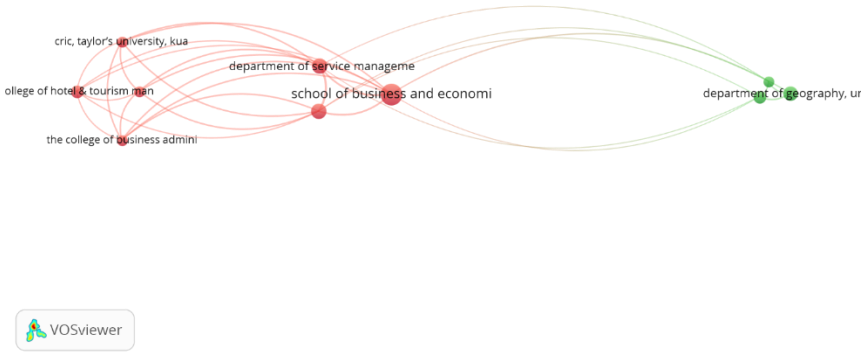

Figure 3. Top research institutions in the field of environmental behavior in rural tourism

4.4.Keyword analysis

In order to determine the main areas of research and current trends, it is crucial to identify the keywords used in articles. Various types of keywords, such as author keywords, abstract keywords, and keywords, can help researchers in conducting bibliographic research. Each type of keyword provides researchers with a general understanding of the study and highlights a particular field of study. The keywords related to environmentally responsible behavior in rural tourism were assessed and ranked over a period of 38 years (1985-2024) based on the title, abstract keywords, author keywords, and other keywords. Table 2 displays the most commonly used words in the title, author keywords, additional keywords, abstract keywords, and all keywords related to the

study of environmentally responsible behavior in rural tourism.

Table 2. The most extracted keywords related to environmentally responsible behavior in rural tourism

total link strength	total link strength	occurrences	keyword	id	total link strength	total link strength	occurrences	keyword	id
17	148	17	carbon emission	13	22	260	16	adult	1
0	89	17	climate change	14	0	199	17	animal	2
0	609	97	coastal zone	15	23	187	26	anthropogenic effect	3
6	298	54	coastal zone management	16	23	304	25	attitude	4
6	110	16	cognition	17	7	164	24	attitudinal survey	5
0	131	18	comparative study	18	4	807	68	australia	6
0	93	18	conservation	19	4	179	16	aves	7
6	121	21	conservation management	20	12	111	17	beaches	8
0	266	33	conservation of natural resources	21	0	276	46	behavior	9
0	241	34	consumption behavior	22	8	145	15	behavioral research	10
6	474	33	contingent valuation	23	0	138	17	behavioral response	11
					17	306	27	biodiversity	12

In this study, the frequency analysis of keywords used in research related to environmentally responsible behavior in rural tourism provides valuable insights into the dominant topics and trends in this field. According to the table presented, 23 high-frequency keywords have been identified that can indicate the importance and thematic priority of the research. Among these, the keywords extracted from article titles and authors' selected keywords have particular significance in representing the main content of the studies due to their prominent position. Among the title keywords, concepts such as "adult," "animal," "anthropogenic effect," "attitude," "behavior," and "conservation" had the highest frequency, indicating researchers' attention to the role of individual and attitudinal factors alongside the consequences of human behaviors on the natural environment. This finding aligns with the perspective of the theory of planned behavior (Ajzen, 1991) and similar studies that emphasize the role of attitudes and individual characteristics in environmental behavior (Han HeeSup, 2015). However, in the authors' selected keywords, concepts such as "sustainable tourism," "ecotourism," "nature-based tourism," "environmentally responsible behavior," and "climate change" have been the focus of attention. These keywords demonstrate the close link between responsible behaviors and the concept of sustainability and the protection of natural ecosystems in tourism destinations. Similar findings are also observed in the keywords extracted from article abstracts, indicating consistency and coherence among different elements of the articles. In an overall view of the set of keywords, it can be discerned that "tourism behavior," "ecotourism," "tourism destination", "tourism development,"

and "tourism management" have been among the most frequent cases. These findings confirm that environmentally responsible behavior of tourists is a central and prominent topic in rural tourism research and has a close relationship with managerial issues of sustainable tourism development in rural destinations. The emergence of keywords such as "performance," "framework," "model," "indicators," and "evaluation" alongside these concepts also signifies researchers' efforts to conceptualize, model, and measure the dimensions of environmentally responsible behavior in connection with sustainable tourism development(S. Lee et al., 2023). The keyword analysis reveals that the study of environmentally responsible behaviors of rural tourists is one of the main active streams in the literature of sustainable tourism development, closely linked with axes such as ecotourism, environmental conservation, destination management, and tourist behavior modeling. These findings can contribute to a better understanding of research lines and the identification of research opportunities in this field.

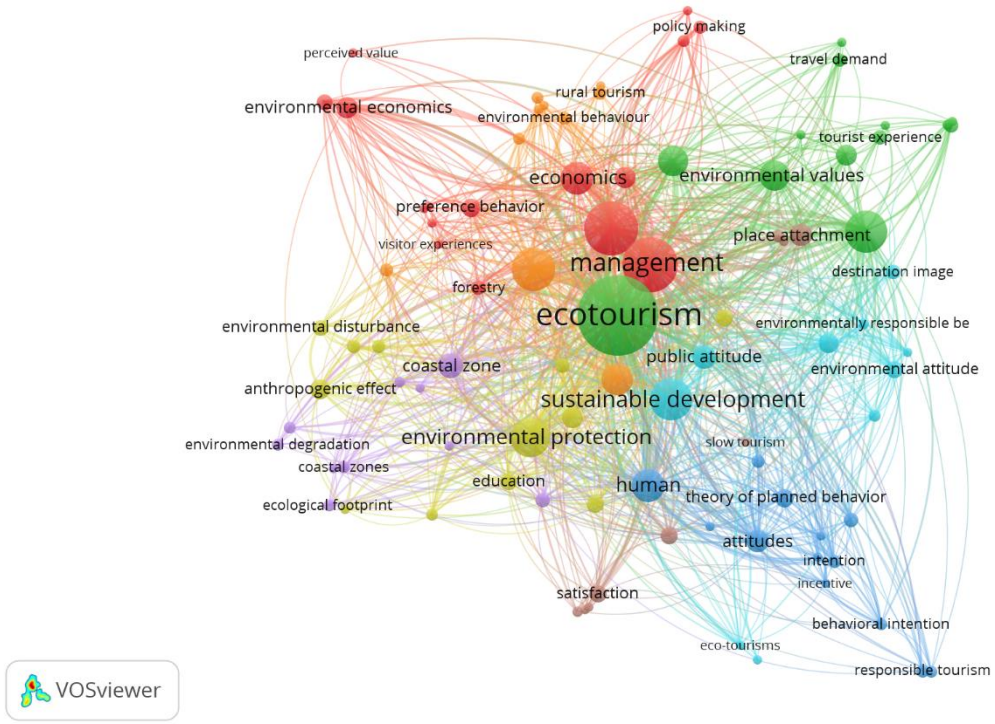

Figure 4. Authors' keyword network authors Keyword Network

Regarding the network of keywords related to environmentally responsible behavior in rural tourism, it can be said that this network itself consists of a series of sub-networks or clusters, each focusing on a specific research domain related to the research title.

Red Cluster (Ecotourism)- The red cluster in Figure 4 primarily focuses on research related to the field of ecotourism. These studies emphasize key aspects such as environmental values, the theory of planned behavior, pro-environmental behaviors, environmentally responsible behaviors, and attitudes. The common thread among the research in this cluster is the elucidation of the relationships and reciprocal influences among these constructs in shaping tourists' environmentally responsible behavior.

The research conducted by Zhang and Sun (2022) suggests that individuals' environmental values, such as altruistic, egoistic, and biospheric values,

significantly impact their general attitudes toward the environment. These attitudes then subsequently lead to pro-environmental behaviors. This finding is consistent with the value-belief-norm theory, which highlights the crucial role of personal values in shaping environmental beliefs and norms. In addition, earlier studies in the field of ecotourism (Chiu & Wang, 2023) have also supported this relationship between environmental values, attitudes, and tourist behavior.

On the other hand, the theory of planned behavior (Ajzen, 1991) and the norm activation theory (Schwartz, 1977) provide widely used theoretical frameworks for explaining the mechanisms of formation of environmentally responsible intentions and behaviors among tourists. These theories emphasize the role of factors such as attitudes, subjective norms, perceived behavioral control, awareness of consequences, and a sense of moral responsibility in predicting behavior(Batool et al., 2024). The extensive application of these theories in the research within this cluster demonstrates researchers' reliance on well-established theoretical foundations in the field of social psychology.

However, alongside these individual factors, the role of contextual variables such as social interactions, participation, and characteristics of the tourism destination is also of importance. Based on the findings of Hansen et al. (2024), behavioral, social, value, and cognitive constructs related to sustainability, alongside contextual factors, jointly shape tourists' attitudes and behavioral intentions towards supporting the environment. In fact, tourists' perceptions of the environmental responsibility of the destination and local residents also play a role in stimulating and reinforcing their responsible behaviors (Y. Wang et al., 2023). This comprehensive approach to the multifaceted influences of individual and environmental factors distinguishes the research in this cluster.

Overall, the red cluster, by drawing on the fundamental concepts of environmental values, attitudes, and norms and integrating them with cognitive-social theories of behavior, seeks to explain the motivating mechanisms of environmentally responsible behaviors of tourists in the context of ecotourism. The findings of this section, while enriching the subject literature, can pave the way for designing effective behavioral interventions in ecotourism destinations.

Green Cluster (Ecosystem and Environmental Conservation)- The green cluster in Figure 4 primarily consists of keywords related to ecosystems and environmental conservation. The central concepts in this cluster include "ecosystems," "nature conservation," and "protected areas." The main focus of the research in this cluster is on elucidating the complex and multifaceted relationships among nature conservation, ecosystem functioning, and the role of protected areas in sustainable tourism development.

In most of these studies, which have focused on specific types of tourism in protected areas, the main objective of tourism has been stated as providing unique nature-based experiences for visitors while promoting the principles of environmental conservation. This approach aligns with the concept of conservation-based tourism (Bushell & McCool, 2007), which emphasizes the establishment of a constructive link between the tourism industry and nature conservation management objectives. Accordingly, tourism in protected areas can serve as a tool for increasing environmental awareness, attracting public support, and providing financial resources for effective conservation of biodiversity and ecosystems (Poudyal & Joshi, 2022) .

However, some research findings in this cluster indicate potential conflicts between protected areas' recreational and conservation functions. For example, in their study, Zhang et al.(2022) found that increased recreational use of natural resources in these areas can impose significant pressures on ecosystem health and wildlife. This challenge highlights the necessity of adopting integrated management approaches based on ecological carrying capacity in developing tourism in protected areas (Poudyal & Joshi, 2022).

Despite these challenges, the common thread among most of the research in this cluster is the importance of protected areas, such as national parks and biosphere reserves, in safeguarding natural and cultural heritage for present and future generations. According to Hopke's (2024) perspective, by providing diverse ecosystem services, these areas contribute to biodiversity conservation and create opportunities for sustainable socio-economic development of local

communities by attracting nature-oriented tourists. In the same vein, Kropf et al. (2019) emphasize the importance of transboundary protected areas in strengthening international cooperation and integrated management of ecosystems at the landscape scale.

Overall, the green cluster, focusing on the concepts of ecosystems, nature conservation, and protected areas, emphasizes the need for comprehensive and interdisciplinary approaches in sustainable and conservation-oriented tourism development. The findings of this section can contribute to the richness of the literature on adaptive management of tourism and environmental conservation and pave the way for formulating effective policies and programs for achieving sustainable development goals in protected areas.

Blue Cluster (Tourism Economics and Market)- The blue cluster in Figure 4 primarily focuses on the concepts of tourism economics and market alongside tourist behavior. Despite sharing an attention to tourist behavior with the red cluster, the main distinguishing feature of this cluster is its emphasis on the relationship between economic variables and tourist behavior, rather than solely focusing on individual motivations and attitudes. In fact, the research in this section, drawing on economic theories and approaches, seeks to explain the complex interaction mechanisms among market structures, the performance of tourism enterprises, and consumer behavior in the tourism industry.

From the perspective of industrial economics, the diverse structures of the tourism market, including perfect competition, monopoly, and monopolistic competition, create different environments for the strategic behavior of firms as well as the dynamics of tourism demand (Candela et al., 2012). The analysis of these structures and their impacts on the tourism sector's efficiency, productivity, and competitiveness has been one of the main axes of economic research in this field (Fu et al., 2020). In this regard, applying microeconomic and industrial organization theories assists researchers in understanding the complex mechanisms of economic actors' behavior in tourism markets and its consequences at the national and international levels.

On the other hand, by linking psychological and economic foundations, the behavioral economics perspective provides a comprehensive framework for analyzing consumer decisions and behavior in the tourism market (Torabi, Shalbafian, et al., 2022). By departing from the assumption of perfect rationality in classical economic theory, the behavioral economics approach pays attention to the role of cognitive biases, emotions, social norms, and other non-economic factors in shaping the preferences and behavior of tourists (Avineri, 2012)Therefore, integrating insights from behavioral economics with tourism marketing knowledge assists businesses in this field in gaining a deeper understanding of demand patterns, market segmentation, and designing effective strategies (Dobroskok et al., 2022).

By linking the concepts and theories of tourism economics, industrial economics, and behavioral economics, the blue cluster offers a comprehensive view of the interaction among market structures, firms, and consumers in the tourism industry. The findings of this field can serve as a basis for macro and micro policymaking aimed at enhancing efficiency, improving the tourist experience, and achieving sustainability goals in the tourism industry. At the same time, the growing richness of the tourism economics literature heralds the expansion of interdisciplinary and applied research in the future of this field.

4.5. Co-citation Analysis

In 1973, Small introduced the concept of co-citation analysis, which identifies a relationship between two documents that appear simultaneously in the reference list of a third document (Tang et al., 2022). Co-citation analysis can be divided into three types: reference co-citation analysis, source co-citation analysis, and author co-citation analysis. The goal of this section is to analyze these three types of co-citation analysis and determine the frequency of similar documents in scientific literature.

Reference Co-citation Network- The co-citation network of publications on environmental behavior in rural tourism from 1985 to 2024 is presented in Figure 5. VOSviewer was used to develop the network, with a minimum threshold of 80 references to a document. A total of 129 documents were evaluated in pairs, with thicker nodes between two documents indicating a stronger link and higher frequency.

The research conducted by Ajzen et al. (1991) holds the first rank with 65 citations. They provided a comprehensive definition of rural tourism environmental behavior and explained responsible behavior as an essential dimension of sustainable development. Kollmuss and Agyeman (2002) secured the second rank by clarifying the concept of responsible rural tourism behavior and its significance for sustainable tourism management. Steg and Vlek's (2009) article holds the third rank, which evaluates the indicators and framework of rural tourist behavior in the conservation and sustainability of heritage sites.

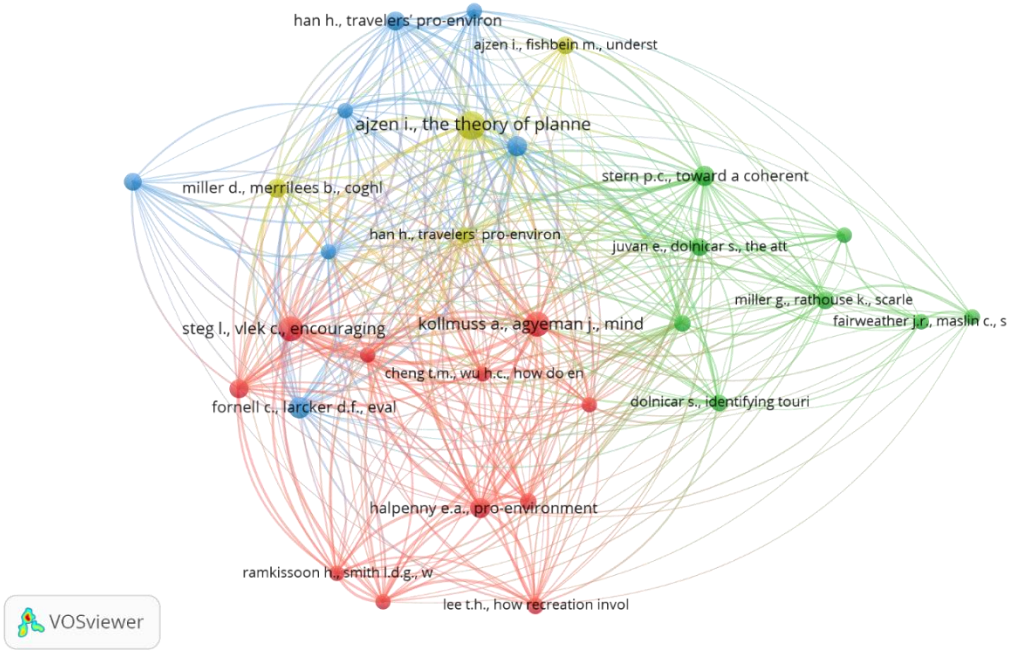

Figure 5. Common citation network of cited references

Journal Co-citation Network The findings from the journal co-citation analysis are presented in Figure 6. Using the VOSviewer software and applying a threshold of 68, the co-citation network of the top 150 journals was mapped in four distinct clusters. In this network, the thickness of the links between two journals indicates the number of times they have been simultaneously cited in other sources, which is considered a measure of the scientific and thematic relationship strength between them (Van Eck & Waltman, 2014).

The analysis performed identified the most influential journals with the highest co-citation links to be Journal of Cleaner Production, Energy Policy, International Journal of Production Economics, Journal of Business Ethics, Energy Economics, European Journal of Operational Research, and Sustainability-Basel, along with other journals in the fields of operations management, energy, and ecological economics. The fact that reputable journals from various fields such as management, energy, sustainability, business ethics, and operations management ranked among the most cited sources indicates that research related to environmentally responsible behavior in rural tourism is interdisciplinary in nature. These results align with similar bibliometric studies in the field of sustainable tourism and the environment (Della Corte et al., 2019; Niñerola et al., 2019). Moreover, the prominent presence of economics and management journals among the main co-citation clusters signifies the growing importance of economic and business studies in advancing the frontiers of knowledge related to environmental sustainability in rural tourism destinations. In fact, a precise understanding of the economic mechanisms and effective managerial strategies influencing the environmentally responsible behavior of tourism stakeholders is considered a fundamental

prerequisite for formulating sustainable policies and business models in this field (Font et al., 2021). The co-citation analysis of journals, while revealing the intellectual structure and thematic links among the most influential scientific sources, emphasizes the need for a comprehensive and integrative view from the perspective of various disciplines on the topic of environmentally responsible behavior in the context of rural tourism. The continuation of future research in this arena requires constructive interaction among researchers and specialized journals from diverse fields such as tourism, environment, economics, management, psychology, and sociology to obtain a comprehensive and practical understanding of the different dimensions of tourists' environmentally responsible behavior.

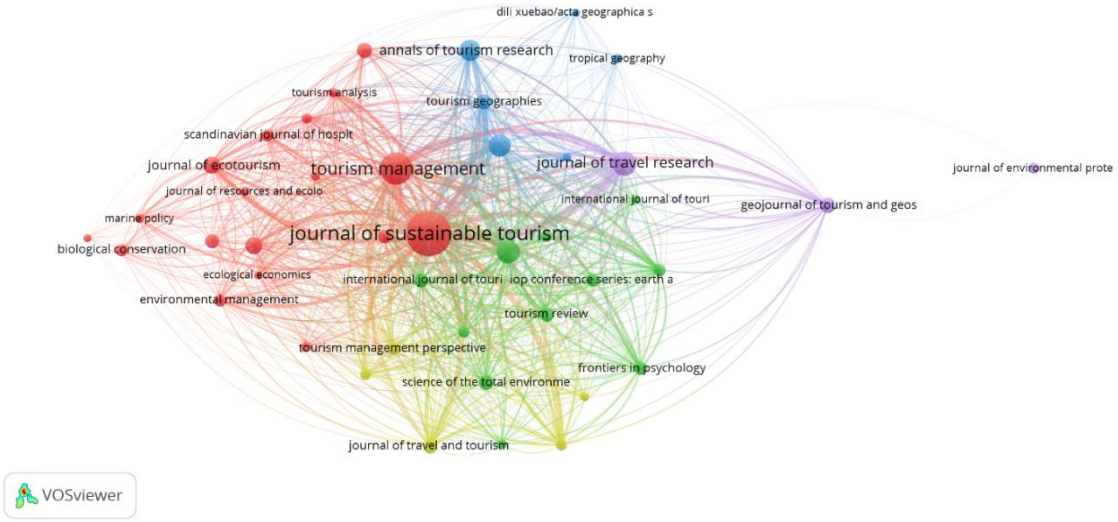

Figure 6. Journal co-citation network

Author Co-citation Network- The figure below (Figure 7) presents an analysis of the co-citation network of authors. The publications on environmentally responsible behavior in rural tourism have simultaneously mentioned 60,024 authors. For analysis using VOSviewer, a threshold of 20 was set. As a result, 852 authors met the threshold conditions. Each node in the graph represents a link between two authors who have been mentioned together in a document. The thickness of the node indicates the frequency of co-citations among authors. Among the 852 authors are the ten most influential ones: Han, Dolincar, Gosling, Hall, Ajzen, Stegn, Scott, Lee, and Welir. This finding suggests that these authors have established strong connections in this research field.

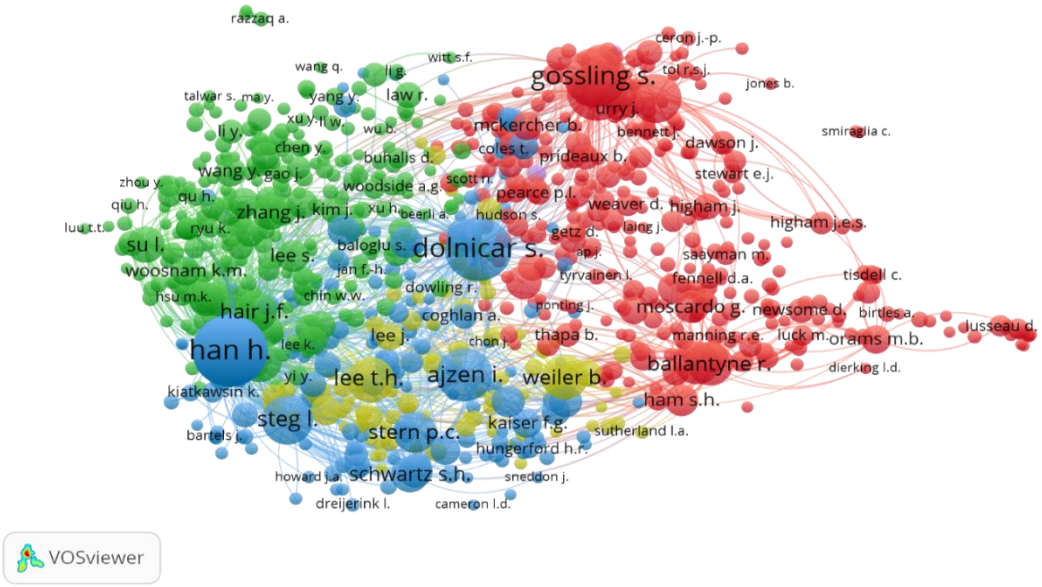

Figure 7. Author co-citation network

the co-citation analysis of cited sources, journals, and authors demonstrated strong scientific networks in academia. The identified networks signify the importance of this research field for fostering environmental behavior in rural tourism.

5. Discussion and Conclusion

The concept of environmentally responsible behavior, particularly in the field of rural tourism, has garnered increasing attention in the realm of scientific research in recent years. This study aimed to provide a comprehensive view of the knowledge structure and research trends prevailing in this domain by employing scientometric methods and bibliometric analysis. The findings of this research, in line with answering the main research questions, contain notable points and implications. First, the analysis of leading countries and institutions in the field of environmentally responsible behavior studies of rural tourists reveals the prominent share and role of developed countries and their renowned research institutions in advancing the frontiers of knowledge in this domain. The presence of China, the United States, Australia, the United Kingdom, and South Korea among the leading countries, as well as the presence of Linnaeus University in Sweden, Sejong University in South Korea, Lund University in Sweden, and the University of Oulu in Finland among the most influential institutions, confirms the high scientific capability and strategic focus of these countries and institutions on the topic of environmental sustainability in tourism development. The alignment of these findings with the global Environmental Performance Index , which affirms the superior position of these countries over the past decade (Wolf et al., 2022), indicates a close relationship between research efforts and actual environmental achievements in these countries. Second, the high citation of seminal works such as the theory of planned behavior by Ajzen et al. (1991), the conceptualization of responsible rural tourism behavior by Kollmuss & Agyeman (2002), and the framework for measuring the conservation behavior of cultural heritage tourists proposed by Steg and Vlek (2009) signifies the pivotal role of these studies in shaping the mainstream research in this field. In fact, the theory of planned behavior, by explaining the cognitive-social mechanisms affecting human decision-making and behavior, has provided a broad theoretical foundation for analyzing the environmentally responsible behavior of tourists. The application of this theory alongside other conceptual frameworks such as the norm activation theory and the value-belief-norm theory has significantly assisted researchers in better understanding the antecedents and

consequences of these behaviors in the context of rural tourism.

Moreover, an examination of the findings from recent studies indicates the prominent role of variables such as attitudes, personal and social norms, environmental concerns, and perceived behavioral control in predicting and explaining tourists' environmentally responsible behavior. For example, Wang et al. (2023) and D'Arco et al. (2023) have emphasized the importance of personal norms and environmental concerns in moderating and mediating the relationship between tourists' demographic characteristics and their responsible behaviors. Similarly, the results of Salinero et al.'s (2022) study demonstrate the significant capability of personal norms in predicting the pro-environmental behavior of Generation Z tourists. On the other hand, the findings of Tsai & Tan (2022) highlight the pivotal role of moral norms in strengthening perceived behavioral control and subjective norms influencing the behavioral intention to protect the environment. In other words, internalizing environmental ethical values can increase an individual's sense of empowerment in performing responsible behaviors and increase the normative pressure to adhere to these behaviors. These findings reveal the necessity of considering the complex interaction among individual, social, and contextual factors in explaining tourist behavior.

The results of this research, while providing a systematic view of the knowledge structure and trends in the field of environmentally responsible behavior in rural tourism, emphasize the need for creative integration of diverse theories and approaches in analyzing this phenomenon. Expanding interdisciplinary studies, developing comprehensive theoretical frameworks, and paying greater attention to the role of cultural-contextual factors in explaining tourist behavior are among the promising areas for future research in this field. Furthermore, utilizing research findings in designing effective behavioral interventions and formulating pro-environmental policies can contribute to achieving sustainability goals in rural tourism destinations.

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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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Original Article

تحلیل کتاب‌سنجی رفتار گردشگران طرفدار محیط زیست در مطالعات گردشگری روستایی

ذبیح‌الله ترابی*[۱]، محمدرضا رضوانی[۲]، حسنی احمدی[۳]، پانته‌آ دوانی[۴]

۱. استادیار جغرافیا و برنامه‌ریزی روستایی، دانشگاه تربیت مدرس، تهران، ایران.
۲. استاد جغرافیا و برنامه‌ریزی روستایی، دانشگاه تهران، تهران، ایران.
۳. دانشجوی دکترای جغرافیا و برنامه‌ریزی روستایی، دانشگاه تربیت مدرس، تهران، ایران.
۳. کارشناسی ارشد جغرافیا و برنامه‌ریزی گردشگری، دانشگاه تربیت مدرس، تهران، ایران.

چکیده مبسوط

۱. مقدمه

نگرانی اصلی مطالعه حاضر، پرداختن به شکاف‌های دانش قابل توجه و کاستی‌های روش‌شناختی شناسایی‌شده در تحلیل‌های پیشین پژوهش‌های مربوط به رفتار گردشگران طرفدار محیط زیست در مناطق روستایی است. با وجود حجم قابل توجهی از انتشارات، این حوزه فاقد درک جامع و سیستماتیک از حوزه‌های تمرکز موضوعی، شبکه روابط میان مفاهیم کلیدی، الگوهای همکاری علمی و روندهای تکاملی دانش در این حوزه خاص است. مطالعات کتاب‌سنجی قبلی اغلب محدود بوده و بر دسته‌های گسترده‌تری مانند گردشگری پایدار یا طبیعت‌محور تمرکز داشته‌اند، یا خود را به معیارهای عملکرد عمومی محدود کرده‌اند بدون اینکه به ساختار مفهومی ادبیات بپردازند. در نهایت، پیش‌بینی می‌شود که یافته‌ها نه تنها شکاف‌های دانش موجود را پر کنند، بلکه به طور قابل توجهی به پژوهشگران آینده در شناسایی ظرفیت‌های جدید و فرصت‌های پژوهشی نوآورانه کمک کنند، در حالی که بینش‌های مبتنی بر شواهد لازم را برای سیاست‌گذاران و برنامه‌ریزان گردشگری برای طراحی مداخلات رفتاری مؤثر و ترویج شیوه‌های پایدار در مقاصد روستایی فراهم می‌آورند.

۲. مبانی نظری تحقیق

رفتار زیست‌محیطی گردشگران در مقاصد گردشگری روستایی به عنوان یکی از حوزه‌های پژوهشی مهم در مطالعات معاصر گردشگری مطرح شده است. این پدیده، به‌ویژه با توجه به افزایش فشارهای وارده بر اکوسیستم‌های روستایی و ضرورت توسعه گردشگری پایدار، توجه قابل‌توجهی از محققان را به خود جلب کرده است. پژوهش حاضر با بهره‌گیری از رویکرد علم‌سنجی، به تحلیل و ترکیب نظام‌مند ساختار دانش و روندهای غالب در ادبیات رفتار زیست‌محیطی گردشگران در بستر گردشگری روستایی می‌پردازد. مبنای نظری این پژوهش عمدتاً بر نظریه رفتار برنامه‌ریزی شده (TPB) که توسط آجزن و همکاران (۱۹۹۱) مفهوم‌سازی شده، استوار است. این نظریه به عنوان چارچوبی بنیادین در درک قصد رفتاری زیست‌محیطی ظهور یافته است. این لنز نظری با چارچوب‌های مفهومی تکمیلی، از جمله نظریه فعال‌سازی هنجار و نظریه ارزش-باور-هنجار تکمیل شده است که چارچوب تحلیلی جامعی را برای بررسی مکانیسم‌های شناختی-اجتماعی مؤثر بر تصمیم‌گیری‌های زیست‌محیطی گردشگران فراهم می‌آورد.

۳. روش تحقیق

روش‌شناختی پژوهش حاضر بر پایه رویکرد علم‌سنجی جامع استوار است که از ترکیب پروتکل‌های مرور نظام‌مند و تکنیک‌های تحلیل کتاب‌سنجی بهره می‌گیرد. فرآیند پژوهش با جستجوی نظام‌مند در پایگاه داده Scopus برای بازه زمانی ۱۹۸۵-۲۰۲۴ آغاز شد که منجر به شناسایی و غربالگری ۱۰۲۰ مقاله واجد شرایط گردید. در مرحله بعد، با استفاده از نرم‌افزار تخصصی VOSviewer، تحلیل‌های کتاب‌سنجی پیشرفته شامل تجسم شبکه‌های علمی، تحلیل خوشه‌ای، و تحلیل استنادی انجام شد که امکان نگاشت ساختار دانش و شناسایی الگوهای غالب در این حوزه مطالعاتی را فراهم آورد. این رویکرد روش‌شناختی چندوجهی، زمینه را برای درک عمیق‌تر روندهای پژوهشی و ساختار دانش در حوزه رفتار زیست‌محیطی گردشگران در بستر گردشگری روستایی فراهم نمود. این مطالعه علم‌سنجی در حوزه رفتار زیست‌محیطی گردشگران روستایی، ضمن

*. نویسندهٔ مسئول:
دکتر ذبیح‌الله ترابی
آدرس: گروه جغرافیا و برنامه‌ریزی، دانشکده علوم انسانی، دانشگاه تربیت مدرس، تهران، ایران
پست الکترونیکی: Email: Zabih.torabi@modares.ac.ir

آشکارسازی ساختار دانش و روندهای پژوهشی غالب، بینش‌های ارزشمندی را برای توسعه نظری و کاربردی این حوزه فراهم می‌آورد.

۴. یافته‌های تحقیق

یافته‌های پژوهش نشان می‌دهد که پیشگامی کشورهای توسعه‌یافته و مؤسسات پژوهشی برجسته در این حوزه، همراه با غنای نظری حاصل از کاربرد چارچوب‌های متنوع نظری مانند نظریه رفتار برنامه‌ریزی شده، زمینه را برای درک عمیق‌تر عوامل مؤثر بر رفتار زیست‌محیطی گردشگران فراهم کرده است. تحلیل خوشه‌ای کلیدواژه‌ها و الگوهای استنادی، نشان‌دهنده سه جریان اصلی پژوهشی شامل اکوتوریسم، حفاظت از اکوسیستم و اقتصاد گردشگری است که مسیرهای آتی پژوهش را مشخص می‌سازد. این یافته‌ها ضرورت توسعه رویکردهای بین‌رشته‌ای، توجه به عوامل فرهنگی-زمینه‌ای، و طراحی مداخلات رفتاری مؤثر برای ارتقای پایداری در مقاصد گردشگری روستایی را برجسته می‌سازد و می‌تواند به عنوان راهنمایی برای پژوهشگران، مدیران مقاصد گردشگری و سیاست‌گذاران در جهت توسعه گردشگری پایدار روستایی عمل کند.

۴. بحث و نتیجه‌گیری

نتایج این تحقیق، ضمن ارائه دیدگاهی نظام‌مند از ساختار دانش و روندهای موجود در حوزه رفتار مسئولانه زیست‌محیطی در گردشگری روستایی، بر لزوم ادغام خلاقانه نظریه‌ها و رویکردهای متنوع در تحلیل این پدیده تأکید می‌کند. گسترش مطالعات میان‌رشته‌ای، توسعه چارچوب‌های نظری جامع، و توجه بیشتر به نقش عوامل فرهنگی-زمینه‌ای در تبیین رفتار گردشگران، از جمله حوزه‌های امیدبخش برای تحقیقات آتی در این زمینه است. علاوه بر این، به‌کارگیری یافته‌های پژوهشی در طراحی مداخلات رفتاری مؤثر و تدوین سیاست‌های حامی محیط زیست می‌تواند به دستیابی به اهداف پایداری در مقاصد گردشگری روستایی کمک کند. این مطالعه با ارائه یک نقشه جامع و پویا از ساختار دانش و روندهای غالب در رفتار دوستدار محیط زیست در گردشگری روستایی، به بدنه دانش موجود کمک می‌کند. این تحقیق با پر کردن شکاف‌های مطالعات قبلی، فرصت‌های تحقیقاتی جدیدی را برای پژوهشگران آینده شناسایی می‌کند.

کلیدواژه ها: رفتار گردشگران، گردشگری روستایی، علم‌سنجی، پایداری، نظریه رفتار برنامه‌ریزی‌شده، محیط زیست

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Original Article

Analyzing Determinants of Community Participation in Rural Water Project Planning in Simiyu Region, Tanzania: A Logit Model Approach

Fred Alfred Rwechungura[*1]
1. Assistant Prof. in Economics, Faculty of Social Sciences, Mzumbe University, Tanzania.

Abstract
Purpose- Access to safe and clean water remains a critical global concern, especially in rural areas of developing countries where infrastructural and institutional limitations are prevalent. In Tanzania, particularly in the Simiyu Region, water insecurity is further compounded by limited community participation in the planning stages of rural water projects. While participatory approaches are widely advocated to improve sustainability and responsiveness of such initiatives, there remains limited empirical evidence on the socio-economic and institutional factors influencing household-level participation. The main purpose of this research is to analyze the determinants of community participation in rural water project planning in Simiyu region, Tanzania by employing a Logit Model Approach.
Design/Methods/Approach- This study addresses this gap by analyzing the determinants of community involvement using a logit regression model, drawing from data collected through a cross-sectional survey of 217 respondents. The sample was derived using Yamane's (1967) formula, and a mixed sampling technique was applied to ensure representativeness across demographic and socio-economic groups. Structured questionnaires were employed for data collection, and the resulting data were analyzed using descriptive statistics and logistic regression methods.
Findings- The results revealed that several variables significantly influence participation. These include age (marginal effect = 0.116, $p < 0.05$), gender (0.098, $p < 0.05$), occupation—particularly among those engaged in livestock keeping (0.161, $p < 0.05$) and small businesses (0.177, $p < 0.05$)-as well as income level. Additionally, community awareness (0.247, $p < 0.05$) and prior experience with development initiatives (0.175, $p < 0.05$) were strong positive predictors. Cultural norms were found to influence gendered participation, with male respondents more likely to be involved in decision-making processes.
Practical implications- These findings emphasize the importance of integrating gender-sensitive and participatory planning approaches to ensure alignment with local needs and to promote sustainability.
Original/Value- The study recommends targeted policy interventions including community capacity-building, equitable policy frameworks, and strengthened local governance mechanisms to foster inclusive participation. Institutionalizing participatory approaches and promoting gender equity will be crucial in enhancing community ownership, improving project outcomes, and ensuring long-term water security in rural Tanzania.
Key Words- Community participation, Rural water projects, Sustainability, Gender equity, Socio-economic factors.

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Corresponding Author:
Rwechungura, Fred Alfred, Ph.D.
Address: Department of Economics, Faculty of Social Sciences, Faculty of Social Sciences, Morogoro, Tanzania.
Tel: +255785333444
E-Mail: farwechungura@mzume.ac.tz

1.Introduction

Access to safe and clean water continues to be a major challenge globally, particularly in rural areas of developing countries like Tanzania. Every year, millions of people die due to using unsafe water, inadequate sanitation, and poor hygiene, with children and young women in rural communities being the most affected groups (WHO, 2019; UNICEF, 2021). To address this issue, various water projects have been implemented by governments and non-governmental organizations (NGOs) around the world. However, the sustainability of these initiatives is often questioned, primarily due to inadequate community involvement (Bakari & Mbunda, 2022). Community participation is considered essential for the long-term success of rural water supply projects in developing countries (Kabote & Mwamfupe, 2020). However, many of these projects fail because of poor community engagement, particularly during the planning phase (Mgulo & Kamazima, 2022). This lack of community involvement leads to projects that do not meet the needs of the community, ultimately undermining their sustainability (Ntibona et al., 2023).

In developing countries like Tanzania, community participation in rural water projects is a significant concern. Despite its recognized importance for the sustainability of these projects, many faces persistent challenges related to inadequate community involvement (Murongo & Theopista, 2021; Priyan & Nyabakora, 2023). For example, in Simiyu Region, only about 20% of the urban population and 40% of the rural population have access to clean drinking water (Ndungu & Karugu, 2019). This situation is worsened by the region's dependence on the Simiyu River, which has become seasonal due to climate change, resulting in unreliable water supply and increased vulnerability to droughts and floods (Lubini & Adamowski, 2013). The insufficient participation of the community in the planning and management of water projects further contributes to their failure and lack of sustainability (Bakari & Mbunda, 2022).

Research by Sei (2016) and Mgulo and Kamazima (2022) suggests that the effectiveness of community participation is hindered by various factors, including governance structures and a lack of awareness within the community. Many rural water projects in Tanzania have historically been designed and implemented without adequate input from local communities, leading to a mismatch between projects and the needs of the beneficiaries. This disconnection not only reduces the sense of ownership among community members but also results in poor maintenance and management of water supply systems once external support is withdrawn (Asbetsadik et al., 2025) . Therefore, understanding the dynamics of community participation is crucial for developing strategies that ensure the sustainability of water supply projects in the region. Previous studies emphasize that ineffective participation often leads to project failure, highlighting the need for interventions that empower communities and involve them in decision-making processes (Murongo & Theopista, 2021; & Macharia et al., 2023). The ongoing challenges related to community participation in Simiyu Region call for further research into the factors that influence engagement and the sustainability of water supply projects. Identifying barriers to participation and understanding the local context can help stakeholders design strategies to enhance sustainability and improve the quality of life for communities (Bakari & Mbunda, 2022; Mgulo & Kamazima, 2022;).

This study aims to identify and analyze the socio-economic and institutional factors that influence community participation in the planning of rural water projects in Simiyu Region, Tanzania. Using a logit model approach, the study explored how factors such as age, gender, occupation, education level, income, cultural norms, and policy frameworks impact community engagement in project planning. The results contribute to the development of strategies to improve community participation, enhance the sustainability of water supply projects, and promote equitable development in rural water management.

Simiyu Region, located in northern Tanzania, faces significant challenges related to water scarcity and poor access to clean water. Despite various government and NGO-led rural water projects, many of these initiatives suffer from low levels of community involvement, especially during the planning stages (United Republic of Tanzania [URT], 2020). This lack of participation often leads to projects that fail to meet the needs of local populations, undermining their relevance and

sustainability. Previous research has identified several factors that influence community participation, including socio-economic aspects (e.g., income, education, and occupation), demographic characteristics (e.g., age and gender), institutional factors (e.g., local governance structures), and cultural norms (Cleaver & Toner, 2006). However, the interactions between these factors are not well understood, especially in the context of rural Tanzania. Simiyu provides a unique case study due to its diverse socio-economic conditions and dependence on agriculture and pastoralism, which are heavily affected by water availability. There is, however, a lack of empirical researches that quantitatively analyzes these factors, particularly using methods like the logit model to assess their influence on community participation in planning rural water projects. The use of a logit model is an effective approach to address this gap. Logit models are designed to analyze binary outcomes, such as whether or not individuals participate in water project planning. This method allows researchers to quantify the likelihood of participation based on various factors, providing actionable insights for policymakers and development practitioners (Gujarati & Porter, 2009). Additionally, the logit model can help identify key leverage points for increasing community engagement, which is critical for improving the design and implementation of rural water projects in Simiyu and similar regions.

2. Research Theoretical Literature

Community participation in rural water project planning has been widely studied in the development literature. It is recognized as a critical component of sustainable rural water supply systems, as it enhances project ownership, accountability, and long-term success (Harvey & Reed, 2007). However, despite its acknowledged importance, various empirical studies reveal significant challenges and gaps in understanding the determinants of community participation. This literature review synthesizes key findings from empirical research, focusing on socio-economic, demographic, institutional, and cultural factors that determine community participation in rural water project planning. The review also highlights methodological approaches, including the use of logit models, to analyze these determinants and discusses their relevance to the Simiyu Region of Tanzania.

2.1. The Importance of Community Participation in Rural Water Projects

Community participation is integral to the success of rural water projects. Studies have shown that projects involving local communities during the planning phase are more likely to achieve sustainability and meet the specific needs of beneficiaries (Narayan, 1995). For example, Isham and Kähkönen (2002), in their cross-country analysis of rural water projects in India, Indonesia, and Sri Lanka, found that community involvement significantly improves project outcomes. They argued that participation fosters a sense of ownership among community members, thereby enhancing the likelihood of proper maintenance and long-term functionality of water facilities.

Similarly, in sub-Saharan Africa, Harvey and Reed (2007) emphasized that community engagement in water project planning is a cornerstone of sustainability. They observed that projects lacking adequate community input often suffer from neglect, mismanagement, and rapid deterioration. In the Tanzanian context, a study by Komakech et al., (2011) highlighted that involving communities in water project planning leads to more equitable resource allocation and better alignment with local priorities. However, they also noted that participation levels are often hindered by socio-economic and institutional barriers, which require further exploration.

2.2. Socio-Economic Determinants of Community Participation

Socio-economic factors such as income, education, and occupation play a crucial role in determining community participation in rural water project planning. Studies have consistently shown that wealthier and more educated individuals are more likely to engage in community initiatives. For example, Sara and Katz (1997) found that in Latin America, households with higher income levels were more likely to contribute financially and actively participate in water project planning, as wealthier individuals often have more disposable income and time. Education also influences participation; Kayaga et al., (2013) found that in Uganda, higher education levels positively affected involvement in water project planning, as educated individuals better understand the benefits of participation and can express their needs.

Similarly, Abebe and Bogale (2014) observed that in rural Ethiopia, households with higher education were more involved in water user associations, which play a critical role in project planning and management. However, income and education are often linked with other socio-economic factors, such as gender. In many African contexts, women, who are the primary users and managers of water resources, face barriers to participation due to limited access to education and decision-making opportunities (Cleaver, 1999). This underscores the need for gender-sensitive approaches to enhance community engagement in water project planning.

2.3. Demographic Determinants of Community Participation

Community participation is a cornerstone of successful development interventions, particularly in rural water projects. This literature review critically evaluates empirical research on how demographic factors affect community participation in planning and implementing rural water development projects.

Gender as a Determinant of Community Participation- Studies show that gender plays a crucial role in shaping participation in development projects. Women often face barriers to participation due to traditional gender roles, household duties, and limited access to resources such as land and education (Mohanty et al., 2018). For example, Agarwal (2001) found that in South Asia, women's involvement in forest management committees was lower than men's, driven by socio-cultural restrictions and time constraints. Women, who are primary users and managers of water resources, are also underrepresented in water-related decision-making processes (Nigussie, et al., 2018) This exclusion limits the integration of their needs in planning. Studies like Kayser et al., (2019) indicate that projects with female participation in planning and management are more sustainable and effective. However, cultural norms in patriarchal societies often exclude women from formal decision-making. In Kenya, Coulter et al., (2019) highlighted how cultural expectations reduce women's involvement in community water committees. Yet, interventions designed to empower women have shown positive results. Kumar et al. (2016) demonstrated that providing childcare during meetings increased women's participation in rural India. Furthermore, women's groups have proven to foster collective action, improving their leadership and involvement in community projects (Kabeer, 2015). Overall, gender remains a key factor influencing participation in development initiatives.

2.4. Household Size and Structure

Household size and structure influence participation by determining the availability of labor and other resources. Larger households often have more members available to contribute to development activities, especially in labour-intensive projects (Adhikari & Goldey, 2010). However, larger households may also face resource constraints, limiting their ability to participate in financial contributions or attend meetings. The role of household heads is also significant, as male-headed households tend to dominate community decision-making in patriarchal societies, while female-headed households may face barriers due to social stigma or lack of resources (Hickey (2004) .

2.5. Age and Community Engagement

Age plays a significant role in shaping participation in community projects. Research shows that younger individuals are more inclined to engage in physically demanding tasks, while older individuals often take on advisory or decision-making roles due to their experience and wisdom (Khan et al., 2020). In rural Kenya, Mudege et al., (2008) observed that middle-aged adults were more involved in agricultural development than the youth, who often migrated to cities for employment. However, younger people typically lack the decision-making authority that elders hold in rural communities (Mutua & Kiruhi 2021). Older individuals tend to dominate planning processes, seen as guardians of local knowledge and traditions. On the other hand, studies like that of Gebrehiwot et al., (2017) highlight how younger individuals contribute innovation and energy, especially in projects involving technology, such as solar-powered water pumps. Still, a generational divide often sidelines youth perspectives in decision-making. Additionally, age-related factors, such as declining physical health in older adults and competing responsibilities for younger individuals, impact their level of participation. Cultural norms, particularly in patriarchal societies, further influence involvement, with younger individuals sometimes excluded from decision-making due to respect for elders (Adhikari & Goldey, 2010).

Education and Literacy- Education attainment is widely recognized as a critical enabler of community participation, simply because higher levels of education can empower community members to engage more meaningfully in discussions and planning processes (Krchnak, 2005). Literate individuals are better able to understand technical details of projects and voice their concerns effectively. Empirical studies demonstrate that individuals with higher levels of education are more likely to participate in development interventions because they are better equipped to understand project goals, communicate effectively, and access information (Mansuri & Rao, 2013). For instance, a study in Ethiopia by Tekalign and Mersha (2020) found that educated individuals were more likely to participate in community water planning activities. Likewise, in a study of irrigation projects in Ethiopia, Tesfaye et al., (2016) found that educated farmers were more likely to adopt improved irrigation techniques and actively participate in community meetings. Conversely, researchers also noted that high levels of illiteracy in rural areas with low literacy rates can serve as a barrier to participation, particularly in technical or bureaucratic processes, often leaving marginalized groups dependent on elite decision-makers, perpetuating inequitable power dynamics. Interventions that provide educational components, such as training programs, have been shown to mitigate this gap by empowering less-educated participants (Ozoh et al., 2019).

Economic Status and Participation- Income and socioeconomic status also play a pivotal role in determining community participation. Higher-income households often have greater access to resources, enabling them to contribute financially and logistically to development projects. Economic status influences participation through financial and time resources available to community members. For instance, Shrestha et al., (2013) reported that wealthier households in Nepal were more likely to engage in collective action for community forestry initiatives. Wealthier individuals often contribute financially to projects, granting them more decision-making authority (Baah et al., 2021). In contrast, low-income households may face opportunity costs by prioritizing survival activities, that limit their ability to participate, such as losing daily wages to attend meetings (Mansuri & Rao, 2013). For example, a study conducted by Nkolola & Phiri, 2025) in rural Zambia revealed that financial contributions to water projects often become a barrier for poorer households, leading to their exclusion from planning processes. This economic disparity undermines the inclusivity and sustainability of interventions. However, targeted interventions, such as compensating participants for lost income or incorporating flexible schedules, have been effective in encouraging participation among economically disadvantaged groups (Mudege et al., 2008).

Cultural and Social Norms- Cultural and social norms significantly influence participation in development initiatives, with factors like ethnicity, kinship, and governance structures shaping who gets involved. In diverse communities, ethnic divisions often result in exclusion or unequal participation (Grootaert & Narayan, 2004). For example, in Senegal, Platteau and Gaspart (2003) found that dominant ethnic groups tended to control decision-making, sidelining minorities. In Nepal, caste-based discrimination limits participation in water projects, marginalizing lower-caste groups (Kalikotay 2022). Cultural views on collective action also vary: Kurebwa (2020) noted that while traditional leadership in Zimbabwe sometimes facilitates participation, it can also silence dissenting voices. Social capital-defined as community networks and relationships-plays a crucial role in participation. In Nepal, Lam (1998) found that higher social capital led to increased involvement in water management. Communities with strong social ties are more likely to engage in collective planning. However, traditional power structures can exclude marginalized groups, such as women and ethnic minorities, from decision-making (Adams et al., 2018). In Uganda, ethnic homogeneity was linked to greater cooperation in water management projects, underscoring the role of shared cultural identity in fostering collective action (Muriuki et al., 2011). Addressing these issues requires culturally sensitive, inclusive approaches.

2.6. Intersectionality of Demographic Factors

Empirical studies emphasize that demographic factors often intersect, creating complex dynamics. For instance, women from lower-income or marginalized ethnic groups face compounded barriers to participation (Kebede et al., 2023). .

Similarly, younger, educated individuals may experience pushback from older, traditional leaders, particularly in male-dominated settings. Intersectional approaches in studies such as those by Mungai et al., (2017) highlight that addressing a single demographic factor in isolation is insufficient for promoting inclusive participation. Holistic approaches that consider intersecting identities are essential for equitable development planning.

The literature shows that demographic determinants-particularly gender, age, education, income, and cultural norms-profoundly influence community participation in rural water project planning. Addressing these factors through inclusive strategies is essential for fostering meaningful and sustainable participation. Future research should focus on longitudinal studies and intersectional analyses to better understand the complexities of demographic influences.

2.7. Institutional Determinants of Community Participation

Institutional factors, including governance structures, leadership, and access to information, significantly influence community participation. Empirical studies have shown that strong local governance and transparent leadership are crucial for fostering community engagement. For instance, in Ghana, Marks et al., (2014) found that communities with well-functioning water user committees were more likely to participate in project planning and management. These committees serve as a bridge between community members and external stakeholders, facilitating communication and coordination.

Access to information is another critical institutional factor. A study by Adank et al. (2013) in Burkina Faso revealed that communities with better access to information about water projects were more likely to participate in planning activities. Information dissemination helps to build trust and ensures that community members are aware of their rights and responsibilities. However, the effectiveness of information-sharing mechanisms often depends on the capacity and commitment of local leaders.

In the Tanzanian context, poor governance and weak institutional frameworks have been identified as major barriers to community participation. For example, Richards (2019) noted that corruption and lack of accountability among local officials undermine trust and discourage community engagement in water projects. Addressing these institutional challenges is essential for enhancing participation and ensuring the success of rural water initiatives.

2.8. Cultural and Social Determinants of Community Participation

Cultural norms and social dynamics significantly influence community participation, especially in rural areas where traditional practices shape collective action. For example, Cleaver (1999) highlighted that in some African societies, communal activities rooted in cultural traditions can either encourage or obstruct involvement in water projects. Social capital, which refers to the networks and relationships within a community, also plays a crucial role. Lam (1998) found in Nepal that higher social capital correlated with greater community participation in water resource management. Communities with strong social ties are better equipped to mobilize resources and plan collectively. However, cultural and social factors can create barriers, such as traditional hierarchies that marginalize groups like women, youth, and ethnic minorities, limiting their decision-making power (Adams et al., (2018). Overcoming these barriers requires culturally sensitive approaches that promote inclusivity and equity. The literature emphasizes the importance of community participation in rural water project planning and identifies various socio-economic, demographic, institutional, and cultural factors influencing participation levels. Despite valuable insights, significant gaps remain, especially in the Tanzanian context. Quantitative methods, such as logit models, offer a promising way to address these gaps. Focusing on the Simiyu Region, this research could contribute to improving community engagement in rural water projects and inform sustainable water management strategies.

2.9. Summary of Background and Direction Chosen in The Upcoming Research Compared to Past Research

Access to clean water remains a critical global challenge, particularly in rural regions of developing countries such as Tanzania. Although numerous water supply projects have been launched to address this issue, many fail due to inadequate community participation in the planning phase. In the Simiyu Region, where water scarcity is exacerbated by climate change and

institutional limitations, community engagement remains notably low. Previous studies have highlighted socio-economic and institutional barriers-including gender disparities, income, education, and governance-as key obstacles to effective participation. However, much of the existing literature has lacked rigorous, context-specific empirical analysis, particularly in northern Tanzania.

This study addresses this gap by employing a logit regression model to investigate the socio-economic and institutional determinants of community participation in rural water project planning in Simiyu. Unlike earlier research, which was largely descriptive, this study adopts a quantitative, evidence-based approach to identify significant predictors of engagement. The upcoming research thus moves beyond general assumptions to provide data-driven insights into the dynamics of participation. It aims to inform more inclusive and sustainable water management strategies by integrating variables such as community awareness, gender norms, and prior planning experience into policy design.

The conceptual framework (Figure 1) for this study integrates insights from the theoretical foundations and organizes the determinants of community participation into four broad categories: socio-economic factors, demographic factors, institutional factors, and cultural factors. These categories provide a structured approach to analyzing the determinants of participation in rural water project planning in the Simiyu Region, Tanzania.

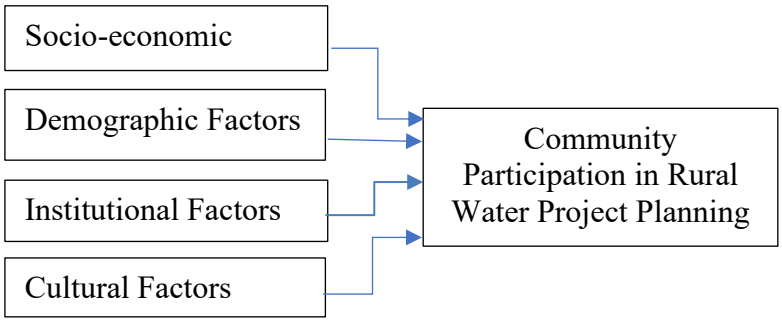

Figure 1. conceptual framework for determinants of Community Engagement in Rural Water Project Planning in Simiyu

Source: Study Design, 2024

3. Research Methodology

3.1 Geographical Scope of the Research

This study was conducted in Simiyu Region in Tanzania. Simiyu Region is located North of Tanzania and South East of Lake Victoria, lying between Latitude 2^0 1" and 4^00" South of Equator and between Longitude 33^03" and 35^0 1" East of Greenwich. The region covers an area of 23,807.7 square kilometers and has the population of 2,140,497 (1,034,681 Males and 1,105,816) with population growth rate of 3.1percent per annum (NBS, 2023). Clean and safe water accessibility in the Region is estimated to cover 59% of the regional population whereas in Rural Area it is estimated to be 55.2% and in urban areas is estimated to be 62.8%.

The study used cross-sectional research design to collect data from a cross-section of the all households in the study area where water development projects have been taking place. Data were collected from ten wards in Simiyu Region (See Figure the Map of Simiyu Region) which included Sapiwi, Nguliati, Matongo, Ibulyu, Mwasubuya (from Bariadi District), Seng'wa, Sukuma (from Maswa District), Nyaluhande, Kiloleli (from Busega District), and Mwamtani (from Itilima District).

Figure 2. Map of Simiyu region showing all district under the region
Source: SIG, 2017

3.2 Methodology

These wards were purposively selected due to the presence of ongoing or completed water projects. The study employed mixed sampling methods whereby Simiyu Region was purposively selected from Tanzania's 30 regions, with the wards selected purposively based on their involvement in water development projects. Table 1 presents the distribution of wards per district and the corresponding number of households.

Table 1 presents the distribution of wards per district and the corresponding number of households.

Table 1. Number of Wards Selected

District	Wards	Selected Wards*	Total Households
Maswa	26	2	3,774
Bariadi	26	5	15,035
Busega	15	2	5410
Itilima	22	1	1713
Total			25,932

Due to the fact that, the number of Wards selected per District was varied as well as the corresponding households, this also had an implication on the number of households per ward to be selected to participate in the research. In order to achieve at the total number of households required (determined sample size) and in order to avoid biasness, the Random Probability Proportional to Size Sampling (RPPS Sampling) technique, also known as Probability Proportional to Size (PPS) sampling technique was employed in this situation to determine the number of households to be involved in the study based on the size of the population per ward. According to Yu, (2019), Lohr, (2019) and Cochran, (1977), random probability proportional to size sampling (RPPS) is a sampling procedure where the probability of selection is chosen randomly proportional to the size of the units in the population. They argue that, the probability of selecting a unit from the population is directly proportional to its size or a measure associated with it (e.g., population, or area). In this case larger units have a higher probability of being selected compared to smaller ones. Thus Wards with higher number of households have high probability of having more participating households and vice versa. In order to determine the number of households to be sampled per ward when using

Probability Proportional to Size (PPS) sampling, the sample size was allocated to each ward proportionally to the total number of households in that ward. Here is how the number of households to be selected per ward was determined.

Step 1: **Determining the Total Number of Households:** The total number of households were to be calculated by summing up the households across all six wards as follows:

Total Households = 3,774+15,035+5,410+1,713=**25,932HH** (See Table 2).

Step 2: **Determining the proportion of households in each Ward**: The proportion of households in each Ward was to be determined i.e. for each ward, the proportion of the total households it represents were determined by using the following approach:

$$Proportion\ for\ a\ Ward = \frac{Households\ in\ the\ Ward}{Total\ Households}$$

Step 3: **Allocation of sample size proportional to the Ward:** The researcher had to perform the allocation of sample size proportionally by multiplying the proportion for each Ward by the total sample size (217):

Sample Size for a Ward = Proportion for the Ward×217 (Total Sample Size)

Now by applying that formula, Table 2 presents the detailed calculation of households for each ward

Table 2. Determination of Sample Households Per Ward

Ward	Households (N_i)	Proportion (N_i/25,932)	Sample (217 x Proportion)
Maswa	3,774	$\frac{3,774}{25,932} = 0.1456$	0.1456 x 217 = 31.6 ≈ 32
Bariadi	15,035	$\frac{15,035}{25,932} = 0.5798$	0.5798 x 217 = 125.8 ≈ 126
Busega	5,410	$\frac{5,410}{25,932} = 0.2085$	0.2085 x 217 = 45.2 ≈ 45
Itilima	1,713	$\frac{1,713}{25,932} = 0.0661$	0.0661 x 217 = 14.3 ≈ 14

From Table 2, it was concluded that the rounded number of households to be sampled per Ward was as calculated in column 4.

The remaining task was to actually select the specific households to participate in the research from each Ward taking into account to number of households determined per Ward (See Table 2). The systematic sampling approach was applied within each ward to select the required households. This method ensured even coverage across the ward's household population and was both practical and efficient for this study's scenario. In order to apply systematic sampling, the following procedure was used. After obtaining the sampling frame from the Ward office, we were required to determine the sampling interval (k) as presented in Table 3, which was obtained by taking the total households in the ward (N_i) divided by the number of households to be sampled in that ward (n_i); thus

$k = \frac{Ni}{ni}$, For example, in Maswa Ward:

$k = \frac{Ni}{ni} = \frac{3,774}{32} \approx 118$

After determining the sampling interval for each ward, we had to determine the random start by **s**electing a random number between 1 and k (sampling interval number). This random start was the first household in the sample. Thereafter, we had to **s**elect every k-th household by **s**tarting from the random start and picked every k-th household until the sample size per ward was met (Refer Table 2).

Table 3. Sampling Interval per Ward

Ward	Total number of households	No. Of Households Sampled	Sampling interval (k)
Maswa	3,774	32	118
Bariadi	15,035	126	119
Busega	5,410	45	120
Itilima	1,713	14	122
	25932		

The sample was selected from the study population and was determined by using adjusted Yamane's formula (Adam, 2020). This formula was proposed for this study because of its ability to balance correctness with practicality. It was deemed useful because we had the finite population and we needed to account for desired precision levels, variability in the population, and sampling error. In this study, it was essential to specify the margin of error (e) that reflects the acceptable level of precision for the study, in this case a margin of error of 0.05 or 5% was desirable. Furthermore, according to Israel, G. D. (1992) and Yamane, T. (1967), this formula is particularly effective for populations that do not exceed 600 individuals which applies well for this study. In the view of the above, the sample size for this study was determined as follows: -

$$Sample\ Size\ (n) = \frac{N}{1 + N(e)^2}$$

Where by
n = Sample size
N= Population size
e = Margin of error (desired level of precision at 0.05 or 5%)

Thus, $n = \frac{543}{1+543(0.05)^2} = \mathbf{217}$

The study population (N) is estimated to be 543 where by E = margin errors and the confidence level is 95%. Then the sample size was considered to be 217.

Data were analyzed using econometric (Logit l) Mode and descriptive analysis was used to supplement the former.

Logit model - The Logit Model, also known as the logistic regression model, was the statistical technique deemed appropriate to be used for analyzing data because the dependent variable (outcome) was binary or categorical i.e., households' decision to participate in planning or otherwise (Fredrick & Ahmad, 2023). Basically, the use of this model was to predict the probability of households to participate in planning as a function of one or more independent variables such as sex, age, occupation status, awareness, education level, income level, experience, household size, marital status, project policy community culture and government regulations (these were the predictor variables.

Furthermore, according to Ntibona et al., (2023), the model was usefully employed as it could simultaneously analyze the impacts of both continuous and categorical explanatory variables on the outcome variable which was either to participate in planning or otherwise. Referring to Fredrick & Ahmad, (2023) if the probability of participation was given by P_i, then the cumulative logistic distribution function was expressed as follows: -

$$P_i = E(Y = 1|X_i) = \frac{1}{1 + e^{-z}} \dots\dots\dots (1)$$

Where $Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2$. Equation (1) can further be modified to; -

$$P_i = \frac{e^z}{1 + e^z} \dots\dots\dots\dots\dots\dots (2)$$

Given that the probability of participating in project planning is represented by P_i, the probability of not participating is represented by $(1 - P_i)$ which is given by the following equation.

$$1 - P_i = \frac{1}{1 + e^z} \dots\dots\dots\dots\dots\dots (3)$$

Dividing equation (2) to equation (3) gives the odds ratio $(P_i/(1 - P_i)$ which is given as: -

$$\frac{P_i}{1 - P_i} = \frac{\frac{e^z}{1 + e^z}}{\frac{1}{1 + e^z}} = e^z \dots\dots\dots\dots\dots\dots\dots (4)$$

By applying the natural logarithm to the left- and right-hand sides of equation (4) to aid estimation of the model, the equation translates into equation (5) which was used to estimate socio economic determinants and institutional factors for community participation in planning process for water projects as: -

$$ln\left[\frac{P_i}{1 - P_i}\right] = Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_{4+} \dots \beta_{12} X_{12+\mu_i} \dots\dots (5)$$

Whereby z is a binary indicator for participation P = decision to participation in planning for rural water project, (1-P) represents the decision not participate, βo = Constant, β1—β12 = Parameter estimates, and X_1=Age, X_2=Sex, X_3=Occupation status, X_4=Education levelX_5 = Income level X_6= Experience X_7 = Awareness X_8 = House hold size X_9=Marital Status X_{10}=Project Policy X_{12} = Community Culture and μ = is the error term.

Table 4. Measurement of the key variables

Variables	Measuring	Measurements scales	Expected Sign
Decision To Participate	Yi = 1, If one participates	Binary	+/-
	Yi = 0, If one does not participate		
Sex	Measured the sex orientation of participants	Categorical	+/-
	1 = Male, 0 = Female,		
Age	Measured number of years household head have	Continuous	+/-
Occupation	Measured the type of occupation the Head of Household has engaged in 1.= Agriculture	Categorical	+/-
	2.= Small business		
	3 = Livestock		
	4. = Civil servant 5 = others		
Awareness	Measured if individual is aware of the concept of participation or not	Categorical	+/-
	1=if aware and 0= If is not aware		
Education	Measured the level of formal education head of household has attained 1. Not formal education, 2. Primary education, 3. Secondary education, 4. Tertiary Education	Ordinal	
			+/-
Income	Measured the amount cash money the household head obtain in all sources of his/her income per year	Continuous	+/-
Household Size	Number of household members	Continuous,	+/-
Marital Status	Measured by the marital status of a household head	Categorical	+/-
	1.= Married, 2. = Never married		
	3.= Separate, 4. = Divorced, 5. = Widow		
	6.= Widower		
Experience	Measured the frequency of individual's involvement in the planning process of water projects	Continuous	+/-

4. Research Findings

4.1. Descriptive Statistics

In this section various demographic characteristics of the participating heads of households are presented in Table 5.

Table 5. Description of respondents' characteristics

Component	Attribute	Number of respondents	Percentage
Sex	Male	112	51.61
	Female	105	48.39
	Total	217	100%
Marital Status	Married	136	62.67
	Separated	32	14.75
	Unmarried	32	14.75
	Divorced	7	3.23
	Widow	7	3.23
	Widower	3	1.38
	Total	217	100%
Education Level	No education	25	11.52

Component	Attribute	Number of respondents	Percentage
	Primary education	64	29.49
	Secondary education	70	32.26
	Tertiary level	58	26.32
	Total	217	100%
Occupation status	Agriculture	49	22.58
	Small business	88	40.55
	Livestock keeping	55	28.34
	Civil Servants	35	16.13
	Total	217	100%
Awareness	Aware	199	91.71
	Not aware	18	8.29
	Total	217	100%
Experience	Have experience	161	74.19
	Not have experience	56	25.81
	Total	217	100%

Source: Research Data, 2024

The results in Table 5 of the demographic characteristics of respondents, indicate a well-balanced sample, with nearly equal gender representation (51.61% male, 48.39% female). The predominance of small business owners (40.55%) reflects the community's entrepreneurial spirit. While the high awareness rate (91.71%) suggests the effectiveness of previous outreach programs, and awareness campaigns made through public meetings, workshops and conferences, had positive impact on community members awareness about the concept of participation in project planning and its importance in project sustainability, though the minority unaware population (8.29%) highlights an area for targeted intervention. Notably, tertiary education's significant representation (26.32%) aligns with higher occupational roles such as civil service, emphasizing the role of education in upward mobility. These findings provide critical insights into tailoring future policies and interventions to the community's needs." The very impressive results are those on experience in participating in planning water projects. The highest proportion of 161 individuals (74.19%) with experience in projects planning its a good sign that participatory project planning is highly practiced in Simiyu Region, something that need to be encouraged. It was learnt that; this higher percentage of participating households being experienced in planning for development project was highly contributed by being involved in project planning process through force account system where by local people were involved in planning and implementing various development projects including rural water projects.

4.2. Determinants of Community Engagement in Rural Water Project Planning in Simiyu

The main aim of this study was to determine the factors responsible for households in Simiyu Region to participate or not in planning for rural water projects. In order to achieve this objective, participants were asked "to list all factors that could encourage or hinder particular households to participate in planning for rural water projects or otherwise." In order to be able to achieve this main aim of the project, that is when collected data were subjected to the Logit Model for analysis; we treated decision to participate in planning for rural water project as the outcome variable while a number of attributes were treated as predictor variables composed both of metric and non-metric variables. The results of this logistic regression analysis from STATA 15 are presented in Table 7.

Model specification test justifying the use of logistic regression

According to Gujarati & Patel's (2014) explanation of model specification, it has been suggested in his study that the model's specification is a crucial component of econometric analysis and that it must be appropriately stated. If this component is not examined, it could lead to biased or incorrect model specification. The link test command in STATA 15 was used to conduct the test in this investigation. When the dependent variable is related to the independent variables, this test looks for specific errors.

Table 6. Model specification test (Link test)

Number of observations = 217					
LR chi^2(2) = 76.51					
Prob> chi^2 = 0.0000					
Log likelihood = -16.801287				Pseudo R2 = 0.6948	
Participation	Coefficients	Standard Error	Z	P>|z|	[95% Conf. Interval]
hat	.9880531	.2607102	3.79	0.000**	.4770706 1.499036
_hatsq	-.0219741	.0918865	-0.24	0.811	-.2020683 .1581201

Source: (Field data, 2024).

The model specification test, is often conducted using a link test, to evaluate whether a regression model is correctly specified. In Table 6, the results of a link test are presented, showing coefficients, standard errors, and p-values for variables (hat and \text{_hatsq}). Once the estimates were obtained, the model specification error was calculated to see if the model accurately reflected the direction that the hypothesis suggested. Hypothesis null (H_O): Alternative hypothesis (H_1): the model is not well specified; the model is well specified.

Key Observations from the Results

1. Number of Observations (*n*):
   - n=217: Indicates a reasonable sample size for robust model testing.
2. LR Chi-Square and Pseudo R^2:
   - LR chi^2(2) =76.51, Prob > χ2 = 0.0000
     - A highly significant *p*-value (<0.05) indicates that the predictors, as a whole, explain a significant portion of the variance in the dependent variable.
   - Pseudo R^2=0.6948: Suggests the model explains approximately 69.48% of the variability in the dependent variable, which is a relatively strong fit for logistic regression.
3. Interpretation of Coefficients:
   - hat Coefficient **(**0.9880531**)**:
   - Statistically significant (*p*<0.000), with a positive coefficient indicating that the predicted values strongly correlate with the outcome variable.
   - \text{_hatsq} Coefficient (−0.0219741):
     - Not statistically significant (p=0.811>0.05), suggesting no evidence of omitted variable bias or incorrect functional form.
4. Confidence Intervals:
   - The confidence intervals for hat ([0.477,1.499]) exclude 0, reaffirming its significance.
   - The confidence intervals for \text{_hatsq} ([−0.202,0.158]) include 0, consistent with its lack of significance.

Interpretations:

1. Correct Model Specification:
   Since \text{_hatsq} is not significant (*p*>0.05), the model appears correctly specified. There is no strong evidence of functional form misspecification or omitted variable bias.
2. Good Model Fit:
   The high pseudo R^2 and significant LRχ^2 value indicate the model is well-fitted to the data.
3. Practical Implications:
   The strong significance of hat confirms that the model's predicted values are meaningful. Thus, researchers can confidently interpret the model's predictors' effects on the dependent variable.

Results from the analysis of the relationship between various predictor variables and the outcome variable (decision to participate in planning or otherwise) as described in equation 5, are presented in Table 7. The essence here was to be able to determine which among the predictor variables are actually the main determinants for community members in the research areas to participate in the planning of water projects or otherwise.

Table 7. Determinants of Community Engagement in Rural Water Project Planning in Simiyu.

Variables	**Coefficients**	**Marginal effects**
Age	1.133324	0.116483**
	(0.622487)	(0.063336)
Sex		
Male	0.953626	0.09805**
	(0.459935)	(0.04532)

Variables	Coefficients	Marginal effects
Marital status		
Separated	-0.20584 (0.544336)	-0.02212 (0.05898)
Unmarried	0.156184 (0.550932)	0.01527 (0.053278)
Divorced	-0.20919 (0.967205)	-0.0225 (0.107838)
Education		
Primary education	-1.19267 (0.746149)	-0.10615 (0.060631)
Secondary education	-1.02421 (0.747529)	-0.08682 (0.057193)
Tertiary level	-1.03535 (0.859878)	-0.08805 (0.080222)
Household size	0.046528 (0.050728)	0.004782 (0.005063)
Occupation		
Small business	1.453318 (0.593849)	0.161392** (0.059521)
Livestock	1.67837 (0.731766)	0.176897** (0.063613)
Awareness	2.340606 (0.840689)	0.246565** (0.083703)
Availability of Project policy		
	0.173716 (0.687231)	0.01731 (0.066045)
Culture and altitudes of people		
	-2.01349 (0.798464)	-0.21341 (0.081234)
Experience of the households on project		
	1.331405 (0.520125)	0.174588** (0.0828)
Constant	-5.61119 (2.459664)	
Observations	217	217

Source: Research Data Analysis output, 2024

The findings of this study provide valuable insights into community participation in planning process for sustainability of rural water project in Simiyu region. Results have important implications for water policymakers, government agencies (RUWASA)[2], and donors in ensuring the sustainability of the implemented rural water projects. In Table 7, the presented results highlight the determinants of community participation in the planning of water projects in Simiyu, focusing on variables such as age, gender, education, household size, occupation, awareness, and others. A detailed discussion of the findings is presented hereunder in the form of key findings and interpretations.

Demographics (Age and Sex)- Results in Table 7, shows that age significantly influences participation in water project planning, with older individuals showing a higher likelihood of involvement (marginal effect = 0.116, $p < 0.05$). This finding may stem from the stronger sense of responsibility and deeper connection to community needs observed in older individuals. These findings seem to be aligning with studies like Chifamba

2 RUWASA stands for Rural Water Supply and Sanitation Agency

(2013), which found age to be positively correlated with involvement in development initiatives. Furthermore, results show that, male individuals are significantly more likely to participate than females (marginal effect = 0.098, $p < 0.05$). This gender disparity could reflect sociocultural norms limiting female participation. These findings are consistent with those of Mugerwa et al., (2019) in African rural settings.

Education- The results from the analysis in Table 7 highlights that education levels (primary, secondary, and tertiary) are negatively correlated with participation in community water project planning. Specifically, the coefficients for education are -1.19267 (primary), -1.02421 (secondary), and -1.03535 (tertiary). The marginal effects are also negative but statistically insignificant (-0.10615, -0.08682, and -0.08805, respectively). These results align with the hypothesis that individuals with higher education levels may be less likely to participate in rural community initiatives due to migration to urban areas for employment opportunities or other pursuits that reduce their availability.

Contrastingly, studies like Hakim, (2020). emphasize the empowering role of education in promoting civic engagement. Their findings suggest that education equips individuals with critical thinking and problem-solving skills, enhancing their capacity to contribute to decision-making processes. This divergence in findings could stem from contextual differences, particularly regarding rural-urban dynamics and employment opportunities in Simiyu compared to other study settings.

Occupation- Drawing from Table 7, results shows that individuals engaged in small businesses and livestock farming are significantly more likely to participate (marginal effects = 0.161 and 0.177, respectively, $p < 0.05$). The marginal effects for small business engagement are 0.161 ($p < 0.05$), indicating a positive and statistically significant influence on participation in water projects. Similarly, for livestock farming, the marginal effect is 0.177 ($p < 0.05$), further supporting the observation that occupations reliant on natural resources are critical determinants of participation in planning for water projects. These findings demonstrate that individuals engaged in occupations tied to resource-dependent livelihoods perceive greater stakes in water projects. These findings are aligning with findings such as of Nchofoung & Ojong (2023) , which emphasize that resource-dependent livelihoods-such as agriculture, livestock farming, and small-scale business-create strong incentives for communities to engage in natural resource management initiatives, including water projects. This is because these groups are more vulnerable to resource scarcity and benefit directly from improved resource management. These findings are suggesting that, the reliance on natural resources for livelihoods suggests that water projects directly impact their income and productivity. Hence, individuals in these categories have higher incentives to participate in planning and implementation phases. Additional studies in community resource management reinforce the idea that individuals' engagement is driven by their dependence on and proximity to natural resources (e.g., Ostrom, 1990; Pretty, 2003).

Awareness and Experience- Based on the results presented in Table 7, it is shown that awareness is the most influential determinant, this is strongly supported by its significant marginal effect (0.247, $p < 0.05$). This highlights the importance of information access in promoting participation to various development initiative such as planning for rural water projects. To further substantiate this, several supporting points can be discussed:

Impact of Awareness on Participation: The analysis clearly indicates that awareness has the highest marginal effect (0.247). This suggests that individuals who are more aware of water project planning are significantly more likely to participate. Such a finding aligns with prior studies, like Isham and Kähkönen (2002), which argue that informed communities are more motivated to engage in collective action. Awareness facilitates understanding of benefits, fostering a sense of ownership and accountability.

Household Experience in Water Projects*:* The significant marginal effect of prior household experience (0.175, $p < 0.05$) further strengthens the role of previous exposure in shaping attitudes toward participation. This suggest that, households with prior experience in similar projects are likely to possess practical knowledge and are better equipped to understand the planning process, contributing to higher involvement.

Role of Sensitization Campaigns**-** Sensitization campaigns can play a pivotal role in addressing the

lack of awareness and experience. These campaigns should focus on delivering accessible and targeted information, emphasizing the value of community input in water project planning. For example, they could leverage tools like workshops, community meetings, or media outreach to bridge gaps in awareness.

Cultural Barriers and Attitudes**-** The negative effect of "culture and attitudes of people" (-0.213, $p < 0.05$) observed in the data emphasizes that certain cultural norms or perceptions can hinder participation. This underscores the need for tailored awareness campaigns that address cultural sensitivities and build trust in the planning process.

Broader Implications for Policy: Policies encouraging community participation must prioritize awareness-raising activities. Policymakers could incorporate strategies to disseminate project-related information broadly while drawing on households with experience to act as community advocates or role models.

Cultural Factors- The results in Table 7, shows that Cultural attitudes exhibit a significant negative influence (marginal effect = -0.213, $p < 0.05$), suggesting that certain cultural norms and perceptions act as barriers to participation. The findings indicates that the variable "Culture and attitudes of people" has a statistically significant negative coefficient (-2.01349) with a marginal effect of -0.213 ($p < 0.05$). This implies that cultural norms strongly discourage community participation in water project planning and is consistent with Cleaver's (2001) "culture of disengagement," where traditions and norms hinder collective actions. These marginal effect values are very significant in explaining this participating variable in the sense that, the marginal effect (-0.21341) indicates that for every unit increase in the negative cultural attitude, there is a 21.3% reduction in community participation probability. The p-value (<0.05) confirms the statistical reliability of this finding. Meaning that the more rural communities focus on honoring cultural values, there is a high likelihood of not participating in development initiatives. In relation to other variables, the results in Table 7, have further revealed that cultural attitudes are the most significant negative predictor among the variables analyzed. In comparison, education (e.g., secondary education, marginal effect = -0.08682) and marital status (e.g., divorced, marginal effect = -0.0225) have smaller and often statistically insignificant effects. On the other hand, variables such as "Awareness" (marginal effect = 0.2466, $p < 0.05$) and "Livestock occupation" (marginal effect = 0.1769, $p < 0.05$) positively influence participation. This contrast highlights the unique role of cultural attitudes as a barrier to participation, underlining their negative influence even amidst other enabling factors. Cleaver's (2001) argument that entrenched traditions and perceptions prevent effective community engagement aligns directly with the findings in this study. The significant marginal effect of cultural attitudes reinforces her assertion that cultural norms can create passive resistance to participatory approaches in development planning.

5. Discussion and Conclusion

The logistic regression model identified several key factors influencing community participation in rural development, including age, gender, occupation, awareness, household experience, and cultural attitudes. These findings provide valuable insights for policymakers and development practitioners aiming to boost community involvement. Age was positively correlated with participation, with older individuals more likely to engage due to their sense of responsibility to the community. Gender played a significant role, with men participating more than women, likely due to sociocultural norms limiting women's involvement in public decision-making. This highlights the importance of considering demographic factors in designing inclusive strategies for engagement. Unexpectedly, education showed a negative, though statistically insignificant, relationship with participation, possibly due to rural-urban migration or other socio-economic factors. Occupation was a stronger determinant, with individuals in small businesses or livestock farming more likely to participate, underscoring the importance of engaging resource-dependent livelihoods in water projects. Awareness emerged as the most influential factor, with individuals who were more informed about water project planning more likely to participate. Household experience with previous projects also positively influenced involvement. Conversely, cultural attitudes, particularly negative norms, acted as a barrier, with entrenched traditions discouraging participation.

This study suggests that, to improve community participation, policymakers should prioritize awareness-raising activities, such as community meetings and workshops, and focus on empowering women through gender sensitization programs. Efforts should also engage resource-dependent groups, like small business owners and farmers, to ensure their active involvement and enhance project sustainability.

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Original Article

Investigating the Role of Livestock Products Production in the Spatial Organization of Houses in the Historical Village of Liqvan, Iran[1]

Nahideh Rezaei[1], Rana Najjari Nabi*[2], Rahmat Mohammad Zadeh[3]

1. Assistant Prof. in Architecture and Urbanism, Tabriz Islamic Art University, Tabriz, Iran
2. Assistant Prof. in Architecture, Shahid Rajaee Teacher Training University, Tehran, Iran.
3. Full Prof. in civil, University of Tabriz, Tabriz, Iran.

Abstract

Purpose- This research attempts to analyze the role of livestock production in the spatial organization of the houses in Liqvan village that is one of the famous rural areas at the national level in Iran, and it owes most of its fame to the dairy products produced there (especially cheese).

Design/methodology/approach- This study has been carried out in two sections: library and field studies. The theoretical part is done from available and accessible library resources (including books, magazines, articles, and authoritative sites). The field part is done using the "phenomenology" method.

Findings- Studies show that in the traditional livelihood period, the role of livelihood was influential in the formation and spatial composition of the houses in this village, and the old living spaces of Liqvan were shaped to respond to the functions, with appropriate internal divisions, to provide long-term living facilities. However, along with the contemporary wave of modernization and changes in the needs of the present era, and especially the significant shift in income from traditional activities to mass dairy production, in the newly built houses, the residential spaces have often been converted into living spaces that do not have much affinity with local customs and traditions and do not have compatibility with the native architecture.

Original/Value- Given the significant changes in the livelihoods of rural communities, it is crucial to implement strategies for developing and regenerating villages like Liqvan. This includes stabilizing rural centers, creating production and promoting income centers, and revising development strategies and policies. The focus should be on leveraging local potentials. The study also advocates introducing new productions and reviving past activities and services through production clusters with technical and specialized consultations. Furthermore, the preservation of indigenous architecture and the regeneration of local spaces can contribute to the growth of the tourism industry in the village.

Keywords: Animal production, Livestock production, Spatial organization, Housing, Liqvan village, Iran.

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Corresponding Author:
Najjari Nabi, Rana, Ph.D.
Address: Department of Architecture, Faculty of Architecture and Urbanism, Shahid Rajaee Teacher Training University, Tehran, Iran.
Tel: +989143015012
E-Mail: ra.nabi2016@sru.ac.ir

1.Introduction

The life of the villages depends on the economy and production, and livelihood has played an essential role in the formation and spatial composition of the village houses. Human settlements have grown and expanded generally based on agriculture, animal husbandry, and related activities following changes in the nomadic lifestyle. The economy and the production system reflect the function of these living centers and are an essential factor influencing the texture, body, and shape of residential buildings. According to Rapoport (2013, 60), economic factors play a significant role in the structure of living complexes. The role of the economy and its degree of influence on various aspects of the building and residential space[i] have been discussed throughout history. Although multiple factors are influential in the emergence of a phenomenon, and sometimes the role of one factor is more prominent than others to the point of being determinative, the economic factor is one of them.

This article delves into the intricate relationship between the production system and the spatial organization of the renowned village of Liqavan, a suburb of Tabriz. Liqavan, a terraced village, holds national fame in Iran for its productive and livelihood-oriented nature. Its economy, primarily driven by dairy products (especially cheese), was officially recognized in 2020 (with No. 2311) as one of Iran's intangible works (Ministry of Cultural Heritage, Tourism and Handicrafts of Iran, 2020). The village's economic landscape is further shaped by agricultural products (wheat, barley, chickpea, etc.) and handicrafts (kilim[ii], Jajim[iii], woolen clothing, basketry, etc.), all of which contribute significantly to the villagers' income sources.

Prior to contemporary developments, the village's structure was primarily centered on local production and livelihood. Dairy production, livestock maintenance, and food preparation all took place within the limited space of the houses, and sometimes the courtyards were also used as enclosures. However, in the past half-century, with the prosperity of production and the prominence of the Liqvan cheese brand, as well as the emergence of technology and the consequent creation of new needs, the architectural form of the residences has undergone a fascinating transformation. This transformation is evident in both the residential spaces and the livelihoods of the villagers.

Today, the transformation of most houses into residential spaces in an urban style, and the presence of stables on the ground floor of some others, is a significant shift. The workshops and factories surrounding the village, now used for dairy production, and the relatively large enclosures in the middle of the land for livestock keeping, have led to a unique spatial organization for the village. This transformation, especially in terms of housing, is a direct response to new demands, making it a crucial area of study.

Previously, the interior spaces of the village dwellings were primarily small and rectangular, consisting of an oven, a weaving room, rooms for various purposes such as guest reception, sitting, sleeping, work, and carpet weaving, as well as storage and a kitchen. The enclosures were either located on the ground floor of the residential level or in a corner of the courtyard. The primary construction materials were plaster, lime, bricks, and clay, with trim and few windows to counteract the cold weather. However, contemporary dwellings are built in multi-story structures similar to urban houses, equipped with spaces such as reception areas, bedrooms, sitting rooms, kitchens, and storage, and equipped with water and electricity systems. The enclosures are located on the ground floor or utilize makeshift sheds in the heart of the mountains.

Following the emergence of the Islamic Revolution in Iran (1978-1979 A.D.) and the rapid urbanization, the architectural features of Liqvan village, like many other villages in the country, underwent fundamental changes. This study aims to identify and ultimately explain the relationship between livelihood activities, particularly economic activities (mass production surplus), and the spatial organization of Liqvan village.

[i] . In this study, the residential space means spaces where work activities such as animal husbandry, production of products, weaving, etc., are carried out. In living spaces, living activities of villagers, such as eating, sleeping, etc., are formed.

[ii] . A kilim is a flat tapestry-woven carpet or rug traditionally produced Iran.

[iii] . Jajim also spelled as gelimsis a handmade, flat-woven textile made of colored natural fiber which is created and used in the majority of villages and rural areas of Iran (Hall, 1996).

Specifically, the analysis of the spatial organization of residences before and after the 2000 A.D. aims to optimize the use of existing facilities and capabilities, strengthen sustainable development, and outline the development prospects of Liqvan village.

Conclutionly, this research aims to answer the following questions: How is the relationship between livestock product production (dairy, meat, and wool) and the spatial-physical organization of houses in Leigu Papa Village (over time)?

2. Research Theoretical Literature

2.1. Production

Production means creating things along predetermined paths and through specific methods within a framework of particular and defined relationships among all those directly involved in the production process and those who enable the work of the direct producers, usually called indirect producers. In production, humans enter into relationships with nature and each other through a specific form of cooperation and mutual exchange of their activities. They enter into certain "production relations" with one another to produce, and it is only within these social relations and relationships that their relationship with nature and production takes shape (Ahmadi, 2002). In all societies, productive labor occupies the central part of most people's lives and is always situated within the broader economic system (Giddens, 2008).

Space, as the medium of production and processing, assumes a pivotal role in the process of value addition. As Madanipour (2016) asserts, the significance of space in the economy can be dissected in two ways: space that is shaped and altered in response to economic demands, and space that is in itself a valuable commodity.

In the first concept, space may be approached as a medium for social and economic activities. As new places are developed, old places are transformed to accommodate diverse functions. In the second concept, space is a social process, and its production and exchange can occur within the market process.

The first concept has a direct relationship between production and use. In the second meaning, the emphasis is more on the relationships between production and exchange. In the first concept, urban development is a response to a need. In the second meaning, it is considered a need and a driver of economic activities, whether to maximize profits, circulate capital, or create employment.

Thus, the intricate interplay between space production and its interdependence with other sectors of the urban and national economy becomes apparent. The creation of the artificial environment, given its magnitude and significance, harbors internal dynamism and substantial capacities that spur those involved to seek avenues to harness production capacities and financial gains.

2.2. Spatial organization

Spatial organization means 1-the general pattern of the use of space by a community and 2. The way the components of space are arranged about each other makes their interaction and complementary relationship possible (Saeedi & Hosseini-Hasel, 2009). It is the order among the roles of the elements that introduce the artificial environment as a system. This system consists of a set of semi-independent components, the elements of which, in a purposeful order, transform the set into a unified whole (Mansouri, 2007). Just as every system and structure is composed of components, spatial organization has its components and elements. Bill Erickson (2002) considers the spatial organization a set of physical and functional elements and components that form the spatial configuration and arrangement. In architecture, as mentioned above, we need a conceptual cut from the individual cases towards a general view to create a good set. Different options show us ways to organize the components. The primary components can be arranged to become more than the primary components; they can create spaces, patterns, themes, and outdoor spaces (D.K. Ching, 2007). As it is evident, although spatial organization is a term that has been used with different meanings and despite the similarities in its definition, it has yet to find a single concept. Still, it is a compound series of a backbone and an interconnected network of diverse and diverse uses and elements that give coherence to the whole. Its warp and woof extend throughout its entire extent.

2.3. Rural Housing

Traditionally, the spatial arrangement of rural settlements has been conceptualized as a town-centered, centralized pattern, where the town serves as the core and the villages form its periphery. However, with the advancements in rural transportation infrastructure and the ongoing

process of urbanization, the choices made by rural residents regarding their places of residence and employment have become increasingly diverse. These changing preferences have acted as a catalyst for the spatial redistribution of residential and occupational functions, prompting a reorganization of the traditional spatial patterns that define towns and villages (Liu et al., 2025)

Housing is a physical facility unit, an economic and durable good, an element with a social or collective role, a set of services, and also an economic category that is part of the fixed capital stock, a means of wealth production, and a tool for governments to regulate economic growth (Bourne, 1981). In this regard, economic factors, architectural style, the local language of the region, cognitive approaches, climate, geography, and local customs and traditions all influence the development and design of housing in different locations (Sendich, 2006). The function of housing and providing shelter is to create favorable conditions for realizing family activities. Rural housing has undergone extensive changes in recent years as a material and cultural element. In addition to its residential role, this cultural element is also part of the space for employment, production, and storage of life necessities (Hedayat-Nejad, 1996).

Villagers, in tune with the nature of the village and their social, economic, cultural, and geographical environments, have a unique internal organization and physicality. This is evident in the type of residence and the various ways of livelihood and life (Philo, 1992). The architectural structures of rural environments are a significant outcome of human activity, evolving over centuries in harmony with social, cultural, and environmental conditions. The morphology and spatial patterns of rural architecture have gradually been shaped to meet the sociocultural needs of the residents and in interaction with the surrounding physical environment. This perspective, particularly in the bilateral relationship between the natural environment and its historical context, defines the human-made environment as a vessel of meaning. Humans are naturally drawn to settle in an environment they can connect with on a meaningful level, in an environment they can connect with meaningfully (Norberg-Schultz, 1985).

Housing, as a spatial manifestation of human ideals, ideas, and functions, is significantly influenced by economic-social deterrents and physical barriers. One of the key approaches that shape housing construction is the environmental approach. This approach underscores the role of natural environmental factors in limiting or controlling human activities, particularly the use of cultural resources and social organization (Shakuei, 2010).

The climate factor directly affects the constituent elements of geographical environments, such that it is influential in the formation of different types of soil, vegetation cover, and water flows, as well as the construction of some natural landforms like relief forms and coastlines. Accordingly, those who study human geography from this perspective widely accept and emphasize the dominant and deterministic role of weather, as well as the climatic conditions and raw materials available in the location, in the emergence of human settlements.1. The socio-cultural approach that considers human culture as the determining factor in human activities and the geographical features of places are considered as a reflection of cultural bases. According to anthropological and sociological studies, various factors such as inventions, discoveries, innovations, population growth, ecological changes, wars, and cultural contacts are involved in cultural changes. These changes have also strongly influenced the physical fabric of rural and urban housing, transforming it quickly (Ibid,180). 2. both material and non-material cultures are changing and transforming with the passage of time; according to this transformation, they find a new order. According to anthropological and sociological studies, various factors such as inventions, discoveries, innovations, population increase, ecological developments, wars, and the contact of cultures are involved in cultural changes. These changes have also greatly affected the physical structure of rural and urban housing and have transformed it quickly (Amanollahi, 1983). 3. The economic approach of housing is a basic need for households, considered an economic commodity. In the past, housing was considered an individual asset and economically non-productive. The economy plays a decisive role in forming traditional and indigenous settlements in the economic approach. This factor is mainly related to how wealth is produced and distributed, the distribution of products, and its relationship with the physical construction of rural housing.

Therefore, with the increase in surplus production, part of the capital becomes wealth and is used for welfare. Its effects appear definitively and decisively on the overall shape of the house, which is one of the most apparent human symbols. Among the economic factors, the type of livelihood and the pattern of exploitation of the natural environment, along with the income of rural households, have been able to influence the shape and use of rural housing effectively (Taghavi, 2020).

It is crucial to recognize that housing, a key determinant of quality of life, is not just a physical structure but a reflection of the rural community's needs and aspirations. The architecture of residential units and other activity spaces in rural areas and the building materials are influenced by the local environmental conditions and the rural community's awareness and preferences. The rural community's familiarity with new architectural patterns in cities and the spread of interests based on the urban living culture in rural areas takes the rural architectural pattern out of its Indigenous form (Musavi and Salehi, 2005).

The advent of modern technology, changes in the production structure, social and economic indicators, and cultural indicators have not just influenced but revolutionized the pattern of rural housing (Moradi, 2015). The occupation of the villagers has also had a significant impact on the formation and organization of rural architecture, so that the functional elements and components of rural housing are different from agricultural and livestock activities, etc.; for example, in the central regions of the southern Caspian Sea, the agricultural economy in rural housing requires space for storing agricultural products such as rice and agricultural tools and equipment such as tillers, etc. For example, the "kandooj", which is a wooden cubicle with dimensions of three by four square meters and a height of two meters, was used by rice growers in the northern provinces of the country for the storage and preservation of rice stalks (Mahdinezhad et al., 2017).

The reason for the change in the structure and function of rural housing, the function and role of housing related to the livelihood and economic activity of the family, has been lost, and it no longer responds to the needs of the rural community. In addition, the cost of building housing was meager in the past. Although the village supplied its architectural design and materials, rural housing was well suited to the needs of the villagers and their type of activity (Musavi and Salehi, 2005). However, it should also be noted that economic factors not only affect the quality of construction and the materials used but also determine the spatial organization and the type of spaces required. Therefore, the village's economic factors regarding the town's physical space can be discussed in three groups: 1. Type of production activity or activities (type of products: immediate sale after harvest, storage of the product and related spaces) 2. Means of production (traditional, semi-mechanized, fully mechanized, and associated spaces) 3. The income level with the power of investment in the housing sector (Zargar, 2007). Rural households mostly use nature's environmental facilities and materials for housing construction, but recently, many changes and transformations have occurred in rural housing. Following the relative improvement in the economic situation of families due to the increase in agricultural product prices and the acquisition of non-agricultural incomes, gradual renovation began in the village, and many rural families made changes in their residential units. While traditional rural dwellings are designed to accommodate a production-based lifestyle, the production necessities in newest dwellings in this village have become less prominent. They still need to create spaces for storing agricultural tools and equipment or have unique spaces for preparing local products. Therefore, the foundation of these activities is weakened. They either have to progress from within or gradually be eliminated from daily life (Mohammadzadeh et al., 2017). In the following, some of the research backgrounds are mentioned.

- Jahansoozi et al (2024), in an article titled " Modeling the Impacts and Consequences ofClimate Change on Sustainable Livelihood of Rural Communities (Case study: Rural Households in Mashhad County)"has examined the effects of climate change on the livelihood sustainability of rural residents in Mashhad County[iv]. The research method is descriptive-analytical. The results indicate that climate change impacts the financial, social, human, natural, and physical capitals of local communities. The most significant effects include income reduction, increased costs, rising product prices, decreased

productivity and employment, reduced sense of place, increased dependence on government support, lower health standards and quality of life, strain on land resources, occurrence of hazards, and a decline in public services and facilities.

- Torabi Farsani et al (2023), in an article titled "Future Research for Promoting Tea Tourism in Rural Areas of Gilan Province, Iran" using structural analysis shows that Guilan Province, which is located in the north of Iran, has great potential (tea hotels, tea museum, tea landscapes, etc.) for promoting tea tourism, and this niche tourism can be a strategy for preserving intangible and tangible tea heritage. This shows that the quality of rural life can be improveed by relying on the manufactured products and promoting ecotourism. As the most compatible tourism type, ecotourism has drawn attention more than other forms of tourism for rural development in recent years. Since some villages have no or very weak potential for the development of ecotourism, it is imperative to select villages for this purpose consciously. The prioritization of villages for the development of rural tourism is even more important when considering the constraints on financial resources (Imani and Alavi, 2022).
- Taghavi et al (2020), titled " The Impact of Economic Change on Livelihood Spaces (Agriculture and Animal Husbandry); Qazvin RuralHousing", examines the architecture of rural housing, livelihoods, and the impact of economic changes on housing. The aim of this study is to investigate modern developments in the formation of spaces related to rural residents' livelihoods and the influence of economic transformations on the elements of rural housing architecture. Responding to the question of why there is a morphological and spatial transformation in rural housing, influenced by economic changes in rural communities, is one of the key challenges of this research. The method used is descriptive-analytical. The results indicate that economic developments have primarily led to improvements in living spaces and increased local facilities and amenities for villagers, while the production spaces related to livelihoods within rural housing have received little attention.
- Next is the study by Rezaei and Haghparast (2020) titled "lifestyle on the spatial organization of houses in the historical-tourist village of Kandovan, in East Azerbaijan province". This study, with a strong focus on the human element, examined three houses: traditional Karans (residential quarters), contemporary Karans, and newly constructed houses. The research method was descriptive-analytical and conducted at the library and field study levels. The results, which underscore the role of the residents, showed that the architecture and spatial design of the residential units were strongly influenced by the activities and livelihoods carried out within them. The residents' lifestyle and occupational activities, a testament to their adaptability, played a significant role in shaping the residential spaces in Kandovan village. The study concludes that the spatial organization of houses in Kandovan was closely tied to the residents' way of life and livelihood practices, whether traditional or evolving with societal changes.
- The study by Mohammadzadeh and Rezaei (2019) aimed to analyze the residential parts (Karan[v]) of the historical village of Kandovan village, focusing on their production-livelihood approach. The research method used was qualitative, with a phenomenological approach. Data was collected through library studies and field research, including open-ended and in-depth interviews, to understand the hidden reasons behind the phenomenon being studied. The results showed that the residential and historical spaces in Kandovan were shaped to serve various functions. However, with the changes and emergence of new livelihoods such as tourism, the production-livelihood spaces of the Karans have moved away from their previous functions and have transformed into simpler residential spaces. The study concludes that the traditional residential quarters (Karans) in Kandovan village were initially designed to accommodate the production-livelihood needs of the residents but have since adapted to newer economic and

social changes, particularly the rise of tourism.

- Zaheri et al (2018) examined the changes in the pattern of rural housing. They evaluated its economic impacts in the two districts of Aji Chay and Meydan Chay in Tabriz County. The research method was descriptive-analytical and correlational. The results of the research show that there is a strong and significant relationship between the factors of social changes and the pattern of rural housing, and economic factors; also, in the spatial distribution, there is a direct and relatively complete correlation between social changes and the pattern of housing in the ten villages. Architectural plan indicators, housing construction quality, and housing resistance directly impact economic factors.
- Shams al-Dini et al (2011), in an article titled "The Impact of Rural Housing Renovation on the Livelihood Economy of Villagers: A Case Study of the Central District of Mamasani County," examined the impact of rural housing renovation on the economic system of the villages in the central district of Mamasani County. The research method was analytical-descriptive and survey-based. The results show that housing renovation has improved the physical space while preserving the beauty and resistance of the village. Regarding the livelihood economy, the incompatibility of the layout of some houses with the type of productive activity (livestock farming) has caused most villagers to refrain from carrying out their activities. Therefore, the renovation of homes, in addition to the relative comfort of the villagers regarding safety and beauty, has caused a subtle change in their livelihood and financial conditions.

This article aims to examine the role of production and activity behavior in the architecture and spatial organization of village houses in detail that has not been addressed in depth in previous research.

3. Research Methodology

3.1 Geographical Scope of the Research

Liqvan village is 36 kilometers southeast of Tabriz, on one of the slopes of Sahand Mountain, and in the neighborhood of Sefideh-Khan, Beiraq, and Hervi villages. The location of communication routes, the natural state of the settlement, and the presence of services have made it proposed as the center of the complex in the upstream plan (Tabriz urban complex plan). The height of this village is 2150 meters above sea level, and the formation of the village on the hills facing the sun - in a stepped way - goes back to the early Islamic period. The products of this village can be divided into four categories: agricultural products (walnuts, apples, barley, wheat, etc.), local foods, and handicrafts (carpets, carpets, woolen clothes, etc.). Finally, dairy products, including (cheese, milk, butter, curd, yogurt, etc.) knew that in the economic field, more than 100 dairy factories have expanded, and along with it, employment, self-sufficiency, and economic prosperity. As a result, it has led to the continuation of settlement and the prevention of migration. In addition to that, this village has natural landscapes and historical monuments, including a historical cemetery and stone lions (except for the registered national monuments belonging to the 7th century AH), the stone palace of Haj Ehtsham al-Dawlah, the stone bridge of Haj Salar, a historical bath and Qiz Qalasi (the Castle of Girl) belongs to the Qajar[vi] period. It attracts many tourists to this village every year. Also, Kaleh Qandi and Karans (Nagimler) houses are other historical attractions in this village (figure 1).

[iv]. It is worth noting that this study emphasizes the role of livelihood (which in this village is based on agriculture, livestock, and horticulture) in shaping the rural landscape and enhancing the economic resilience of villagers for rural fabric revival.

[v]. Rural houses of rock architecture type (conical or sugarcane shaped)

[vi]. Qājār dynasty, the ruling dynasty of Iran from 1794 to 1925 A.D

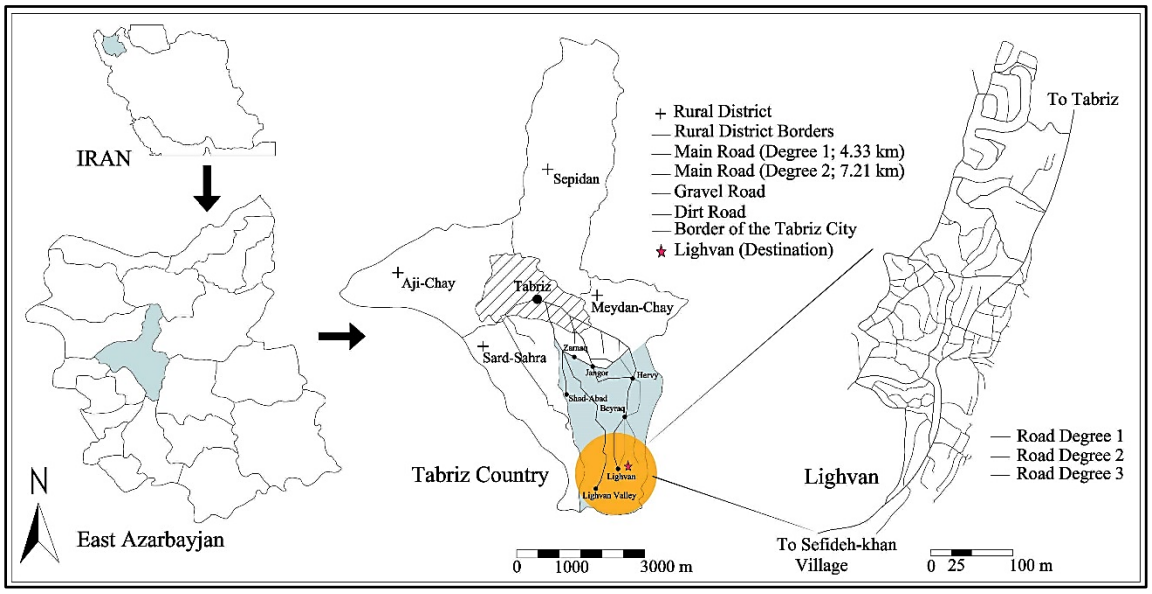


Figure 1. location of Liqvan Village

3.2. Methodology

This study has been carried out in two sections: library and field studies. The theoretical part is done from available and accessible library resources (including books, magazines, articles, and authoritative sites). In the interview section, in-depth and semi-structured interviews are used. To determine the content validity of the questions (in the interview), consultations were conducted with five faculty members from the Departments of Geography and Urban Planning, Architecture, and other experts in the research field (faculty members from Tabriz University and Islamic Art University of Tabriz). After obtaining their approval, the extracted objectives shaped the content of the questions. Additionally, part of the questions is created during the conversation. Statistical population, older and more experienced activists in the field of animal husbandry and dairy production were interviewed until saturation. Therefore, the participation of 10 people, from villagers aged 45-90 years old, benefited, each lasting between 30 and 45 minutes. To assess the reliability, interviews were conducted in Liqvan village on two occasions by the authors. These interviews have been recorded so that, through repeated review of the conversations, a more accurate analysis and examination of the participants' viewpoints can be conducted. At this stage, the data are considered raw and unprocessed, representing the initial phase of the research. The results obtained from this section are coded, and the data are classified into concepts and objectives.

4. Research Findings

In general, from the point of view of the participants in the interview, livelihood, and economy can be examined both inside and outside the houses:

4.1. Outside the houses

The focus of attention in this village has been and still is dairy matters. In this regard, there are many spaces, one for keeping livestock (slum-pen-karan) and another for producing and processing livestock products. Figure 2 shows the position of livestock spaces, and each one is explained below (Figure. 2).

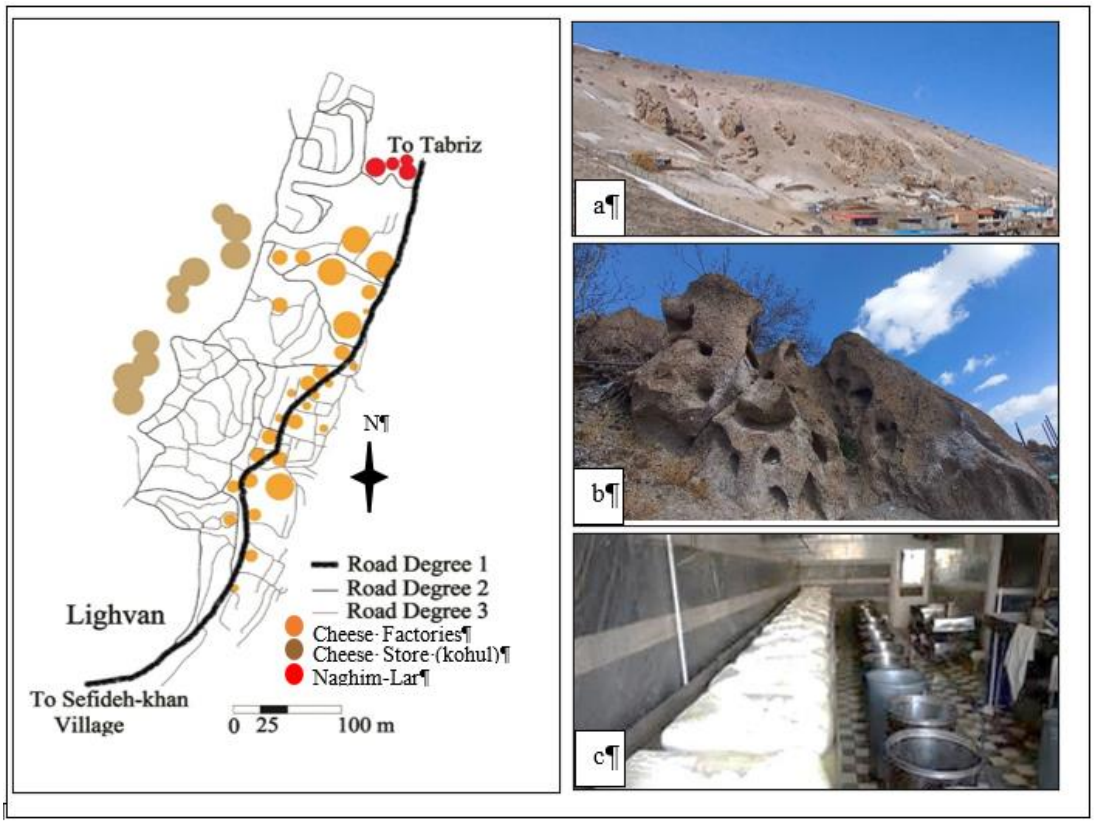


Figure 2. Plan of the location of cheese factories and Nagim in the village, (a) and (b): Views of Naghim-Lar, (c): A Cheese factory.

Milk factory and cheese production workshop- Since animal husbandry and milk production are the dominant occupations of Liqvan, many villagers in this village work in numerous dairy and cheese production workshops and milk collection and distribution centers. More than 35% of the village's working population works in these centers (The Rural Guidance [Hadi] Plan of Liqvan Village, 2016). The space of these workshops is in different scales. Some of these workshops have small dimensions of about 2 square meters, and they have allocated a part of the house space for this activity due to health issues. In some newly built houses, the entire parking lot and pilot house floor are reserved for this activity. According to objective observations, some workshops have a maximum floor area of 80-100 square meters, and the internal division includes the main space for cooking milk and preparing cheese, as well as the entrance and pre-entrance areas. It should be noted that in small workshops, all activities occur in that space.

Outdoor Warehouses- The warehouse in this village is divided according to the various activities in the dairy production process. 1. Forage for livestock is located in the outer part of the houses. The "karans" (rocky outcrops) are used in the elevated areas as forage storage. It is worth noting that although most of the karans in the mountainous region are fragmented and rocky, in some parts, the villagers have cleared these karans and used them for forage storage. 2. The storage for dairy products (cheese) during the initial cheese processing stage is located inside the karans due to the suitable temperature. 3. Public and private warehouses are usually built in the newly constructed houses for storing dairy products for sale.

Cold Storage- Usually, two stages can be mentioned for storing cheese. 1. The freshly made cheese is transferred to the "Karans." According to the villagers, the Karans provide suitable temperature conditions for maturation. These Karans have the ideal warmth for cheese production. After three months, the cheeses are transferred to cold storage. Due to the abundance of cheese production, several cold storages have been established. One of them is located in the

western part of the village entrance. This cold storage is specialized for this village. However, more significant cold storage is located at the exit of Basmenj, which supports the surrounding towns and Liqvan, and the villagers of this village can also use this out-of-village cold storage if needed.

Naghim-lar [vii] ***(Karans)-*** Naghim-lar is an ancient site where numerous cone-shaped protrusions can be seen, reminding visitors of the Kandovan [viii] village. In the past, the people of the region dug inside some of them and turned them into folds where sheep were kept. The doors of these folds are small and hidden from view. It is also a place for children's play. But it has not been used for residential or living purposes.

Zaghes[ix] ***(Stone Tunnels)-*** These tunnels, which have been manually carved, are essentially tunnels, cavities, and caves made of "Karan" stone, located inside the mountain and under the residential houses. They are used as storage for keeping cheese and sheepfolds. These places are cool in the summer and warm in the winter. (Figure 3).

[vii] . The word "**Naghim-lar**" in Azerbaijani (Azeri Turkic, mother tongue of the people of Azerbaijan) is the plural form of Naghim. Naghim is a ridge which the type of it is from the lahar, ignimbrite, and ponce complex; as a result of the lava flow, the ash of the volcanic material, which after mixing with the flowing water from snow and rain, turns into a fluid mass, this liquid mud mass hardens after cooling. It is difficult to see clearly in most of the villages of this region (Sahand domain), and they are often called "Karan," but in this village, they are called "Naghim".

[viii] . Kandovan is an ancient village in Sahand Rural District in the East Azerbaijan Province, northwestern Iran. It exemplifies artificial cliff.

[ix] . It is a cave-like slum that was dug in the ground in ancient times and used to keep sheep in the winter.

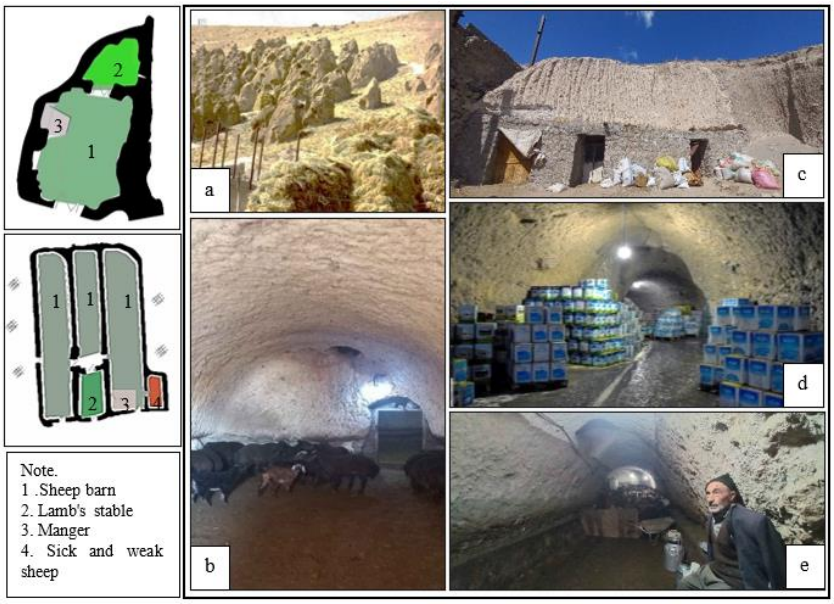


Figure 3. Plan of Naghim-Lar (top) and Zaghe (bottom)., (a): External view of Naghim, (b): Internal view of Naghim, (c): External view of the tunnel, (d) and (e): Internal view of tunnel (top: cheese warehouse, bottom: barn)

Aghol- Generally, Aghols (traditional sheep/goat pens) are more private and specialized for a single family. New private Aghels are usually carved out of the mountain. Due to the unique natural characteristics of this region and the high strength of the soil, numerous Aghols have been dug at the foot of the hill, which have an arched shape with a 1-meter entrance corridor and a space of about 70 square meters, with a narrow vent to the outside for ventilation. Due to this region's mountainous and cold climate and the increase in milk quality, they keep the Aghol space warm. Also, this space creates an unsuitable space for milking. However, due to the rise in the number of sheep and the prosperity of the dairy industry, some hygienic principles should be considered. Sometimes, in some newly built houses, due to the existence of "Karans" (natural underground spaces) under the

houses (the houses are located on a slope and there is a "Karan" under the building, and the foundation of the new homes is built on the Karans), they are used as a place to keep livestock, which the natural Karan with the mentioned characteristics is suitable for livestock.

Jajim weaving space- Previously, the village women used the yarn obtained from sheep's wool after spinning in Jajim weaving. The Jajim loom was laid horizontally in large dimensions on the ground, and due to its large size, it was usually woven by women outside the house and more in the open space and threshing floor. Due to lifestyle changes, sheep's wool is sold more and less in homes. Industrial Jajim weaving has also fallen out of fashion.

According to Table 1, the Nghim includes several parts, each with a specific function. The largest area is used for keeping milking sheep, which is also the milking place. Part of the barn's space is reserved for maintaining the lambs, which is 4 to 7 times smaller than the main storage space. Also, for ease of access, space is allocated for livestock food storage (Table 1).

Table 1. Characteristics of residential spaces

House type	No	Space Name	Area Defining Factors			Area meter^2	Area Space	floor height	Form	Location in the Plan
			Door	Wall	window					
stable and warehouse	Naghim	Sheep pen	√	√	×	38	%72	1 Floor	Rectangular	First Layer
		Lamb pen	√	√	×	9.13	%10.8		Trapezoidal	
	slum	Sheep pen	√	√	×	60.92	%28	1 Floor	Rectangular	First Layer
			√	√	×	32.35	%15			
			√	√	×	57.41	%26.4			
		Lamb pen	√	√	×	13.37	%6.15			
		Garner	√	√	×	5.81	%3			

Other service sectors of the village- In this village, most of the service activities include dairy shops. Some shops include a bakery, hairdressing, butchery, sale of construction materials, and groceries. The total share of this rural employment sector accounts for 10.50% of all jobs. Due to the easy access to roads and communication roads and the ease of receiving services and facilities, most of the shops and dairy stores stand out in the village's main wall, which has a high building value. Many of these shops stand out on the ground floor of newly built buildings. Due to the diversity of preparation and sales activities, production (butter and local buttermilk in the back of the shop) usually consists of several departments. An essential part of the space is reserved for sales, and at the back of the shop, there is a room for preparing butter and buttermilk, etc. The maximum size of these shops is about 60 square meters, and the smallest unit is about 6 square meters. It does not have a preparation and production department (The Rural Guidance [Hadi] Plan of Liqvan Village, 2016) (Figure 4)

Figure 4: The outer spaces of the house in the village: (a): rooftops, (b): dairy distribution shops, (c): Jajim knitting, (d): sheep pen in the basement of houses, (d): entrance of sheep pen.

4.2. Inside the houses (before and after 2000 AD)

Before 2000 AD- Previously, families were extended and lived in houses with a central space with 1 or 2 adjacent rooms. These houses were single-story and were constructed with mud bricks, with the exterior walls made of mud straw or bricks. The window dimensions on the walls were small in number and size for climatic and security reasons and were mostly made of wooden frames. The roofs of the houses were also usually flat and served as a place to dry garden products. The residential and livelihood spaces were also divided according to specific functions, the relevant elements of which are as follows:

Main Room- One of these rooms, usually the largest at around 16-20 square meters, was a place for sitting, eating and drinking, receiving guests, and activities like handicraft production. A traditional clay oven (Kannur) was also used in this room for heating, cooking food, and baking bread. In this village, the leading staple foods were bread and dairy products. The oven also helped provide warmth in the cold climate. Some houses had two clay ovens - one inside the residential spaces for winter use and another outside (sometimes shared with neighbors) for summer use. A part of the main room was also used for storing bedding, rugs, and clothes, separated by curtains. Shelves were built into the walls throughout the rooms, used for decoration, lighting, and holding dishware and other items. The floor furnishings were typically woven rugs. In the winter, a heated platform called a korsi, with a mattress and rugs, was used for seating and sleeping.

The Entrance Hall or Astana- Due to the cold outdoor climate in most houses, a separate entry filter space of approximately 2 square meters with limited length and width was provided. This space was intended for activities such as washing dishes. This area was an entry filter for removing shoes before entering the main living spaces.

Spinning Room- The space dedicated to spinning was usually located either inside the house or in the storage area. After shearing the sheep in the spring and summer, the wool was spun into thread to produce Jajim (a type of traditional woven textile) using a semi-industrial spinning machine called a jahre. This traditional spinning machine was considered an essential and indispensable piece of equipment for every rural household, as wool was abundant in the village, and spinning was a thriving activity. Due to the fluff and fibers involved in the spinning process, this space was often enclosed with a door to prevent the spread of fibers to adjacent areas.

The produced threads were then wound into skeins, dyed in the external tandoor (the clay oven), and used in the weaving of Jajim. Due to the cold climate, the production of woolen garments was also widespread. Silk carpets were another product

made by the villagers in this region, with the carpet loom traditionally hung in the storage space. Nowadays, the looms are often set up inside the houses, in one of the rooms.

Kitchen- This space was typically used for baking bread and preparing food. A vent and chimney of about half a meter in size were installed above this area to vent the smoke from cooking. The clay oven (tannur) was usually circular and made of stone from the inside. In the winter, this space was used for a korsi (a traditional heater) to accommodate sleeping space for up to 4 people. It's worth noting that the courtyard space was usually used for baking bread in the summer.

Storage- A section of the courtyard was typically allocated for storing fodder for livestock and firewood for domestic use. Even today, in many homes where bread is baked indoors, the firewood is stored in the open space of the house (Figure 5).

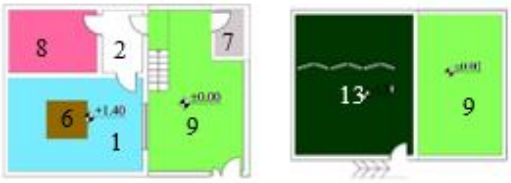
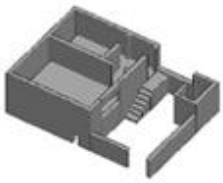
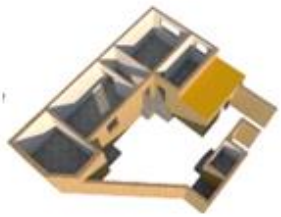
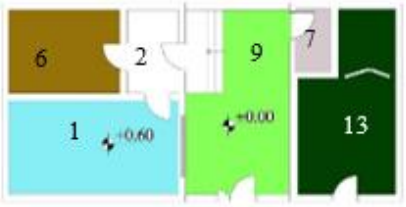
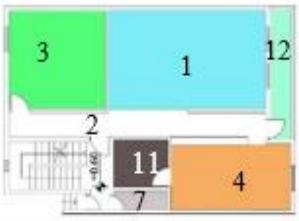
Figure 5. (a): Jahrehkhana, (b): Korsi, (c): Carpet weaving room, (d): Traditional Clay Oven.

4.3. After 2000 AD

Since 2000, the houses in this village have undergone significant physical changes and transformations. Families have shifted from extended to nuclear households, and instead of being based on a livelihood-oriented approach, the houses are now more focused on aesthetic principles. In the past, housing was closely connected to nature and human living environments, and it could only continue adapting to them. However, the current cultural and social changes in the lives of villagers have brought about changes in areas such as the diversity of use of new tools and facilities (modernism) within the dwellings and the design and architectural plans that are different from traditional rural housing patterns (i.e., with approximately two bedrooms, a kitchen, a living room, and services).

Due to lifestyle changes, the Liqvan houses have become more urban and have lost their traditional form. However, despite the significant changes in the face of the village, Liqvan has yet to become truly urban, and the rural way of life continues alongside the urban way of life. The residential spaces are similar to urban dwellings in the new houses, which are often built on multiple floors. Still, the livelihood-related spaces, such as the animal pens or stone tunnels, are located outside the home or in the basement. The village also has a bakery; sometimes, the neighbors' ovens are used for baking bread. Dairy production and processing also take place in workshops and cold storage. The following presents six examples of traditional and contemporary housing samples which shows plans, 3D view and Sample image of interior spaces (Table 2).

Table 2. some houses of Lighvan village

Type	No	Space Name	3D view	Sample image of interior spaces
Traditional House	No 1			
	No 2			
	No 3			
Modern Housem	No 4			

There are common patterns and practices among all the examined houses, such as the fact that it often enters the threshold space after the entrance and accesses the living room from there. The oven is located in the middle of that space, and the spinning and nettle space is placed in the last layer and corner of the building. Regarding the differences between traditional and contemporary houses, old houses have more functional diversity with less spatial diversity. The yard has been very dominant in this house. Many activities took place in the yard, including small-scale milk and cheese making, animal husbandry, spinning, bread baking, firewood and straw, and even storage of dairy products. Inside the house, spaces such as the living room, kitchen, and storage were in one space. However, in newly established houses, based on the change of lifestyle, the division of internal spaces has varied dramatically, and some spaces, such as the kitchen, bedroom, and living room, have been separated. Also, activities such as cheese making have been transferred to workshops separately, and the pen space is located in the lower part of the house (due to the stepped development of today's houses and the location of the spaces dug in the heart of the mountain, these spaces have become a place to keep livestock.

With the limitation of the activities of the house in the contemporary period, following the change in the type of employment and the transfer of most livelihood activities from inside the home to the space outside it, the house has become a place for

personal activities, and this has caused the transformation of the room multi-functional space has become a single-functional space. Also, with the installation of independent rooms in the courtyards of today's houses, some of the former activities, such as baking bread and storage, are carried out in this space. It is clear that it is impossible to maintain the native context of the village, and the villages will inevitably be affected by the changes that occur. It should be accepted that if in the past, various activities, especially economic and livelihood activities in the heart of the residential spaces of the villages, acted as an unwritten law, today it has faded due to the mentioned cases. Still, the town of Liqvan has various functions and roles in the economy and even tourism. Therefore, it can play a prominent role in guiding and leading business activities at the level of the villages in the region (Table 3).

Table 3. Typology of defining spaces in rural houses (traditional-modern)

House type	No	Space Name	Area Defining Factors			Area meter^2	Area Space	floor height	Form	Location in the Plan
			Door	Wall	window					
Traditional House	No 1	Living room	√	√	√	20.27	%20	1 Floor	Rectangular	First layer
		Entrance hall	√	√	×	5.53	%5.5			
		The Oven	√	√	×	11.83	%11.7			
		WC	-	-	-	2.88	%3			
		Yard	√	√	×	24.57	%24.3			
		Sheepcote	√	√	×	19.51	%19.3			
	No ۲	Living room	√	√	√	27.22	%29.6	2 Floor	Rectangular	Second layer
		Entrance hall	√	√	×	5.51	%6			
		WC	√	√	×	2.89	%3			
		Store	√	√	×	12.06	%12.5			
		Yard	×	√	×	29.78	%3			
			√	√	×	33.85	%34		Rectangular	First layer
		Sheepcote	√	√	×	47.18	%47.5			
	No ۳	Living room	√	√	√	17.34	%11.8	1 Floor	Rectangular	First layer
		Entrance hall	√	√	×	5.54	%3.8			
		Bed room	√	√	√	15.6	%10.6			
		Kitchen	√	√	√	8.87	%6			
		Roof	√	×	×	12.26	%8.3			
		The Oven	×	√	×	2.74	%2			
		WC	√	√	×	3.09	%2.7			
		Store	√	√	×	12.29	%8.4		Trapezoidal	First layer
		Yard	√	√	×	48.22	%33			
Modern House	No ٤	Living room	√	√	√	14.77	%21.3	2 Floor	Rectangular	First layer
		Kitchen	√	√	√	12.64	%18.2		Trapezoidal	First layer
		Roof	√	√	×	35.89	%51.7		Trapezoidal	Second layer
		WC	√	√	×	1.50	%0.2		Rectangular	First layer
		Store	√	√	√	19.60	%28.2		Trapezoidal	Second layer
		Sitting Room	√	√	√	20.39	%29.4		Rectangular	First layer
	No ٥	Living room	√	√	√	26.91	%10.6	1 Floor	Rectangular	First layer
		Entrance hall	√	√	√	18.31	%7.2			
		Kitchen	√	√	×	12.13	%4.7			
		WC	√	√	×	4.44	%1.7			
		Yard	√	√	×	119.72	%47			
		Sitting Room	√	√	√	9.12	%3.6			
		Bath	√	√	×	3.18	%1.3			
		Carpet Weaving Room	√	√	×	19.02	%7.5			

House type	No	Space Name	Area Defining Factors			Area meter^2	Area Space	floor height	Form	Location in the Plan
			Door	Wall	window					
	No 1	Living room	√	√	√	36.11	%26.3	1 Floor	Rectangular	First layer
		Entrance hall	√	√	×	15.01	%11			
		Bed room	√	√	√	22.41	%16.3			
		Kitchen	√	√	√	18.41	%13.4			
		WC	√	√	×	2.36	%1.7			
		Bath	√	√	×	6.31	%4.5			
		Carpet Weaving Room	√	√	√	6.59	%4.8			

According to the present research, two axes perpendicular to each other are considered to show how the space is organized in the taken plans. On its ground (horizontal) axis, the spatial layers from the entrance to the building are displayed, and on the sky (vertical) axis, the spatial layers are shown up to the roofs of the houses. On the horizontal axis, the layers surrounding the entrance are presented as the first layer, and in the same way, the farthest spatial layer from the entrance is the last layer, and on the vertical axis, the existing floors are presented. From the intersection of horizontal and vertical layers, specific and defined spaces have been formed, and according to their up and down or backward and forward, various spaces have emerged according to the needs of the family (Figure 6).

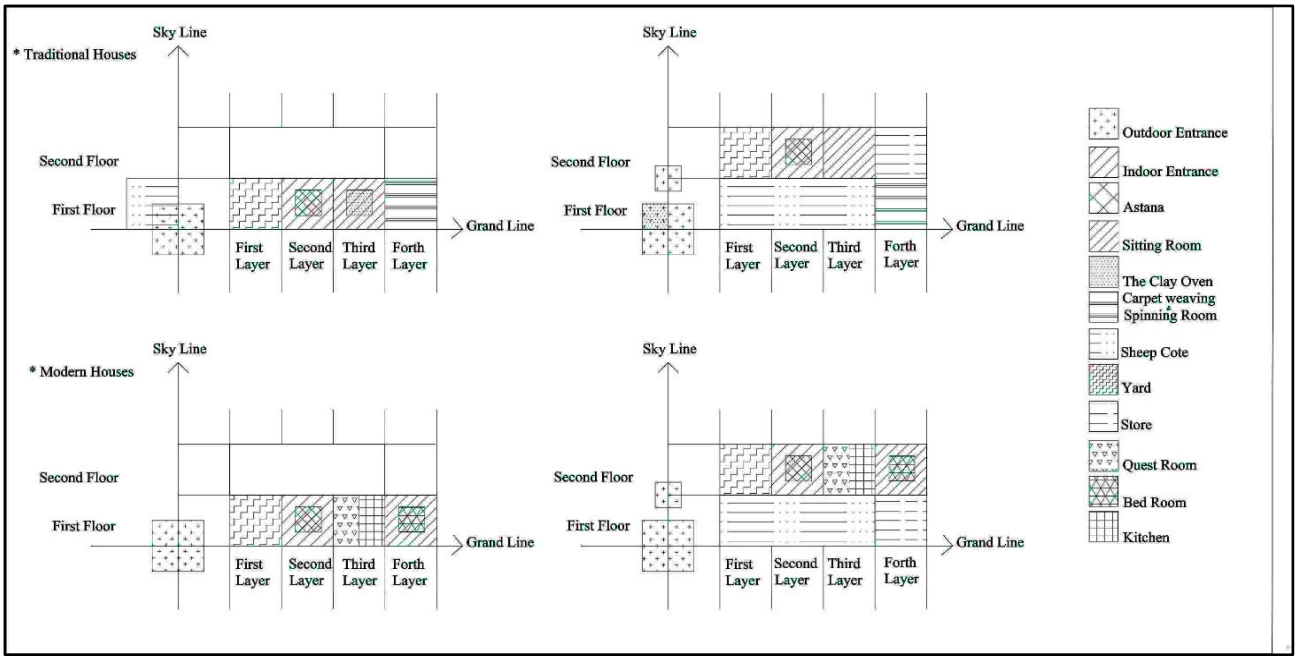


Figure 6. Showing the spatial network and pattern of settlement of residential spaces.

5. Discussion and Conclusion

The research findings indicate that in recent years, numerous morphological changes have occurred in the structural organization of rural houses in Leigu. On the other hand, considering the technological advancements in livestock production methods, this activity is highly popular and significant in the local economy. Furthermore, analyzing the relationship between the production system and the spatial organization of the village of Leigu suggests that the village's economy is seasonal, primarily based on agriculture and animal husbandry during the farming seasons.

The production of dairy products in the non-agricultural seasons and activities such as carpet weaving are also the second priority of income sources. Given the dominant economic activity in this village (animal husbandry), the spaces for keeping livestock and storage make up a larger share of the village spaces. These spaces are kept outside the residential fabric on the banks or in the sheds built on the mountain's slopes. In addition, these banks are the main element for storing dairy products, including cheese.

Regarding the typology of residential spaces, in the traditional period of livelihood, it had an essential role in the formation and spatial composition of the village houses. The old residential spaces of Liqvan were formed in response to functions and with appropriate internal divisions so that living facilities are provided in the long run. Many activities, such as livelihood activities such as animal husbandry, agriculture, and other service work (spinning, weaving, etc.), as well as living and cultural activities such as cooking, health issues, eating and sleeping, family gatherings, guest affairs, holding celebrations, etc., have been realized in the house spaces, and sanitary facilities (toilet, bathroom), pens and some others have been primarily located outside the houses. However, in line with the contemporary wave of change and changing the needs of the present age, especially the significant shift in income from traditional activities to mass dairy production, in the newly built houses, the living spaces have often been converted into living spaces, and for the sake of comfort, sanitary spaces, and kitchens have been added to the houses, and due to the fame of this village in cheese production, the establishment of workshops and cold storage in the village has boomed, but some of the livelihood needs such as pens are still being carried out in the basement or a corner of the yard; Although with the increase in the number of sheep, pens have been dug in the heart of the mountain. The newly built houses do not have much in common with local customs and traditions and do not show any harmony with the indigenous architecture.

Nevertheless, the robust and productive role in the village (mass production of cheese and its export) indicates that the use of solutions for developing and regenerating such villages is an undeniable necessity. Stabilizing rural centers, creating production and income hubs, and reviewing rural development and housing strategies and policies with a focus on local potentials, conditions, and the interests of the residents should be the focus. The valuable volume of dairy and handicraft production in Liqavan and the neighboring villages requires the establishment of large production and supply centers in that area. Alongside establishing production and workshop complexes across the village, villagers can develop economic and livelihood activities within the residential spaces. In this way, by activating the members of the households and even the neighbors, various production costs, such as human resources, facilities, etc., can be reduced. It is possible to use the excavated spaces within the land for the workshop products' sales spaces and design recreational spaces such as cafes, coffee shops, etc. This will establish a logical connection between training and production in local workshops and the sales and display section.

When comparing these results with previous research conducted in other rural areas of Iran and similar settings, it becomes evident that economic and technological advancements universally influence rural spatial patterns. Past studies emphasize that traditional rural architecture was closely linked to local livelihood activities, primarily agriculture and animal husbandry, and served functional purposes aligned with these activities. Our findings reinforce this understanding but also highlight the ongoing impact of modernization in considerable regional differences.

In conclusion, understanding this evolving relationship is essential for developing effective rural regeneration strategies that preserve cultural heritage while accommodating socio-economic progress. The insights from this study align with

earlier research, emphasizing the importance of integrating local potentials, traditional architecture, and modern livelihood needs to foster sustainable rural development.

In addition to the mentioned cases, we know that the elders have been aware of the location, time, and conditions in the past, and their participation should be directed toward appropriate regeneration. Many activities and spaces should be more thoroughly considered, as local products can no longer be processed similarly. For example, in the competitive world of dairy production, there are various types of cheese, butter, and even yogurt, and several new activities related to the wool industry can be observed. The crucial point is that there is no choice but to move towards new productions and the reproduction of past activities and services in the form of production clusters, with the technical and specialized consultation of knowledge-based companies in developing spaces and production and service processing. In this regard, attention to indigenous architecture and the regeneration of indigenous and local spaces can add to the natural beauty and tourism of the village and the region on the lush slopes of Sahand in Tabriz.

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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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Original Article

بررسی نقش تولیدات دامی در سازمان فضایی روستای تاریخی لیقوان

ناهیده رضایی*[1]، رعنا نجاری نابی[2] ، رحمت محمدزاده[3]

۱. استادیار معماری، دانشگاه هنر اسلامی تبریز، تبریز، ایران.
۱. استادیار معماری، دانشگاه تربیت دبیر شهید رجایی، تهران، ایران.
۳. استاد شهرسازی، دانشگاه تبریز، تبریز، ایران.

چکیده مبسوط

۱. مقدمه

مقاله حاضر با مروری اجمالی بر شناخت روستا، به تحلیل ارتباط میان نظام تولیدی و خلق سازمان فضایی روستای لیقوان از توابع شهرستان تبریز می‌پردازد. پیش از تحولات معاصر (غالبا پس از انقلاب اسلامی ۱۳۵۷ شمسی)، کالبد این روستا با مرکزیت تولید و معیشت محوری در مقیاس محلی ساخته شده بودند، به‌گونه‌ای که تولید لبنیات، نگهداری دام و خورد و خوراک همگی در فضای محدود خانه‌ها اتفاق می‌افتاد و از فضای کران‌ها نیز گاه بعنوان آغل استفاده می‌شد. اما از نیم قرن گذشته و با رونق تولید برند پنیر لیقوان و همچنین در پی ظهور تکنولوژی و ... و بالتبع خلق نیازهای جدید؛ نوع کالبد آن چه به لحاظ فضاهای زیستی و چه معیشتی، تفاوت‌های بنیانی به خود دیده است. در این پژوهش، محقق سعی می‌کند، رابطه فعالیت‌های معیشتی و بالاخص اقتصادی (تولید انبوه پنیر) با سازمان فضایی روستای لیقوان را شناسایی و تبیین نماید. سوالات اصلی این پژوهش عبارتند از: رابطه بین تولید محصولات دامی (لبنیات- گوشت و پشم) با سازمان فضایی روستای لیقوان در گذشته/ حال و آینده چیست؟

۲. مبانی نظری تحقیق

فضا بستر نیروی تولید است، زیرا مالکیت فضا به‌عنوان ابزار تولید و سازمان‌دهی روابط تولید، شیوه‌ی تولید را شکل می‌دهد و در این حالت کسی که مالکیت فضا را در دست دارد، متعاقباً قدرت سازماندهی و کنترل بر فعالیت‌هایی که می‌تواند یا باید در فضا انجام شود، را نیز خواهد داشت. با توسعه مکان‌های جدید، مکان‌های قدیمی برای در برگرفتن عملکردهای گوناگون تغییر داده می‌شود. لذا نقش مهم تولید فضا و ارتباط نزدیک آن با بخش‌های دیگر اقتصاد مسکن روستایی مشهود است. تولید فضای مصنوع به‌واسطه مقیاس و اهمیتش، از پویایی درونی و ظرفیت‌های قابل توجهی برخوردار است که کاربران را به یافتن فرصت‌هایی برای استفاده از ظرفیت‌های تولیدی و سود ترغیب می‌کند.

۳- روش تحقیق

این مطالعه در دو بخش کتابخانه‌ای و مطالعات میدانی انجام پذیرفته است. در بخش نظری از منابع کتابخانه‌ای و در بخش میدانی با روش «پدیدارشناسی» انجام می‌شود. لذا از مشارکت ۱۰ نفر از افراد مسن‌تر و باتجربه‌تر، تا حد اشباع مصاحبه صورت گرفت. روستای لیقوان در جنوب‌شرقی شهر تبریزدر یکی از دامنه‌های کوه سهند، بر روی تپه های رو به خورشید – به‌صورت پلکانی - در دوره اوایل اسلام شکل گرفته است.

۴- یافته‌های تحقیق

آن‌چه در این روستا کانون توجه بوده و هست مربوط به امور لبنیاتی است. در این خصوص فضاهای زیادی وجود دارد، بخشی برای نگهداری از دام‌ها (زاغه- آغل- کران)، بخشی برای تولید و فرآوری محصولات دامی. فضاهای بیرونی عبارتند از: شیرپزخانه و کارگاه تولید پنیر، انبارهای بیرونی، سردخانه، نغیم (کران)، زاغه‌ها و تونل‌های سنگی، آغل، فضای بافت جاجیم، سایر بخش‌های خدماتی روستا: در این روستا، بیشتر فعالیت خدماتی شامل فروشگاه‌های لبنیاتی می باشد.

سازمان فضایی داخل مساکن روستا به دو بخش (قبل و پس از دهه ۸۰ شمسی) تقسیم می‌شود. قبل دهه ۸۰ شمسی فضاهای زیستی و معیشتی نسبت به عملکردهای خاص تقسیم‌بندی شده‌اند که شامل فضاهایی چون اتاق اصلی، دهلیز یا آستانا، اتاق ریسندگی، مطبخ، انبار می شود. از دهه ۸۰ شمسی به بعد، خانه در این روستا با تغییرات فیزیکی زیادی همراه بود. تغییرات فرهنگی-اجتماعی در زندگی روستاییان مانند تنوع استفاده از وسایل و امکانات جدید (مدگرایی) در داخل مساکن و طراحی و پلان‌های معماری متفاوت از معماری

*. نویسندهٔ مسئول:
دکتر رعنا نجاری نابی
آدرس: گروه معماری، دانشکده معماری و شهرسازی، دانشگاه تربیت دبیر شهید رجایی، تهران، ایران.
پست الکترونیکی: Email: ra.nabi2016@sru.ac.ir

سنتی در الگوی خانه روستایی به وجود آورد. خانه‌های جدید که غالبا در چند طبقه اجرا می‌شود. بخش‌های زیستی چون خانه‌های شهری است، اما بخشهای معیشتی همچون آغل یا در بیرون از خانه (تونل‌های سنگی) قرار دارد یا در طبقه زیر زمین خانه‌هاست.

۵- بحث و نتیجه‌گیری

نقش تولیدی قوی در روستا (تولید انبوه پنیر و صادرات آن) نشان می‌دهد، بکارگیری راهکارهایی برای احیاء و بازآفرینی چنین روستاهایی یک ضرورت انکارناپذیر است. تثبیت مراکز روستایی و ایجاد کانون‌های تولید و درآمد، بازنگری در راهبردها و سیاست‌های توسعه و مساکن روستایی با تاکید بر پتانسیل‌ها و شرایط بومی و محلی و علایق ساکنین باید مورد تمرکز باشد. حجم ارزشمند تولید محصولات لبنی و صنایع‌دستی در لیقوان و روستاهای مجاور ایجاب می‌کند که مراکز بزرگ تولید و عرضه در آن بخش به وجود آید. در کنار راه اندازی مجموعه های تولیدی و کارگاهی در گستره روستا، می توان بخشی از فعالیت های اقتصادی و معیشتی روستاییان را در دل فضاهای داخل مسکونی توسعه داد و بدین ترتیب با فعال نمودن اعضاء خانوارها و حتی همسایگان هزینه های مختلف تولید چون نیروی انسانی، تاسیسات و ... را کاهش داد. حتی می‌توان از فضاهای کنده شده در دل زمین، برای فضاهای فروش تولیدات کارگاه استفاده کرد که در کنار آن طراحی فضاهای تفریحی اعم از کافه، قهوه‌خانه و ... ، منظور نمود. بدین‌سان می‌توان ارتباط منطقی بین آموزش و تولید در کارگاه‌های محلی و بخش فروش و نمایش آن برقرار کرد.

کلید واژه‌ها: تولیدات دامی، تولیدات لبنی، سازمان فضایی، مسکن، روستای لیقوان.

تشکر و قدرانی

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دکتر رعنا نجاری نابی

آدرس: گروه معماری، دانشکده معماری و شهرسازی، دانشگاه تربیت دبیر شهید رجایی، تهران، ایران.

پست الکترونیکی: Email: ra.nabi2016@sru.ac.ir

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Original Article

Cross-Cultural Differences in Rural Landscape Assessment: Iran and Sweden

Mojgan Ghorbanzadeh[1]*, Seyed Hassan Taghvaei[2], Saeid Norouzian-Maleki[3], Åsa Ode Sang[4]

1. Ph.D. in Landscape Architecture, Shahid Beheshti University, Tehran, Iran
2. Associate Prof. in Landscape Architecture, Shahid Beheshti University, Tehran, Iran
3. Associate Prof. in Landscape Architecture, Shahid Beheshti University, Tehran, Iran
4. Full Prof. in Landscape Architecture, Planning and Management, Swedish University of Agricultural Sciences, Lomma, Sweden.

Abstract

Purpose- This study explores cross-cultural differences in the assessment of rural landscapes among landscape architecture experts in Iran and Sweden. The research focuses on three key indicators of landscape aesthetics: diversity, naturalness, and sense of place, aiming to understand how cultural background influences the perception and valuation of these elements in rural environments.

Design/methodology/approach- A quantitative survey approach was employed using a structured questionnaire based on a 7-point Likert scale. The sample included 31 landscape architecture experts—18 from Iran and 13 from Sweden—who were selected purposively and responded via email. To analyze the data, non-parametric statistical methods were used, including the Kolmogorov–Smirnov test for normality and the Mann–Whitney U test for comparing group differences.

Findings-The results revealed that both groups valued vegetation diversity similarly, indicating a shared professional appreciation for diverse plant types. However, a significant divergence was noted in perceptions of naturalness: Iranian experts tended to associate cultivated and managed vegetation with higher natural value, while Swedish experts favored more untouched, wild natural elements. Regarding the sense of place, particularly the activity subcomponent, Iranian experts gave more weight to cultural infrastructure and traditional or religious events, reflecting the socio-cultural importance of communal and ritual activities in Iran.

Practical Implications- These findings can guide rural landscape planning and design processes that are sensitive to cultural context, providing a basis for cross-cultural assessment tools tailored to differing aesthetic values.

Originality/Value- The study contributes to the underexplored area of non-Western landscape perception research, offering fresh insights into how cultural frameworks shape aesthetic evaluations across distinct environmental and social settings.

Keywords- Cross-Cultural Differences, Landscape Preferences, Diversity, Naturalness, Sense of Place, Assessment of Rural landscape.

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Corresponding Author:
Ghorbanzadeh, Mojgan, Ph.D.
Address: Department of Landscape Architecture, Faculty of Architecture and Urban Planning, Shahid Beheshti University, Tehran, Iran
Tel: +98 9155871040
E-Mail: m_ghorbanzadeh@sbu.ac.ir

1. Introduction

According to the definition of the European Landscape Convention (2000), “Landscape" means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors;”. In line with the definition of this convention in ICOMOS documents (2017), the rural landscape is the biological areas of water and soil that are the result of human-nature interaction and have dynamic biological systems that include rural elements and functional relationships. These areas can be large rural areas or small areas in the suburbs. The most common feature of a rural landscape is that it includes farmland and agricultural activities. The importance of the rural landscape as a valuable cultural heritage has been recognized by the international documents of ICOMOS, Council of Europe (CoE), and UNESCO. In general, demographic-cultural, structural, and environmental changes are three related factors that make rural landscapes vulnerable to the risks of destruction, abandonment, or fundamental changes (ICOMOS, 2017). To maintain the sustainability of these landscapes, it is very important to recognize their intrinsic values and ensure their transmission to future generations.

An innovative approach to dealing with these issues involves adopting a psychological perspective to understand how different cultures perceive and respond to global environmental challenges (Eisler et al., 2003). The intrinsic values of rural landscapes arise in different cultural contexts and deeply affect their perception and conservation strategies. Considering that societies are going through the process of globalization, understanding human preferences towards the landscape, and especially the difference in these preferences among different groups, becomes important from the perspective of basic and practical research in landscape and environmental management. This cross-cultural convergence in aesthetic preferences has encouraged scholars to propose generalizable models for landscape evaluation and management that can be adapted across cultural settings. Several studies have supported the potential for such universal frameworks, particularly in relation to visual landscape assessment and ecological value recognition (e.g., Tveit et al., 2006; Ode et al., 2008; Hägerhäll et al., 2018; Van Zanten et al., 2014).

However, in current landscape planning and decision-making processes, the perceptual and emotional dimensions of how people experience landscapes are often overlooked. While ecological and functional aspects typically receive priority, the subjective values—such as aesthetic preferences, cultural meanings, and sense of place—are rarely integrated systematically into planning frameworks (Huai & Van, 2022). This disconnect can lead to designs that fail to resonate with local communities or reflect their cultural identity.

Landscape Character Assessment (LCA) is a widely recognized and well-established framework for understanding and describing the character of landscapes by integrating both physical and perceptual dimensions. It offers a systematic approach to capturing the complexity of landscapes through the analysis of visual, ecological, and cultural attributes. Within this framework, the perceptual dimension—which includes emotional responses, aesthetic preferences, and cognitive interpretations—has gained increasing attention in recent years (Aoki, 1999; Karmanov, 2009; McIntosh et al., 2022; Hung et al., 2023).

Our study is positioned within this perceptual dimension of LCA and focuses specifically on the psychological evaluation of rural landscapes. By investigating how experts from two culturally distinct countries—Iran and Sweden—perceive key landscape attributes, we aim to contribute to a more inclusive and culturally informed application of LCA.

In particular, we examine three core indicators derived from landscape aesthetics theories—diversity, naturalness, and sense of place—to evaluate how cultural background influences landscape preferences. This cross-cultural comparison highlights the importance of incorporating cultural variability into the theoretical development and practical application of rural landscape assessments. By aligning our approach with the LCA framework, we provide insights that complement its physical assessments and reinforce the significance of subjective perception in landscape planning and management. Building upon this framework, the present study aims to explore how cultural background influences the perception and evaluation of rural landscape aesthetics among experts in Iran and Sweden. The investigation focuses on three core

indicators—vegetation diversity, naturalness, and sense of place—with the intention of identifying similarities and differences in expert judgment across distinct socio-cultural and ecological contexts. To guide this investigation, the study addresses the following key questions: How do experts from Iran and Sweden differ in their perception of vegetation diversity within rural landscapes? What variations exist in how naturalness is interpreted and valued in each context? And how is the concept of sense of place—including its physical, semantic, and activity components—perceived differently between the two cultural groups?

2. Research Theoretical Literature

2.1. Landscape appraisal and landscape preference

Research on landscape preference and aesthetics began in the 1960s (Purcell et al., 2001). Lothian (1999) believes that landscape perceptions are formed by the two factors of inherent environmental characteristics and people's interpretations of these characteristics (Taghvaei al., 2017; Huai & Van, 2022). Landscape preferences derive more from emotional reactions to the physical environment than anything else and affect the sense of attraction or aversion to the environment. These preferences are usually called aesthetic or evaluative reactions resulting from visual communication with the natural or built environment (Buijs et al., 2009).

2.2. Landscape aesthetic concepts

This study adopts a comprehensive theoretical framework that integrates subjective and objective components of environmental values in landscape aesthetics theories and uses the framework developed and outlined in Tveit et al. (2006). In this study, we specifically focus on three fundamental concepts in rural landscape assessment: diversity (or complexity), naturalness, and sense of place. These were selected from a broader set of theoretical constructs commonly used in landscape aesthetics research, such as coherence, legibility, stewardship, and openness (Tveit et al., 2006).

These three indicators were prioritized because they collectively capture both the objective, physical properties of landscapes—such as structural complexity and ecological patterns—and the subjective, experiential dimensions, including emotional attachment and cultural interpretation. The concept of diversity, often associated with ecological richness and visual variety, has been widely addressed in works such as Ode et al. (2008) and Erikstad et al. (2008).Naturalness, defined as the perceived degree of human influence in a landscape, is rooted in frameworks developed by Ode et al. (2009) and expanded by Keong & Onuma (2021).Sense of place, reflecting emotional and cultural ties to the landscape, is grounded in the works of Jorgensen & Stedman (2001), Taghvaei (2012), and Ghorbanzadeh et al. (2023).

The combination of these three distinct yet complementary indicators make them particularly suitable for examining cross-cultural differences in landscape perception and valuation (Li et al., 2022; Tenerelli et al., 2017; Frank et al., 2012). The choice of these three indicators centers on studying landscape preferences through environmental features, species, and physical or natural qualities. Additionally, it examines historical and memorable components integral to the landscape.

The selected indicators are conceptually distinct: diversity relates to visual and ecological variety, naturalness to the degree of perceived human influence on the landscape, and sense of place to emotional and cultural attachment. This distinction allows each indicator to capture different yet complementary aspects of landscape perception and evaluation. Relevant research highlights the role of environmental factors and local context in shaping rural development strategies and landscape preferences, emphasizing that effective planning should consider place-specific ecological and socio-cultural conditions (Jome'epour et al., 2018; Ghorbanzadeh & Niloufar, 2019). This study will explore cross-cultural differences in the interpretation and importance of different aspects contributing to the perception of vegetation diversity, naturalness, and sense of place.

2.2.1. Diversity

Landscape diversity includes the complex interaction between pattern, form, composition, and configuration of landscape features. This multifaceted concept, presented in the Biophilia hypothesis by Kellert and Wilson (1993), emphasizes the central role of diversity in nature, which includes both species richness and landscape species variety (Ode et al., 2008). In landscape ecology, diversity is often synonymous with complexity and has a central place (eg, Green et al., 2006). In particular, landscape diversity is defined

as the diversity of land cover classes, and it is usually measured through land cover mapping methods (Ramezani, 2019).

The importance of landscape diversity transcends ecological domains and affects human perceptions and preferences in specific landscapes. People's preference for a particular landscape is fundamentally related to their ability to perceive the complexity, variety, and level of interaction with that landscape (Kaplan et al., 1989). Significantly, a Europe-wide meta-analysis, by Van Zanten et al. (2014) found that there is a distinct preference for mosaic landscapes and that diverse landscapes are considered being more attractive (Hermes et al., 2018). Therefore, landscape diversity plays an important role in shaping human perceptions and preferences, since more diverse landscapes are often more attractive.

We assessed vegetation diversity by classifying land cover into distinct types and structural categories. This helped to identify visual contrasts and transitions between different landscape components.

2.2.2. Naturalness

Naturalness refers to the extent to which a landscape appears untouched by human influence and emphasizes its similarity to natural environments. The concept of naturalness is one of the concepts studied in most landscape preference research and is generally used to describe how close a landscape is to the perceived natural state (Ode et al., 2009). It is noteworthy that perceived naturalness can be different from ecological naturalness (Tveit et al., 2006). Environmental psychologists and proponents of ecological aesthetics both recognize naturalness as a critical aspect of visual quality (Purcell & Lamb, 1998; Gobster, 1999).

The results indicate a preference for environments that are perceived as natural in appearance and structure, even if such landscapes may include human-modified or cultivated elements, as opposed to clearly artificial or built environments (Kaplan and Kaplan, 1989), This confirms the cross-cultural relevance of perceived naturalness in shaping both visual appreciation and recreational preference.

The Hemeroby index is used to measure the perceived naturalness of the land cover based on the level of human influence on the landscape. The Hemeroby index, which was originally designed for ecological studies, has now become a standard tool in the assessment of landscape aesthetic quality (Frank et al., 2013). Using this approach, the human perception of naturalness is considered rather than its ecological meaning, such that deciduous forests are usually rated as more natural than mixed or coniferous forests, and surface water is ranked second in importance (Jackson et al., 2008).

In this study, to assess the naturalness, the Hemeroby index classification has been used, and based on this, it has focused on natural components such as vegetation, water bodies, and elements of natural and built environments. In this way, a systematic approach to the assessment of naturalness is presented and helps to increase our understanding of human perceptions in societies with different cultures.

2.2.3. Sense of Place

The sense of place has been the focus of geographical science studies and refers to the attachment or emotional connection of people with a place or the meaning that a person attributes to such areas (Williams & Vaske, 2003; Brown & Raymond, 2007). Attachment to a place is proposed by environmental psychologists. They consider it equivalent to geographers' sense of place. The place attachment scale (Williams and Waske, 2003) is one of the first valid scales used in different areas of land use. This scale is defined based on the two concepts of place identity and place dependence (Brown and Raymond, 2007). Tuan's theory (1977) posits that individuals who are rooted will act responsibly toward their immediate environment (Kudryavtsev et al., 2012). In addition, people in communities with stronger place attachments enjoy a higher quality of life, and they tend to identify landscape values and specific places in their communities (Brown et al., 2007; Mohammad-Moradi et al., 2022).

Place attachment, or the human-place bond (Altman, 1992), has been present in academic discourse since the 1990s. As understanding of the construct and its applicability has grown, so has its use across contexts and cultures (Falahat, 2006; Montazerolhodjah & Sharifnejad, 2023). The scale's psychometric properties have not been evaluated despite being widely used. Certain researchers (e.g., Williams and Vaske, 2003) suggest that because context plays a crucial role in comprehending and gauging individuals' attachment to places, further examination is necessary to evaluate the conceptual consistency

and measurement accuracy of commonly used attachment scales across various locations and situations (Wynveen et al., 2018).

The assumption of item equivalency, as proposed by Budruk (2010), could present challenges when comparing data gathered from diverse social and physical settings. Scholars such as Kyle and Johnson (2008) and Trentelman (2009) have noted differences in place conceptualization among individuals with varied experiences and cultural backgrounds. Alternatively, there may be subtle differences in how distinct groups perceive places, which conventional variables like shared experience history or activity preferences fail to capture (Wynveen et al., 2018).

2.3. Cultural differences

There are several established theories in this field; including the landscape sanctuary theory, the savanna theory (Orians, 1980), and the biophilia theory (Wilson, 1984), which are based on the global consensus on landscape preference. Most people's consensus on landscape preferences is focused on tree and water preferences (Ulrich, 1983). Evolutionary psychology acknowledges that there are innate and shared perceptions of perspective regardless of cultural differences (Ozgüner, 2011; Tveit et al., 2006).

Other studies have shown that different social groups may have varying preferences for wild versus managed landscapes, depending on factors such as cultural background, education, or familiarity with nature (e.g., van den Berg & Koole, 2006; Gobster et al., 2007). Likewise, people from different socio-cultural backgrounds have different preferences for urban parks (Kaplan & Kaplan,1989; Buijs et al., 2009). This suggests that comparative studies among different cultural groups can reveal commonalities and differences in preferences (Madureira et al., 2015), hence further studies are required to understand how landscape characteristics lead to global consensus or specific cultural differences (Swapan et al., 2017). Also, background-based studies such as comparisons between landscape experts and the general public have shown differences in landscape preferences (Ode et al., 2010; Van Den Berg and Koole, 2006).

Most people today, especially in eastern countries, live in urban areas, with nature experienced almost solely through vacations. However, the experience of nature differs for those living in Western countries (Hung et al., 2023). In addition, natural environments are universally considered to have a higher aesthetic value than urban environments (Ulrich et al., 1993). However, research suggests that cultural variations affect aesthetic perceptions (Lehman et al., 2004) and emotional responses to landscapes (Ulrich, 1983). This idea suggests that the perception of landscape aesthetics can be influenced by socio-cultural structures such as knowledge, experience, or individual cultural background, different from one person to another (Lim et al., 2015).

Thus, it is important to understand the different roles played by nature for people living in Western and Eastern countries and the extent to which these differences are based on cultural differences and, more extensive research on landscape preferences with different cultural contexts seems necessary and informative (Hägerhäll, 2001; Van Den Berg and Koole, 2006; Hägerhäll et al., 2018). In addition, expertise, special interests, and landscape typology can also influence aesthetic preferences.

There are still important gaps in the understanding of cross-cultural differences despite many studies in the field of landscape evaluation. Many of these studies assessed only one indicator, such as perceived preferences for naturalness or landscape openness. In addition, despite the importance of cultural preferences, the impact of cultural diversity on landscape perception has limited research (Eisler et al., 2003). Also, landscape preference studies have mostly been conducted among Western populations, and this has led to a more limited understanding of cultural differences among populations in different countries (Hägerhäll et al. 2018). Therefore, there is a need for more basic research that examines different cultural dimensions in diverse landscape contexts.

3. Research Methodology

This study is an initial pilot research project designed to examine cross-cultural differences in rural landscape preferences between Iranian and Swedish landscape architecture experts. The research specifically focuses on the psychological dimension of landscape perception, using three indicators: vegetation diversity, naturalness, and sense of place, which are frequently discussed in landscape preference literature.To address the cultural contrasts meaningfully, a purposive sampling strategy was adopted to select participants with extensive academic and professional experience in rural landscape studies.

This ensured that respondents would have sufficient knowledge and contextual insight to evaluate the indicators effectively. The sampling approach also aimed to include experts from diverse academic institutions and professional backgrounds to enhance the validity and reliability of the findings.

To gather the required data, a structured questionnaire was developed based on established landscape preference frameworks and adapted to fit the cross-cultural context of Iran and Sweden. The questionnaire consisted of clearly defined items measured on a Likert scale to quantify participants' perceptions. Before the final distribution, the instrument was pre-tested for clarity and cultural appropriateness.

Overall, this pilot study serves as a valuable preliminary investigation to test the feasibility and relevance of a larger, more comprehensive cross-cultural study in the future (Kunselman, 2024).

3.1. Participants

Landscape architecture experts from several Iranian universities and the Swedish Agricultural University (SLU) in Sweden participated in this study. Due to the specialization of the questions of this study and their inherent complexity, the participants were selected from landscape architecture experts. Proficiency in the terms and concepts of landscape architecture requires that study sampling be limited to professionals and the general population excluded from the study. Selective selection reduces bias and increases the focus of the study. In selecting Iranian and Swedish landscape architecture experts participating in this study, we tried to recruit them from among those who have experience working on rural landscape studies. While Swedish participants were affiliated with SLU, we clarified in the methodology that we recruited only those who had lived and worked in Sweden for an extended period and had practical experience in Swedish rural landscape studies. Similarly, all Iranian participants were natives and residents of Iran. This has now been explicitly stated in the text to ensure cultural validity in the cross-national comparison. Therefore, the interview questions were sent to 25 Iranian experts and 25 Swedish experts in the form of email invitations, and they were given two weeks to respond. By obtaining confirmation from the participants, we were assured of their willingness to participate in the interview. This email interview resulted in a response rate of 62% with 18 Iranians and 13 Swedes responding (For detailed sample statistics, please refer to Table 1).

Table 1- Profiles of the respondents engaged in the online questionnaire.

Country	Number of respondents	Expertise	Organizational affiliation
Iran	18	Landscape Architecture	SBU (Shahid Beheshti University), TU (Tehran University), TMU (Tarbiat Modares University), IKIU (Imam Khomeini International University), IUST (Iran University of Science and Technology)
Sweden	13	Landscape Architecture	SLU (Swedish University of Agricultural Sciences)

The two countries studied – Iran and Sweden – differ significantly not only in terms of habitat characteristics such as vegetation and topography, but also in climate conditions, which range from arid and semi-arid zones in Iran to temperate and subarctic zones in Sweden. These environmental contrasts are relevant as they shape cultural practices and landscape interactions in each context. To ensure the cultural grounding of our expert sample, all Iranian participants were native-born and residing in Iran, and all Swedish participants were long-term residents with Nordic cultural backgrounds and direct professional experience in Swedish rural landscapes. These efforts were made to strengthen the validity of cross-cultural comparison by ensuring that the expert evaluations were rooted in each country's cultural and environmental context.

3.1.1. Iranian (Iran)

The history of settlement throughout the Plateau of Iran has a long history (which dates back to the 4-5th millennium BC). Traditional Iranian landscaping, enclosed courtyards, and gardens in particular, have been regarded as constitutive sources of design patterns and conceptual context for architecture. The country of Iran, with an area

of 1,873,959 km^2 (the 17th largest country in the world), is located in the Northern and Eastern Hemispheres, on the Asian continent, and among the countries of West Asia. A major part of Iran, which is located in the dry belt of the world, consists of areas with harsh hot, and dry climate conditions and deserts. Most of these areas, which face severe limitations of water resources, vegetation, and some other natural features, at the same time, contain many very old and important urban and rural settlements. In addition, the average height is more than 1200 meters above sea level, and as a four-season country with a great variety of climates, such that the northwest has a mountainous climate, the north has a moderate and humid climate, the central regions have a hot-dry climate, and the south and southeast regions have a hot and humid climate.

According to the United Nations forecast, Iran's population in 2023 is estimated at around 88 million, with approximately 26% living in rural areas based on the 2015 national census. While this study focuses on expert evaluations rather than public opinion, such demographic data provides important context. The considerable portion of the population residing in rural areas reflects a strong and ongoing connection to rural landscapes, which may influence how Iranian landscape architecture experts perceive and evaluate these environments through direct experience or professional engagement. Furthermore, the formation and physical texture of these rural ecosystems are deeply shaped by a combination of geographical, social, economic, and cultural factors that vary across climatic regions of Iran (Zargar, 1999; Taghvaei, 2006). Iran caters to a wide range of preferences, climates, and weather conditions. The official language of the Iranian people is Persian (Farsi). The landscape architecture experts participating in the study were from the universities located in Tehran (as Capital) and Qazvin city in Iran (Table 1).

3.1.2. Swedish (Sweden)

Sweden is a country with an area of approximately 450,000 square kilometers and is considered one of the largest countries in Northern Europe. Sweden's geographic location is in the northern and eastern hemispheres, its western border is Norway and its eastern neighbour is Finland. The latest UN census estimates Sweden's population to be approximately 10.5 million in 2023, a significant fraction of Europe's population. The majority of Sweden's population, about 85 percent, lives in cities and larger settlements. Sweden has a diverse geographical landscape including forested areas, numerous lakes, and vast plains. About half of Sweden is covered by forest and the other half is covered by farmland and urban areas.Due to the geographical extension of Sweden, there is a wide range of climates in this country, from the southern temperate climate to the northern semi-polar climate. Swedish is the official languages of Sweden. The landscape architect professionals who participated in this study were based at the Swedish University of Agricultural Sciences, SLU, in Alnarp and Uppsala, in southern Sweden.

3.2. Questionnaire

This questionnaire was designed to examine the opinions of landscape architecture experts on three evaluation indicators of rural landscapes: diversity, naturalness, and sense of place. This questionnaire with 15 main questions, of which three questions are related to diversity, eight questions are related to naturalness, and four questions are related to the sense of place, was first prepared in Persian and then translated into English. To design this questionnaire, the survey methodology of previous related studies was used, for example, for the indicators of diversity and naturalness from Zhang et al., (2022) and Ólafsdóttir and Sæþórsdóttir (2020), and for the sense of place index from the studies of Jorgensen & Stedman (2001) and Mohammad-Moradi et al. (2022) were used.

In addition, adherence to the ethical standards that were guaranteed in the design of the questionnaire. Given that the main method of identifying preferences in landscape preference studies has typically been rating or ranking images (Kaplan and Kaplan, 1989). Based on this, all items were evaluated on a seven-point Likert scale, from 1=very little to 7=very much.

In addition, the normative and semantic equivalents of the questions in both Persian and English languages were carefully examined, and after the questionnaire was prepared in Persian, its semantic equivalents were translated into English. This survey was prepared for Iranian experts using the Porsline online survey platform in Farsi and sent as an invitation link to their email, and for Swedish experts it was designed in English using a university intranet system with the Netigate platform and emailed to them. In this survey, the

participants were asked to rate their opinion on the importance of three rural landscape concepts in 15 questions with a 7-point Likert scale, and three open questions were presented at the end of each section for the participants to express their opinions. An overview and interpretation of the selected indicators and their sub-components is presented in Table 2 to support a clearer understanding of the study framework.

Table 2. Summary of questionnaire framework.

Indicator	Main Question (in two languages)	Sub-indicator	Number of Questions per Sub-indicator
Experiences of Landscape Diversity	To what extent do you find that different features of vegetation contribute to your experience of landscape diversity?	- Different types of vegetation - Composition and configuration of vegetation - Open-ended question, a suggestion for the components of vegetation diversity	3 2 1
Experiences of naturalness	To what degree do natural and cultivated components of rural landscapes contribute to your experience of naturalness?	- Natural vegetation - Cultivated vegetation - Waterbody - Patterns and shapes of the landscape - Natural relief components - Paths and roads - Building components - Open-ended question, a suggestion for the components of naturalness	6 5 5 3 4 3 6 1
Sense of place	How important are different physical, semantic, and activity components for your experience of a sense of place?	- Physical components - Semantic components - Activity components - Open-ended question, a suggestion for the components of sense of place	4 5 7 1

Overview of the questionnaire structure, including main indicators, sub-indicators, and the number of questions assigned to each. The questionnaire items were rated on a 7-point Likert scale (1 = very low, 7 = very high).

3.3. Data Analysis

The statistical analysis of the aesthetic preferences of three indicators of vegetation diversity, naturalness, and sense of place was done using IBM SPSS 29 software. Descriptive statistics were used to determine the average responses for each sub-index and its items. After the assumption of normality of the data was rejected with the help of the Kolmogorov-Smirnov test and obtaining a p-value of less than 0.05, non-parametric tests were used to analyze the data. Since the study was conducted between two groups (Iranian and Swedish experts) with independent data, U Mann-Whitney comparative tests were chosen as the most appropriate test to investigate cultural differences and similarities. In addition, due to the relatively small size of the sample (N=31), the exact distribution of the test statistic (U) was used to obtain more reliable results (Table 3).

Table 3. Tests for differences in preferences for three Indicators across two respondent groups.

Indicators	Test Group	n	Analysis method
Experience of landscape diversity Experience of naturalness Sense of place	Iranian, Swedish	31	Kolmogorov-Smirnov test Mann–Whitney U test Exact Mann–Whitney U test

3.4. Limitations of research

In this study, the survey was developed to assess Iraninan landscape, and hence not adapted to fit into a Swedish landscape context, and hence concepts might be less relevant. While this could be seen as negative, we believe this is one of the

strengths of the study – there has been a tendency to theory development taking place in Western Europe/US and by testing a survey developed for an Iranian landscape context and experts in Europe, this provide something that are more novel.

Experts in landscape architecture were used because of the specialization of landscape assessment questions and their complexity. There is a need for background knowledge and familiarity with the specialized words of landscape architecture, which makes it limited to involving the general population in the study and only makes it possible for experts to answer them. Their inclusion reduces noise and bias, enhances the study's focus, and prevents response bias. Therefore, considering that the study is based on the preferences of landscape architecture experts, especially those with experience working on rural landscape studies, it basically includes a small statistical population in two countries. At the same time, this study has been done with the aim of emphasizing the importance of cross-cultural differences among landscape architecture experts. In addition, because the questionnaire was without visual questions and was based on the mentality of each expert towards the elements of the rural landscape, it is possible that it may be different from the experiences that are obtained in reality in these landscapes. However, since the questionnaire has specifically questioned three important indicators of aesthetics in the rural landscape with specific elements in this landscape, the results effectively show the effect of cultural differences on the responses of landscape aesthetic preferences. At the same time, more studies with a larger sample size and more types of cultural samples are necessary. Future studies can fill the knowledge gaps related to different kinds of rural landscapes and their relationship with human resources, and can also strengthen explanations for human and natural experiences.

4. Research Findings

In the U-Man-Whitney comparison test, the significance level of landscape aesthetic preferences regarding vegetation diversity was 0.68, which shows that there is no significant difference between the two groups. This average for Iranian experts is 4.95, which is slightly lower than the average of experts. Sweden, which was 5.25 (Table 4), but at the same time with a p-value greater than 0.05, this difference is not statistically significant. This means that there are similar preferences regarding plant species diversity as well as vegetation patterns and configuration between Iranian and Swedish experts (Table 4).

Table 4. Comparison of the differences in opinions of two groups of Persian and Swedish experts

Indicator	Sub-indicator	Mean (IR)	Mean (SW)	Sig.	Analysis item	Mean (IR)	Mean (SW)	Sig.
Diversity	Different types and structures of vegetation	4.95	5.25	0.68	Tree species (3 to 12 meters)	5.56	5.62	0.182
					Shrub species (1 to 3 meters)	4.83	5.15	0.745
					Herb species (0 to 1 m)	3.83	5.00	0.271
					Composition and configuration of vegetation	5.67	5.92	0.668
					Vertical structure	5.61	5.23	0.118

By comparing the indicators of naturalness (Figure 1) and sense of place (Figure 2), significant cultural differences were revealed, especially regarding the perception of naturalness, the average ratings showed that cultivated vegetation for Iranian experts had an average of 4.80 compared to Swedish experts with an average of 2.65 is more important and this difference of opinion is considered significant with p-value=0.001.

Specifically, the understanding of the naturalness of sub-indices such as gardens, vineyards, and agricultural land was higher for Iranian experts (sig<0.05). On the other hand, differences were observed in the perception of relief components, which showed that Iranian experts attach less importance to it than Swedish experts (Iranian=4.68; Swedish=5.75, p-value=0.012). Related to this index, the degree of naturalness of items such as bare rocks, heights with little vegetation, and sandy hills was ranked higher by

Swedish experts (sig<0.05).

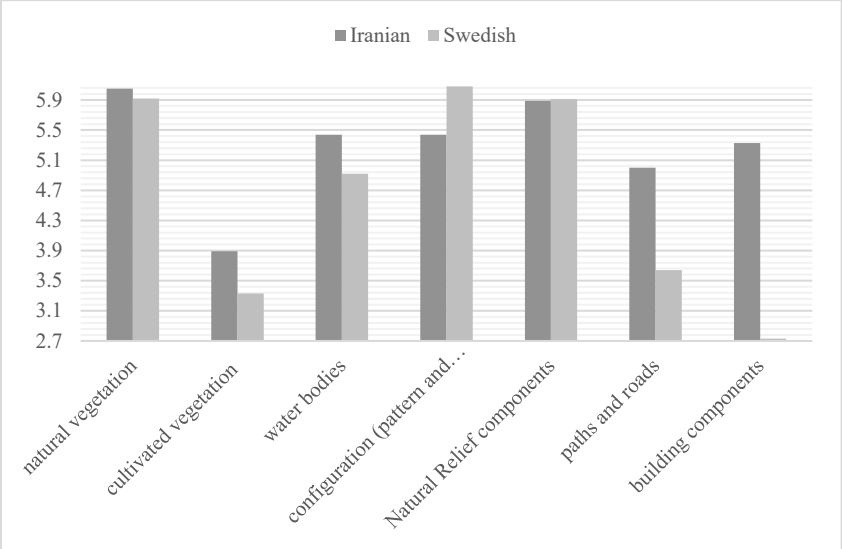

Figure 1. Comparison of difference of mean of sub-indicator of naturalness

In addition, for paths and roads, Iranian experts compared to their Swedish counterparts gave higher importance (Iranian=4.12; Swedish=3.27, p-value=0.052). These significant differences were also observed in some of the building components, so Iranian experts in architecture with canvas materials and rural stepped residential areas received higher scores than Iranian experts (mean = 4.72 to 5.33, p-value = 0.004) (Table 5). Examining these findings shows how cultural differences affect the perception of naturalness and highlights the importance of paying attention to local contexts in rural landscape planning and decisions.

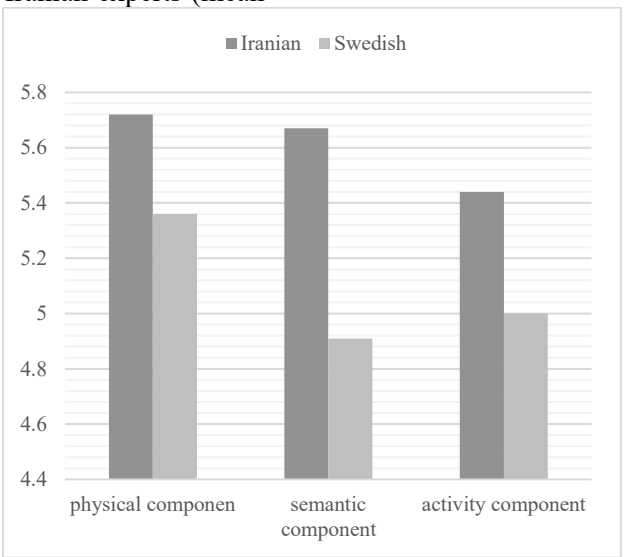

Figure 2. Comparison of mean of sub-indicator of sense of place

Contrary to the significant cultural differences that were seen in some aspects of the perception of naturalness, in other naturalness sub-indices such as natural vegetation (sig=0.382), water bodies (sig=0.095) and configuration (sig=0.095) with a p-value greater than 0.05 significant difference was not observed between experts of two groups and the sub-indices were evaluated similarly. These results indicate that the experts of the two groups have a common understanding of the importance of

natural vegetation, water bodies, and landscape organization and form.

Table 5. Comparison of the differences in opinions of two groups of Persian and Swedish experts on the naturalness of rural landscapes.

Indicator	Sub-indicator	Mean (IR)	Mean (SW)	Sig.	Analysis item	Mean (IR)	Mean (SW)	Sig.
Naturalness	Natural vegetation	5.17	5.04	0.382	Broadleaf forest	5.33	5.75	0.225
					Coniferous forest	4.39	4.58	0.863
					Mixed forest (broadleaf and coniferous)	5.33	5.68	0.516
					Natural pasture and bushland	5.83	4.75	0.144
					An area rich in vegetation	5.89	5.75	0.915
					Area poor in vegetation	4.28	3.75	0.528
	Cultivated vegetation	4.80	2.65	0.001	Planted forest	4.17	3.08	0.060
					Orchard	5.33	3.08	0.001
					Vineyard	4.83	2.50	0.001
					Irrigated agricultural land	4.72	2.25	0.001
					Dryland agricultural land	4.94	2.33	0.001
	Water bodies	5.14	4.75	0.095	Water spring	6.11	6.17	0.229
					Seasonal river	6.61	6.25	0.722
					Perennial river	5.61	6.08	0.294
					Narrow rural man-made water channels	3.67	2.92	0.170
					Fish breeding ponds with soundscape	3.72	2.33	0.007
	Configuration (pattern and shapes)	4.94	5.08	0.958	Various vegetation patch shapes	5.50	5.58	0.806
					Multi-layer vertical vegetation and complex structure	5.54	5.53	0.178
					Number and arrangement of roads around vegetation patches	3.89	4.33	0.559
	Natural Relief components	4.68	5.75	0.012	Bare rocks	4.50	5.91	0.017
					Heights with low vegetation	4.39	5.82	0.015
					Sandy hills	4.17	5.36	0.035
					Densely vegetated valleys	5.67	5.91	0.539
	Paths and roads	4.12	3.27	0.052	Asphalt road	2.83	2.36	0.182
					The dirt road	4.33	3.09	0.056
					footpath or nature trail	5.22	4.36	0.188
	Building components	3.95	2.80	0.010	Small industrial and commercial units	2.78	2.09	0.061
					The rural stepped residential area	4.83	3.00	0.007
					Rural flat residential area	3.72	3.00	0.160
					Architecture with canvas materials	5.61	3.09	0.001
					Architecture with modern materials	2.28	2.45	0.773
					Beehives with different colors	4.50	3.18	0.107

No standard descriptions or images were provided for each variable. Respondents interpreted the items based on their own expertise and professional judgment, which may introduce variability in interpretation for less concrete categories.

The analysis of the sense of place index leads us to interesting insights about the sense of place in Iranian and Swedish experts. While in general the sense of place does not show significant cultural differences (p values > 0.05), subtle differences are revealed in some sub-indices. One of the observed differences is related to various activities that are effective in creating a sense of place. Iranian experts rated the importance of some activity components with an average rating of 5.44 significantly higher than Swedish experts with an

average rating of 5 (Table 6). Especially, the importance of equipment such as electricity, water, gas, and the internet was significantly higher for Iranian experts with an average of 4.22 compared to Swedish experts with an average of 2.64 (sig=0.015). Also, holding cultural, religious, and ritual events was much more important for Iranian experts with an average of 5.39 than for Swedish experts with an average of 3.18 (sig=0.006).
On the other hand, no significant difference was observed in the physical and semantic components of the sense of place between the two Iranian and Swedish specialized groups. Physical characteristics such as the quality of materials and facades of buildings, rural residential context, historical monuments, and the overall historical value of the landscape had similar values for both groups (sig=0.815). In the same way, the evaluation of two groups of the sub-indices of the semantic components of the landscape including narratives, collective memories, kinship ties, and prosperity did not differ significantly (Sig>0.05). These findings emphasize the common understanding that exists among people of different cultures regarding the sense of place (Table 6).

Table 6. Comparison of the differences in opinions of two groups of Persian and Swedish experts on the Sense of place in the evaluation of the rural landscape.

Part	Sub-indicator	Mean (IR)	Mean (SW)	Sig.	Analysis item	Mean (IR)	Mean (SW)	Sig.
Sense of place	Physical component	5.72	5.36	0.815	Quality of materials and facades of buildings	5.06	5.64	0.311
					Quality of the rural residential context	5.56	5.73	0.824
					Historical and valued building	5.67	4.91	0.404
					The historic value of the overall rural landscape	6.00	5.36	0.356
	Semantic component	5.67	4.91	0.098	Safety and Security	5.33	4.82	0.493
					Narratives from the history of the village	5.17	4.55	0.487
					Prosperity and comfort	4.56	3.36	0.076
					Collective memories	5.72	5.36	0.272
					Kinship and ethnic ties	4.94	5.18	0.777
	Activity component	5.44	5.00	0.017	The existence of suitable walking paths	5.06	5.64	0.160
					Existence of suitable roads	4.61	3.91	0.087
					Equipment (electricity, water, gas, internet)	4.22	2.64	0.015
					Assistance to rural residents on occasions	5.28	3.91	0.065
					Holding cultural, religious, and ritual events	5.39	3.18	0.006
					Fun recreational activities	5.28	4.18	0.132
					Cleanliness and garbage collection	5.44	4.36	0.422

5. Discussion and Conclusion

5.1. Comparison of vegetation diversity

Table 4 and the analysis of the p-value results show that there is no significant difference between Iranian and Swedish experts in the prioritization of vegetation types and structures, including herbaceous, tree, and shrub species, despite the cultural and geographical differences. There is a high degree of commonality in rural landscape aesthetic preferences between the two expert

groups. In environmental psychology, there is a consensus on the relationship between complexity and preference (Ode et al. 2010). The result of this study suggests that also the indicators used to assess diversity are similar across cultural contexts. The lack of significant differences in vegetation diversity preferences between Iranian and Swedish experts suggests intriguing implications regarding the universality of aesthetic experiences in rural landscapes. While cultural and geographical factors often shape individuals' perceptions of beauty (Zargar,1999; Rosley et al., 2017; Hägerhäll et al., 2018) the observed similarities hint at underlying commonalities that transcend these influences. From a psychological standpoint, evolutionary theories propose that humans are innately drawn to natural environments due to their restorative qualities, irrespective of cultural background. Thus, while cultural differences undoubtedly exist, the convergence in aesthetic preferences regarding vegetation diversity underscores the potential existence of fundamental human values toward nature's beauty and functionality (Garrido-Velarde et al., 2018; Williams & Cary, 2002).

5.2. Comparison of naturalness

Comparing the preferences of Iranian and Swedish experts in the perception of naturalness using the results of Table 5 reveals interesting results about the influence of culture on landscape aesthetic preferences.

Important differences arise because Iranian experts show a more natural understanding of cultivated vegetation. This may reflect the cultural importance of traditional agricultural practices and the integration of nature into daily life in Iran. However, this interpretation is based on contextual assumptions, as the questionnaire did not explicitly include questions about participants' personal experience with agriculture or land-based livelihoods.

This preference difference can also be related to Iran's prevailing arid and semi-arid climate, which makes them value the abundance of green vegetation. In contrast, in Sweden, with its temperate climate and abundant natural resources, preserving natural landscapes and integrating environmentally friendly design elements is a higher priority. Swedish experts placed more value on natural highland components such as bare rocks and sand dunes, which is probably due to the lack of high mountains in southern Sweden. Socio-economic factors such as population density and economic development also significantly affect the perception of landscape aesthetics. Finally, different perspectives emphasize the deep impact of cultural norms, historical heritage, and collective experiences on the interaction of people with their environment (Shaw, 2019; King, 2016; Wall and Oswald, 2010).

Despite the differences, significant similarities have been identified across cultural differences in the assessment of naturalness sub-indices. Iranian and Swedish experts have the same preferences for natural vegetation, water bodies, and landscape configuration. Shared cultural preferences in key landscape elements emphasize that innate human preferences for specific environmental features are rooted in evolutionary adaptations and biophilic tendencies, thus aligning the results with psychological theories (Petrova et al., 2015; Hoyle et al., 2019). While subtle differences in landscape preferences emerge under the influence of culture, a shared understanding of the core elements of landscape emphasizes the universal aspects of human-environment interactions (Ulrich, 1993; Kellert & Wilson, 1993).

5.3. Comparison of sense of place

The analysis of the sense of place index shows a new perspective on the preferences of Iranian and Swedish experts regarding the cultural significance of rural landscapes. While significant cultural differences in the evaluations of the sense of place index are not shown in the results, at the same time subtle differences are visible. Some activities related to the sense of place are rated more important than their Swedish counterparts in the opinion of Iranian experts, and this shows how different cultural norms affect the sense of place. Especially for Iranians, access to essential services such as electricity, water, gas, and internet was emphasized and this highlights the role of infrastructure in shaping the identity of a place. In addition, the importance of holding cultural, religious, and ritual events among Iranians emphasizes the influence of cultural practices on the construction of place meanings and emphasizes the dynamic nature of place-making processes. Aligning with place attachment theories (Jorgensen & Stedman, 2001; Scannell & Gifford, 2010), these findings emphasize the importance of shared experiences in shaping people's connections with

place. In other words, based on the theory of place attachment, people establish deep emotional bonds with certain places through their interactions and experiences with the environment, which plays a central role in this process of common encounters. In short, shared experiences in collective activities while establishing one's connections with the place and its inhabitants; also strengthens the sense of belonging and collective identities.

On the contrary, despite these significant differences, no significant difference was observed in the physical and semantic components of the sense of place between Iranian and Swedish expert groups. Both groups showed similar evaluations of physical features such as the quality of materials and facades of buildings, rural residential context, historical buildings, and the overall historical value of the rural landscape. Similarly, the semantic components that included the symbolic meanings and cultural significance attributed to the landscape showed the same values across the cultural contexts. In examining the complex relationship between place attachment and landscape values, Brown and Raymond (2007) argue that people's emotional connections with specific places in their neighbourhood are influenced by the surrounding environment. Also, the study of the concepts of place attachment, place identity, and place memory by Lewicka (2008) reveals the importance of collective memory in the formation of people's place attachment. In this study, the observed similarities in how Iranian and Swedish experts evaluated the physical and semantic characteristics of rural landscapes align with existing theories on place identity and collective memory. These shared perceptions suggest that certain aspects of place attachment and landscape heritage may transcend cultural boundaries. Therefore, even when specific components of the sense of place differ, a common understanding of human–environment interaction often remains. While specific differences in preference were observed, the primary goal of the study was to highlight the significance of cultural perspectives in shaping rural landscape assessment frameworks.

It seems necessary to express this point that while this study has obtained considerable differences and similarities in the results of the naturalness and sense of place indexes of the rural landscape, the main emphasis of this research is on recognizing the different perspectives in the assessment of rural landscape aesthetics rather than the specific differences we found here and, the importance of understanding cross-cultural differences in landscape considerations.

A comparative analysis of rural landscape evaluations among experts of Iranian and Swedish landscape architects provides valuable insights into the influence of cultural, environmental, and socio-economic factors. This comparative study provides us with a new understanding of rural landscape aesthetics and by examining three indicators of vegetation diversity, naturalness, and sense of place, it clarifies similarities and differences in cultural contexts.

Aesthetic preferences in vegetation diversity are the same among Iranian and Swedish experts, despite the cultural and geographical differences. These shared preferences stem from universal values related to aesthetics and awareness of the role of vegetation diversity in habitat health, microclimate regulation, and biodiversity enhancement, which transcends cultural influences. By recognizing the common understanding that exists among different cultures of the importance of biodiversity and ecological balance, the potential for intercultural cooperation in landscape planning and decision-making is also provided.

The observed cross-cultural differences between Iranian and Swedish landscape architecture experts can be interpreted in light of cultural, environmental, and socio-economic contexts, which are widely discussed in the literature as key influences on landscape perception. While these factors were not directly measured in this study, they provide a meaningful framework for understanding the findings. This study provided a valuable perspective for the assessment, planning, and management of rural landscapes so that with cultural awareness in planning processes, we can cultivate landscapes that not only enhance aesthetic qualities but also ensure sustainability and cultural identity. By understanding these differences, architects and landscape planners can develop cross-cultural collaborations and create and design spaces that reflect human experiences and values.

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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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Original Article

تفاوت‌های میان‌فرهنگی در ارزیابی مناظر روستایی: مطالعه‌ای در ایران و سوئد

مژگان قربان زاده*[۱]، سید حسن تقوائی[۲] ، سعید نوروزیان ملکی[۳]، آسا اد سانگ[۴]

۱. دانشجوی دکترای معماری منظر، دانشگاه شهید بهشتی، تهران، ایران.
۲. دانشیار معماری منظر، دانشگاه شهید بهشتی، تهران، ایران.
۲. دانشیار معماری منظر، دانشگاه شهید بهشتی، تهران، ایران.
۳. استاد معماری منظر، دانشگاه علوم کشاورزی سوئد، لوما، سوئد.

چکیده مبسوط

۱.مقدمه

مناظر روستایی به‌عنوان بخشی ارزشمند از میراث فرهنگی، در معرض تهدیدات گوناگونی همچون تغییرات کاربری زمین، گسترش شهرنشینی، و نادیده‌گرفتن ارزش‌های بصری و فرهنگی قرار دارند. درک ادراکات فرهنگی نسبت به این مناظر، برای برنامه‌ریزی و مدیریت پایدار آن‌ها، نقشی اساسی دارد. با توجه به جهانی‌شدن و گسترش تعاملات فرهنگی، بررسی و مقایسه ترجیحات زیبایی‌شناختی در بسترهای فرهنگی متفاوت، به‌ویژه در ارزیابی مناظر روستایی، اهمیت فزاینده‌ای یافته است. هدف این پژوهش، بررسی تفاوت‌های میان‌فرهنگی در ارزیابی مناظر روستایی میان متخصصان ایرانی و سوئدی معماری منظر بر اساس سه شاخص تنوع، طبیعی‌بودن و حس مکان است.

۲. مبانی نظری تحقیق

پژوهش حاضر بر اساس چارچوب نظری زیبایی‌شناسی منظر و با تکیه بر مفاهیم بنیادین در ارزیابی مناظر طراحی شده است. سه شاخص اصلی در این مطالعه شامل *تنوع* (به‌معنای پیچیدگی و تنوع پوشش‌های گیاهی)، *طبیعی‌بودن* (میزان درک طبیعی بودن مناظر در برابر مداخلات انسانی)، و *حس مکان* (پیوند عاطفی و معنایی انسان با فضاهای خاص) از نظریه‌های موجود در ادبیات منظر استخراج شده‌اند. این سه شاخص به‌طور هم‌زمان ابعاد عینی و ذهنی درک مناظر را پوشش می‌دهند.

۳. روش تحقیق

این پژوهش به‌صورت پیمایشی و با استفاده از پرسش‌نامه ساختارمند انجام شده است. نمونه شامل ۳۱ متخصص معماری منظر (۱۸ ایرانی و ۱۳ سوئدی) بود که از طریق دعوت‌نامه‌های ایمیلی و پلتفرم‌های آنلاین در ایران و سوئد به پرسش‌نامه پاسخ دادند. پرسش‌نامه شامل ۱۵ سؤال اصلی بر مبنای طیف لیکرت ۷درجه‌ای و سؤالات باز در انتهای هر شاخص بود. تحلیل داده‌ها با استفاده از نرم‌افزار SPSS و آزمون‌های ناپارامتریک (کولموگروف–اسمیرنوف و من–ویتنی یو) صورت گرفت.

۴. یافته‌های تحقیق

در شاخص *تنوع*، نتایج نشان داد که میان دو گروه تفاوت معناداری وجود ندارد؛ هر دو گروه ترجیحاتی مشترک نسبت به تنوع پوشش‌های گیاهی (گونه‌های درختی، درختچه‌ای و علفی) دارند. این همگرایی، احتمالاً ریشه در ترجیحات جهانی نسبت به مناظر موزاییکی و متنوع دارد که توسط پژوهش‌های پیشین نیز تأیید شده است.

در شاخص *طبیعی‌بودن*، تفاوت‌های فرهنگی برجسته‌ای مشاهده شد. متخصصان ایرانی، عناصر کشت‌شده‌ای همچون باغات و زمین‌های کشاورزی را طبیعی‌تر درک می‌کردند، در حالی که متخصصان سوئدی، عناصر طبیعی دست‌نخورده مانند صخره‌ها و تپه‌ها را ترجیح می‌دادند. این تفاوت‌ها می‌تواند ناشی از تفاوت در شرایط اقلیمی (خشک در ایران و معتدل در سوئد)، نوع تعامل تاریخی با طبیعت، و اهمیت معیشتی کشاورزی باشد.

در شاخص *حس مکان*، تفاوت‌های جزئی در زیرشاخص فعالیت‌ها مشاهده شد. برای نمونه، عناصر زیرساختی مانند دسترسی به آب، برق، گاز و اینترنت و همچنین برگزاری مراسم فرهنگی و مذهبی، برای متخصصان ایرانی اهمیت بیشتری داشتند. با این حال، در ارزیابی ویژگی‌های فیزیکی و معنایی حس مکان، هر دو گروه درک

*. نویسندهٔ مسئول:
دکتر مژگان قربان زاده
آدرس: گروه معماری منظر، دانشکده معماری و شهرسازی، دانشگاه شهید بهشتی، تهران، ایران
پست الکترونیکی: Email: m_ghorbanzadeh@sbu.ac.ir

مشابهی داشتند. این همگرایی می‌تواند نشان‌دهنده درک جهانی نسبت به عناصر هویت‌بخش در مناظر روستایی باشد.

۵. بحث و نتیجه‌گیری

این مطالعه نشان می‌دهد که در کنار برخی تفاوت‌های فرهنگی، اشتراکات قابل توجهی در ترجیحات زیبایی‌شناختی متخصصان ایرانی و سوئدی وجود دارد. این اشتراکات می‌توانند پایه‌ای برای همکاری‌های فراملی در برنامه‌ریزی مناظر روستایی ایجاد کنند. در عین حال، تفاوت‌های مشاهده‌شده نیز ضرورت درنظر گرفتن زمینه‌های فرهنگی، اقلیمی و اجتماعی در طراحی و ارزیابی مناظر را یادآور می‌شود. یافته‌های این پژوهش می‌تواند به توسعه چارچوب‌های ارزیابی حساس به فرهنگ و طراحی فضاهایی منجر شود که هم پاسخگوی ارزش‌های زیبایی‌شناختی انسان باشند و هم هویت فرهنگی فضاها را حفظ کنند.

کلید واژه‌ها– تفاوت‌های میان‌فرهنگی، ترجیحات منظر، تنوع، طبیعی‌بودن، حس مکان، ارزیابی منظر روستایی.

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Original Article

Architectural Strategies under the Influence of Rural Business Space & Place (Case: A Delphi Survey in Babolkenar, Iran)

Morteza Maleki Charkovani[1], Farhang Mozaffar*[2], Mohammad Ali Khan Mohammadi[3], Bahram Saleh Sedghpour[4]
1. Ph.D. Candidate in Architecture, Iran University of Science & Technology, Tehran, Iran.
2. Associate Prof. in Architectural, Iran University of Science & Technology, Tehran, Iran.
3. Associate Prof. in Architectural, Iran University of Science & Technology, Tehran, Iran.
4. Associate Prof. in Educational, Shahid Rajaee Teacher Training University, Tehran, Iran.

Abstract
Purpose- To examine the architectural and economic strategies of rural business spaces from the perspective of experts.
Design/methodology/approach- In synthesis of literature review, after reviewing 47 articles found, the relationships between variables in first relation between R.B.S & R.B.A: The components were extracted & converted to 8 components based on the Roberts synthesis method. But since the main unknown of the research was Architecture & speciology of the building, according to the gaps extracted 8 types of architecture were compiled & the axial coding & 8 research content was extracted from it. Then the content-target-table was generated. In the current step, since theoretical foundations were insufficient, a combined research method was used & the Delphi research method was used in this phase of research. The study community had 41 elite subjects (rural-urban-architectural-entrepreneurial). To analyze the data collected based on the Q factor analysis extracted results & ultimately the most influential factors on the RBS & RBP from each of the specified spatial attributes. The results of the study indicate that in total, 3 categories are emphasized, 5 categories in the 2nd priority, 3 categories are not generally approved by this community, but in some factors, it is emphasized.
Findings- In response to the research question of what the classification and perspective of the community of experts are on the architectural strategies of rural business spaces, there are 7 views in this regard: Requirements for multi-purpose spaces (second activity): separate, isolated, sanitary, and Indigenous (12.67%); Second activity in the form of multi-purpose buildings or increasing the area for the construction of a sales place in rural buildings (11.49%); The sales Place is equipped with isolation (10.07%); Sanitary and isolated interior architecture (cultivation space) (8.06%); Indigenous model of Health and isolation (7.85%); Reconstruction of old buildings by equipping, and separating and increasing the business area (7.68%) and etc.
Reseach limitation/implications- Interdisciplinary and lack of coherent studies and literature on Rural Business Architecture (R B A) and multi-purpose & hybrid building and architecpreneure (architecture + entrepreneurship).
Originality/value– Research started with the hypothesis of multifunctionalization of production spaces, but ultimately concepts such as health & reducing the penetration of the second activity pest were given priority over multifunctioning & combining activities. There for the priority of health concepts & sales & second activity is the innovation of this research.
Keywords- RBS=Rural business space, RBP=Rural business place, RBA=Rural business architecture, SEPBS (Sustainable employment program of the Babolkenar system), B&P = Breeding and processing, S&T = Sales and tourism

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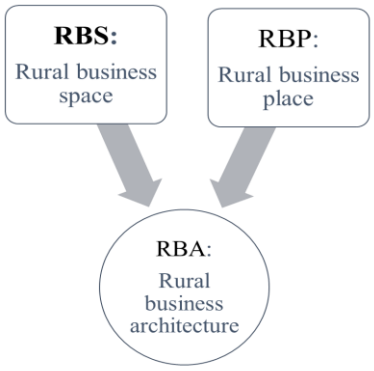
* ***Corresponding Author:***
Mozaffar, Farhang, Ph.D.
Address: Department of Architectural, Faculty of Architecture & Urbanism of Iran University of Science & Technology, Tehran, Iran.
Tel: +98217322001
E-Mail: Mozaffar.farhang@gmail.com

1. Introduction:

Although the problem of the village, migration & the impact of the business space creation rate on it is a global problem, it is more difficult in developing countries & more complex in the vast, dry & sanctioned country of Iran. Economic dimensions & business space & rural employment is among the topics that have recently been addressed by the authorities (Vice President's office for Rural Development) in the last half decade (2006 onwards), & the reason for this issue is the emptying of half of the villages of Iran & along with cultural & environmental issues, the lack of jobs & business in the village as an important reason for the migration of villagers & the emptying of villages (Qasemi ardahali, alizadeh, 2012, Hajarian et al, 2016, 2021). The research question is what impact has R.B.A had on local economies, ongoing development plans & unplanned sporadic guidelines, & how can it help improve the state of business & rural economy? The discussion of rural production in Iran starts from the point where what is the relationship between business architecture & improving the economic situation of villagers? **Answer:** architecture is the place of business, & economic justification is the largest relationship between economy & business, & no business starts as long as there is no economic justification (the difference between long-term profit & initial investment). But in a situation where the economy is unstable (like Iran, which is developing, sanctioned & with a constitutional & non-free economy), the economic justification is also temporary & transient, & in a situation where the village has little economic capacity for initial investment, this economic justification will become weaker & more fragile & temporary on the other hand, the difference in development goals (national development – Rural Development) & the intersection between different levels of development & rural planning / design & R.B.A makes architecture unable to adequately adapt to programmatic & economic conditions & only operates on predetermined standards such as the Neufert standard & National Building Regulations.[1]

But what is the solution? There are two hypotheses in the research: 1-the dialogue of multi-functional agriculture & villages & along it multi-functional & hybrid architecture & diversification & flexibility of architecture allows the occurrence of various businesses in the building due to the temporary economic justification over time. 2-primitive, local & even contemporary indigenous architecture (as opposed to standard urban architecture) formed by local people of different generations & more adapted to the indigenous economy can be part of the solution to these problems. It is clear that the common chapter of these two assumptions is stronger strategies, & the development of current Indigenous strategies can guide research in the optimal type of R.B.A & the development of local businesses, according to the discourse of multi-function agriculture (M.F.A).



1. The research assumption is that local and indigenous rural architecture also has its own rules. Rules that may not seem as important as national standards and laws at first, but in terms of cohesion and connection with the fragile local and indigenous economy, have worked for many years and have not caused the emptying of villages in the specific climate of Iran.

2. Research Theoretical Literature

2.1. Theoretical foundations of research

Employment consists of one sector: work but business consists of two sectors: work & sale. The concept of business has a meaningful relationship with the concept of entrepreneurship and is more comprehensive than the concept of employment creation. Some theories (welfare state) favor the theory that the state supports production by buying guarantees. So they're in favor of the employment plan. But some theories (neoliberal) advocate giving the producer the responsibility to sell, which is why they support entrepreneurship. That is, the role of business, sales and tourism spaces alongside cultivation and production spaces should be considered in rural business architecture.

RBS: rural business space- Rural business space is a combination of Business Space & Rural Business. Creative rural theory says that 90% of urban jobs in the village can also be done and generalized. But the rural business space is usually done in a limited village environment based on the local economy, and the "village-village" & "village-urban" communication is raised in it. In the meantime, tourism can play an important role as an intermediate sales space.

RBP: rural business place- Location of rural businesses in relation to each other and connection with access road and entrance and center and edges and rural boundaries and document, legal and environmental restrictions are among the things that require the connection of the chain of rural business spaces and location in relation to the lifestyle and rural economy, and are less worked on and research.

As a rule, the livelihood and sales space and the village market-cities are the backbone of the place and are created in busy and crowded places, usually at the beginning of the village, and other spaces are created in proportion to it, and in the village, housing is the second priority of the place and agricultural and livestock spaces are the third priority.

RBA: Rural Business Architecture- The aim of this study is to establish the relationship between R.B.S rural business space and R.B.P rural business place with the RBA rural business architecture to be seen.

The question is, how can Architecture help improve and develop rural business spaces?

Relationships of research variables *(R.B.S & R.B.P to R.B.A)-* Relationships in two dimensions in the first R.B.S to R.B.A: it is divided into three areas: 1 - tourism (second home, tourism) 2 - mortgage & Resilience Improvement Projects 3 - Indigenous economy & economic developments in the second dimension into three areas: 1 - economic (positive & negative dimensions) 2 - socio-cultural (positive & negative dimensions) & physical dimensions.

Highlights of the architecture of rural business spaces: R.B.A- in the development of a comprehensive program in the rural housing sector, it is proposed to consider the specific characteristics of rural life such as the way of livelihood, income of villagers, the culture governing rural life, etc. (Qasemi ardahali & alizadeh, 2012) because the improvement of rural housing has played an important role in making changes in the components of rural housing. The most significant changes in the economic performance of rural housing are among the components examined... It can be said that the economic functioning of rural housing in exemplary villages is passing mainly from the traditional form of rural economy to diverse & new forms & mainly services. (Einali et al, 2016) housing renovation has increased the level of satisfaction of residents with the physical dimensions of housing, including increasing the strength of the building & the type of materials used; but due to the elimination of living spaces & the decrease in the level of housing unit infrastructure, the household economy has been affected & reduced the level of satisfaction of residents. (Bahmani et al, 2021) the impact of housing renovation on improving the physical space of the villages is to maintain the beauty & resistance of the building in the villages studied. (Shamsuddin et al, 2011) other economic indicators include the length of the construction period, the average price of building one square meter, how to provide human resources, the ratio of the cost of building to household income, the selling price of one square meter, the financial institutions of housing supply (ceredit/ Loan Fund) among the physical indicators can be reduced to the basement level, the area of bio-spaces/ living

spaces / common bio-living spaces[1]/ living-density, the number of rooms based on bio-living & common functions, the durability of materials, structures & the ratio of the level of occupation (Sartepipour 2005) was noted. In the context of the economic economy, due to the incompatibility of the "plan" of some built housing with the type of production activity, including livestock farming in the villages, indirectly caused more than 75 percent of the villagers to turn away from such activities in the villages. Therefore, although the renovation[2] of the House has provided the relative comfort of the villagers in terms of safety & beauty, it has also caused an indelible change in the living & financial conditions of the villagers. (Shamsuddin et al, 2011).

2.2. Open codes & components extracted from previous articles: (relationship between R.B.S to R.B.A)

Reducing the cost of building- (influenced by the local economy to rural buildings): includes moderation in decoration, moderation in the size of the building, avoidance of identification, biological simplicity, simplicity of the building form, simplicity of the building facade, reconstruction of old houses, providing materials At Reasonable Prices to villagers through the formation of cooperatives or unions for the distribution & sale of materials & materials (kharabati et al, 2021- Nikpour et al, 2017 - Maler et al. 2004).

Attention to traditional methods of construction & living spaces- The ceiling of the living space (spinning wheel placement room) of specific microspaces, canvas materials, strengthening traditional practices, natural & local technology, natural & local construction methods, scale dimensions & natural & local proportions, optimal exploitation of nature also leads on the one hand to reduce costs & maintain the dynamics of the rural economy, strengthening the criteria for the construction of rural housing, including technology, construction method, scale dimensions & proportionality to the natural features of the village (kharabati et al, 2021, Ebrahimian et al, 2021). when rural architecture has been adapted to nature & has optimized the exploitation of existing facilities, its sustainability is relatively increased in all areas It's found. In this regard, the role of roofing materials in rural architecture is more significant, especially in the field of preserving & developing original rural architecture & making it resilient by revising & strengthening traditional practices. The source of income of the villagers is based on activities such as agriculture, livestock, local industries &... It has also had a great impact on the structure & shape of rural architecture (Pirzad & Riahi Mogham, 2023).

New methods, current needs of women & villages/ villagers- including greenery (green wall, green open space), new methods of construction, landscape & views towards the climate, semi – open spaces overlooking the crossings, building orientation, communal recreation spaces, improving biological spaces, increasing facilities, beauty - beautification, meeting the needs of the village (the dominant needs of the village - the sample household-the needs of women) urban needs, safety, resistance & strength (Rahmani & khodadi, 2011, kharabati et al, 2021, Azizpour & Sadeghi, 2019, Bahmani et al, 2021, Maler et al. 2004)

Increased agricultural production activities, livestock farming & even services- As a result of the change in economic & social conditions, changes have been made in the private space of livestock, fodder warehouse, bread cooking place,

1. In literature and research, there are two different and important areas in rural housing that are less paid for in urban housing: a - biological area and rural housing B-livelihood area and domestic and family business a major part of the problems is that in New rural housing, the livelihood area was weakened by urban housing, and no plans have been seen to separate it from the residential area. Due to the incompatibility of the biological sphere, the livelihood and business sphere, a large part of the livelihood performance has been eliminated, and the main research issue is the elimination of this part of Housing and strategies out of this challenge.

2. As seen in the literature review, the challenge of modernization/ localization in many cases does not imply modernism in its international sense. In fact, in the village, renovation means urbanization and the use of factory materials (cement and block) instead of materials produced in the rural environment (the use of soil and wood from trees as raw materials for construction) and more attention to the field of biology versus the field of production (agriculture, livestock farming) ... It is.

fossil fuel storage place, kitchen space, open kitchen, private sleeping & reception space & porch. These changes have led to the development of rural phisical & services. (Fazlali et al, 2018). the farmer & livestock occupational group has had the most changes & decreases in their housing performance after receiving credits. Most of the rural housing space after the implementation of the housing Resilience Plan & along with the modernization of rural housing, following the style & pattern of urban housing due to the proximity of the villages studied to the city of Zanjan city & changes in the quantity & quality of space, housing has been more intense towards changing functionality & bio-functionality. (Mohammad Yeganeh et al, 2017) the improvement of rural housing has played an important role in making changes in the components of rural housing. So, these changes can be seen in the apparent layout & mapping & the widespread model of urban housing, the removal of some of the basic components of old housing, as well as the improvement of access to infrastructure facilities & services. Also, due to the location of most of the villages studied in the Ravansar- Paveh communication road, in the two periods before & after the partial improvement of housing, it is dedicated to providing services. So, it can be said that the economic functioning of rural housing in exemplary villages is passing mainly from the traditional form of rural economy to diverse & new forms & mainly services. (Einali et al, 2016)

Combining & increasing activities- Things like the fodder warehouse, the spatial organization of rural housing in the livelihood area, are referred to only as spaces such as warehouses & toilets. Changes in the private space of livestock, fodder warehouse, bread cooker, fossil fuel storage, kitchen space, open kitchen, private space of sleeping & reception & porch / toilet: the livelihood space of the toilet has made it possible for Rural Housing to be flexible over time. Non-agricultural domestic activities: part of the housing is dedicated to providing services such as mechanical, carwash, punching & passenger services & employment for non-agricultural activities among men. Economic indicators of Housing, vehicle, number of livestock, ownership of the garden, history of receiving credits, type of job & income & percentage of income earned from the non-agricultural sector (Fazlali et al, 2018, Taghavi et al, 2021) the second rural house is one of the sources of increased activities & rural density. The density of a rural area is associated with second homes & consequently more production developments. These impacts include job creation, protection of cities, a range of forward & backward economic links, as well as the supply of flexible tourism accommodation. Urban leisure tourism based on high-standard second homes seems to offer the best potential for sustainable rural economic growth. (Visser, 2004, Gallent, 2014, Mohammadi & Mirtaghian Rudsari, 2017, Kiyani Salmi, & Shaterian, 2017, Ghorbanpour et al, 2023).

In the negative dimension the interaction of architecture & rural economy is divided into 3 components:

Avoidance of some features of urban housing including quasi-urban housing- Housing has been oriented towards changing functionality & bio-functionality. / Changing the traditional fabric of villages / building housing from traditional to modern form / increasing uncontrolled construction / economic functioning of rural housing from traditional form of rural economy to diverse & new forms & mainly services / apparent design & mapping & extensive modeling of urban housing, eliminating some basic components of old housing / improving access to infrastructure facilities & services (Gelin Maqam, 2009 , Rahmani & Khodadi, 2011 , Einali et al, 2016:201)

Priority to preserve agricultural land over the construction of tourist towns- Some article code: Changing the use of agricultural & horticultural l& / most of the consequences of tourism on garden & agricultural l& / agricultural l& for the construction of villas (tourist towns) / changing the use of l& / changing the use of gardens & agricultural l&- drastic changes in use / converting rural gardens & farms into domestic gardens in villas / agricultural sector contribution in rural areas of this area is decreasing due to drastic changes in the use of agricultural l& for the construction of villas (tourist towns). (Taghavi et al, 2021, Ramazanzadeh Lesboi, 2011 , Fazlali et al, 2018).

Incompatibility of agricultural & domestic livestock spaces with biological spaces- Due to the incompatibility of the "plan" of some built housing with the type of production activity, including livestock farming in the villages, indirectly causing more than 75% of villagers to turn away from such

activities in the villages / the rate of production of housing in the time after receiving reduced credits / the livestock & farmer occupational group after receiving credits will lead to the greatest change & decrease in housing performance / decrease in agricultural production related to housing in these areas. / Elimination of living spaces & reduction of the infrastructure of the housing unit of the household economy, change in the private space of livestock, fodder warehouse, bread cooking place, fossil fuel storage place, kitchen space, open kitchen, private space of sleep & reception & Ivan (Shamsuddin et al, 2011:63 , Bahmani et al, 2021:59, Fazlali et al, 2018).

Summary- After categorizing the objectives & considering the solutions a total of 8 components were extracted from the synthesis of the study which were categorized in Table 1:

Table 1. Selected objectives of the relationship between economic space/architecture (taken from synthesis research)

Combination of activities	Quantitative, qualitative increase in production & economic productivity	Reduced cost of production & construction	Employment of more women & villagers	Location potential	construction approaches (local & new)	increased agricultural, non-agricultural & service space	Incompatibility of urban space & production

2.3. Strategies, results & research gap

Although each component has a gap in research, the unknown & the main gap in research is architectural typology & speciology. Business architecture is the place of business activity that should normally be economically justified in the context of a poor indigenous economy. The research hypothesis was that multifunctional & hybrid architecture could solve part of the problem. With this assumption the research chats were re examined:

Combining & increasing activities- In architectural design, two ways were considered to combine & increase activities: 1-home businesses & combine the business space with the housing space & the production & biology sector, if raised in the pathology sector, the incompatibility between the biology & production sector in quasi-urban housing has caused a large part of the livestock farmers to turn away in housing. But the right combination & how these two areas are combined can be seen as an important research gap. 2-in research (essay & thesis) in recent years, multi-purpose business spaces: hybrid buildings & multi-purpose agriculture are one of the strategies for Rural Business Development & therefore are raised as the frontier of Science & a new topic. In fact, the process of economic transformation has only improved the living spaces & increased the facilities of the villagers, but the livelihood production spaces in rural housing have been neglected as a loop of the production system over the years & are considered a research gap, & in the organization of rural housing space in the livelihood area, only spaces such as warehouses & toilets have been mentioned, while the field in rural housing also includes Gardens, livestock & agricultural l&, which is the most important part of rural housing.the use of agricultural elements (garden, farm, pasture & livestock) in rural architecture is an inevitable necessity. (Taghavi et al, 2021, Maleki et al, 2025)

Addressing the current needs of new methods & increasing the role of rural women- The plan, construction & production approach in the village should be a bilateral approach. Both attention to local & indigenous practices & attention to unspoken needs & new lifestyles. Today's villages have faced widespread migration of young people & elites, leaving only a fraction of young & elderly women. On the other hand, attention to market & tourism & processing spaces (non-agriculture spaces) requires more attention to new models & the use of materials, equipment & facilities,

especially new infrastructure (including the internet & electronic marketing) in the rural area. This is because of the connections of the urban village & globalization as a whole, & it varies from village to village. In this study, two poles classified rural business spaces. that are audience-oriented & are mostly assigned based on the audience's opinion, & work spaces (breeding & product processing spaces (livestock, poultry, insects & aquatic animals) as two poles of dangerous rural work. (Maleki et al, 2025)

Summary of the objectives of architectural speciology- Attention to bipolar: 1-breeding & processing 2-Sale and Tourism have been considered in this category, while considering domestic spaces for employment & micro-scale, as well as independent/ dependent spaces as well as multi-purpose/ single-purpose, according to the research hypothesis:

Table 2. Architectural design of business spaces in the research gap summary:

Multi-purpose sales & tourism	Single-purpose sales & tourism	Seasonal home sales & tourism	Permanent home sales & tourism	Architecture & business	Seasonal home breeding & processing	Permanent home breeding & processing	Independent single-purpose breeding & processing	Independent multi-purpose breeding & processing

3. Research Methodology

3.1 Geographical Scope of the Research

The babolkenar district is a district of Babylon County, Mazandaran Province, and is located in northern Iran. It is located in the south of the city of Babylon and is one of the green and climatic areas of the city. The exact geographical location of Babylon can be expressed as south of the city of Babylon, Mazandaran Province natural features: a green area with a temperate climate and foothills. Babylon is the most populous city in Mazandaran Province and the second most populous city in northern Iran. Babylon has 6 wards, 7 towns and 673 villages. The county seat is the city of Babylon. It is the capital of the city of Babylon, between 36 degrees and 34 minutes and 15 seconds north latitude and 52 degrees and 44 minutes and 20 seconds east longitude from the Greenwich Meridian, 17 kilometers south of the Mazandaran sea and 25 kilometers north of the Alborz mountain range, and Babol river also passes through the city. To select the site, at first, the country's rural employment programs (production-oriented village) were referred. A lot of projects are planned in Iran about the production-oriented village. A large number of single-village projects have been piloted by the Budget office, several general provincial preparation projects by the budget program and several provincial sustainable employment projects of the system, of which 7 projects have been piloted in the form of a trilateral memorandum of understanding (The Budget Offic-Governor's office- Housing Foundation) and three projects have reached the final stages (Babolkenar of Mazandaran- Tarom of Zanjan- Gachsaran of Kohkiloie and Boyer Ahmed). In this study, among the three employment projects implemented, the Babolkenar system was selected as a case study due to the items of Persian language and proximity to Tehran. Then, during the initial field visit, it was determined that in District 7 of the system, there are tourism potential, including the Lofor dam and the seven waterfalls, and the employment plan of the system also emphasizes this issue, and the activities of the rural boiling itself in this area are based on this issue. That's why the area of the 7th District of the Babylonian system was considered as an example.

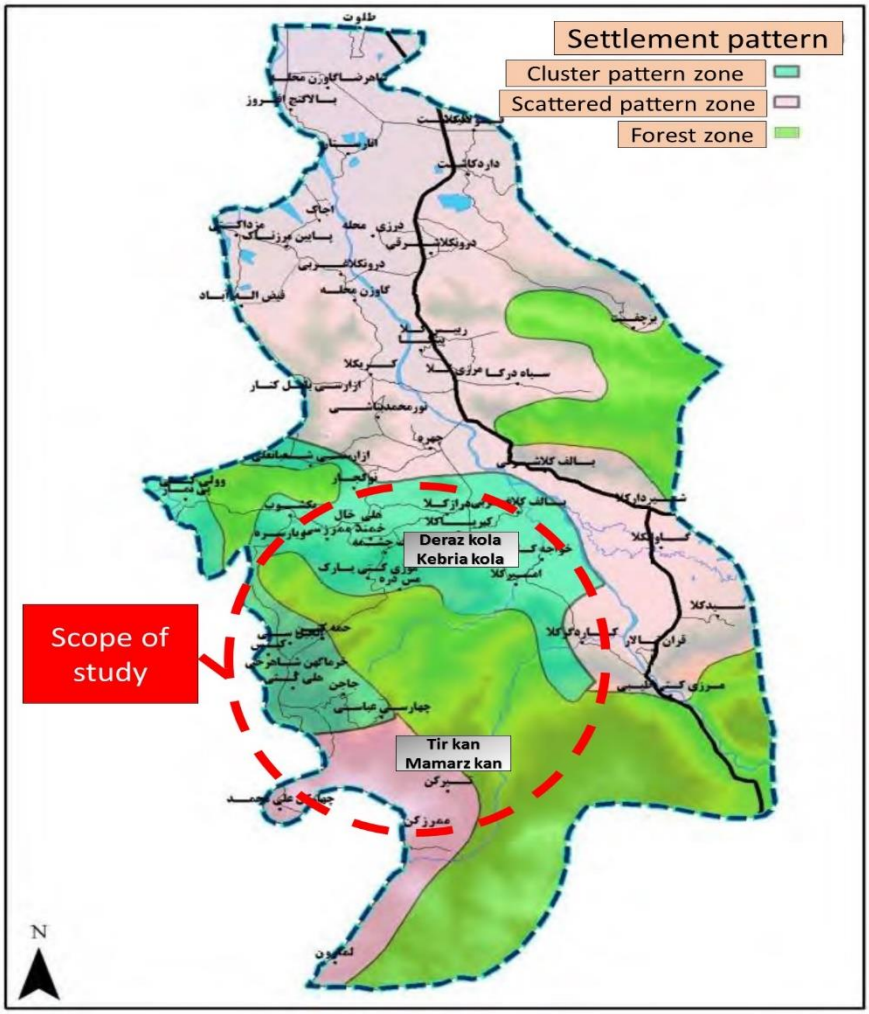


Figure 1. Area of study of the Babylon project aside
source: sustainable employment plan of the Housing Foundation

3.2. Methodology

Due to the interdisciplinary nature & the fact that research is done in the field of communication between R.B.S & R.B.P to R.B.A, not many theoretical foundations were found in the relationship between them, but from the literature review, about 46 articles in various fields were identified & categorized into a table of contents. But since the theoretical basis for this research was insufficient & the nature of the research was exploratory, the combined research method (quantitative-qualitative) was used. In the qualitative stage, the Delphi research method was used for this research to achieve the initial classification & thought groups related to the research topic using the opinion of interdisciplinary specialists. The tools used were the target-content table & the Q factor analysis method & the software used were the spss. The statistical community was selected using specialists in the fields of rural, architectural, urban planning & entrepreneurship. Due to the nature of being rural, the opinions of the elite of the rural area (about 50%) were used more. On the other hand, because the nature of the research is interdisciplinary & these professors are not completely obvious, a non-r&om snowball sampling method was used in such a way that professors from the Faculty of the Universities of I.U.S.T, Tehran, Shahid bahshti, kharezmi were invited to work in the fields of Rural Development &/or architecture, & then asked them to introduce other professors in this field. In the case of sampling volume, since Delphi studies involve

between 10 & 50 people, the sample volume advanced to 41 people & reached theoretical saturation. The unstructured interview measurement tool & questionnaire were of the Likert 10 spectrum type (numbering from 1 to 10). 8 the objectives of the literature review were converted into research objectives with a few changes.

2-5- Axial coding: from the combination of two axes produced from open coding, the axial coding Table (Table 3) was created. From examining the intersection of horizontal & vertical codes in a diameter from the top right to the bottom left new concepts were synthesized which became the basis for creating a table of research content in order of Table 3:

Table 3. Axial coding taken from two linear research coding

				Combining activities				**multipurpose the workshop**
				Quantitative, qualitative increase in production…			increase in area	
				Reducing the cost of products		equipment & renovation		
				Employment of more women & villagers	became the second activity			
Multi-purpose business & tourism	single - purpose business & Tourism	seasonal business & Home Tourism	Permanent home tourism business	Business architecture	Seasonal home cultivation & production	Permanent home cultivation & production	Independent single-purpose cultivation & production	Independent multi-purpose cultivation & production
			Desirability: the intended design of the audience	Potential for place (business & tourism)				
		Nativism: materials/construction		Construction approaches (native & New)				
	Comfort: audience-oriented interior architecture			Increased service space				
Separation: separation of domains in composite buildings				Incompatibility of urban space & production				

Preparation of a table of contents from the synthesis of axial coding- Finding the right research content is one of the most complex research tasks, using axial coding & several months of back & forth & mind storms. 9 content obtained from the axial coding intersection (Table 3) was completed at this stage & three other content (sanitation & isolation & location construction) were added to the content, & the content was categorized into three S&T / cultivation & processing/ planning & composition fields. At this stage, in addition to the initial objectives of the source of the research synthesis & the research gap, 3 general objectives of the potential of the cultivation & acquisition of livelihood housing were also created from summarizing the location components according to the research model. Along with the objectives, it was raised that the objectives were general & the specific & field objectives of the 7th District of Babolkenar should also be studied. For this reason, by studying the overhead plan for the preparation & employment of the 7th District of the Babolkenar system, two issues of supply chain & development drivers of the 7th District (Nogan, Bee, tourism, livestock) were extracted & the objectives of 1 - strengthening the overhead production chain of the silkworm (mulberry farm, pond farming, silk worm rearing house, workshop, sales) 2 - strengthening the honey supply chain (hive, workshop, tourism, Ecomuseum, sales) were added as the source objectives of the district's overhead documents in the objectives. Further, since the speciology of architecture was unknown & the gap of research, by combining speciology & the chain of propulsion, it reached the goal of speciology (multifunction pool, silkworm rearing house, bee home, workshop, sales & tourism) & was achieved in a total of 19 goals in three groups. Open coding was used for interviews. In open coding on the space/ business location axis, a summary of the objectives table was used, & in the architectural axis (type finding) of the business from the business architecture Objectives section, the result of this coding is the production of Table 2 of the research. (Codes are arranged from negative to positive, like a spectrum, & are linked to each other in the same category. (Table 1 & 2) (Table 4)

Production of the target table – content- From the intersection of the target table (19 targets) & the content table (12 contents) in the content target table, the extent of the impact of different contents on the related goals in 224 closed questionnaires of the elite stage of income & after selecting 42 questionnaires with the selective coding method & the narrative & final control of the questionnaire by the teachers, the research entered the elite questionnaire stage. The validity of the questionnaire tool was confirmed from the target table - its content & footprint from α kronbach to prioritize & research & combine the initial proposed content, & the functional components & the group-response of the teachers are extracted from it & the scientific content obtained can be examined at the field stage. Finally, the questionnaire agreed with the teachers was given to all the elites, & the Q factor analysis (factor analysis on specialists & extraction of the interviewed components) was done on the data & the results were extracted.

Table 4. Objective-content taken from axial coding & selection of 41 important questions from among the 224 primary questions:

Specific features of the business & tourism space...			**Specific features of the cultivation space: Greenhouse/ breeding space (insects, birds, livestock, aquaculture)/ production & processing workshop (non-living)**					**Planning / composition: Cultivation/work spaces & business/tourism spaces & ...**					
Indigenism: materials, methods of construction, Indigenous builder	Comfort: providing a service space, desirable & intended for the audience in rural tourist spaces	Desirability: form design, facade & attractive, desirable & intended audience in rural spaces	Health & safety: preventing pollution from entering the cultivation & cleaning environment	Isolation: preventing the entry & exit of pests, insects, noise, pollution & reducing disturbance	Low cost increase in area: (non-structural surfaces & shelving/ outdoor/ semi-roofed	Equipment & renovation: Use of modern facilities for artificial supply of suitable cultivation conditions	Climate / climate of the productive space: Orientation, glass-eating surfaces, openings & installations to use natural light/ ventilation to	Separation: separation of different & intrusive areas in composite buildings	Multi-purpose / multi-chapter workshop &... & compliance with its architectural requirements	Conversion of production space into second activity, including tourism space in non-working	Building a sales place in the village	Content: Target:	
									2		1	Strengthening the chain of nuggets (tutstan-telembar-spinning-handicrafts-sales)	Rural space chain planning
									4		3	Strengthening the honey chain (Farm-home beekeeping, extraction Workshop, sale of honey)	
								7	6	5		Optimal combination of activities (business-bio-tourism-entrepreneurship)	Planning (business space-based on synthesis)
					10	9	8					Quantitative, qualitative increase in production & economic productivity	
			12	11								Reducing the loss of livestock & food production...)	
14.2									14	13		Employment of more women & villagers	
	16	15										Reduction of urban service spaces unrelated to the village	
								18		17		Reducing the incompatibility of the environment (urban housing) & the production space	
						20	19					Indigenous & new methods of building design	
			23	22				21				Compliance with legal restrictions (health, safety & environment)	

			26	25	24							The potential of the place of the cultivation space in design	Place/space potential: Productivity/ desirability/ adaptability
	28	27										Place potential of the business & tourism space in design	
								30		29		Potential of living space / combined architecture in design	
	32								31			Pool species (single-purpose agriculture or multi-purpose agricultural tourism	Economic architecture of business spaces in rural areas
						34	33					Telembar species (native / modern/ smart/ home/ farm / independent)	
				36	35							Production workshop species (single-purpose / multi-purpose/ domestic/ independent)	
											37	Species of sales & support space (domestic, farm, Independent, 4 chapters)	
							39			38		Species of tourist space (domestic, agricultural, farm, independent)	
				41		40						Species of beekeeping spaces (domestic, farm...)	

In the qualitative phase of the Delphi research method, the research was used to achieve the initial classification & thought groups related to the research topic using the opinion of interdisciplinary specialists. The statistical community was selected using specialists in the fields of rural, architectural, urban planning & entrepreneurship. Due to the nature of being rural, the opinions of the elite of the rural area (about 50%) were used more. On the other hand, because the nature of research is interdisciplinary & interdisciplinary professors are not completely obvious, a non-r&om snowball sampling method was used in such a way that professors from the Faculty of the Universities of Science & industry of Iran, Tehran, Shahid bahshti, khorezmi were invited to work in the fields of Rural Development &/or architecture, & then asked them to introduce other professors in this field. In the case of sampling volume, since Delphi studies involve between 10 & 50 people, the sample volume advanced to 41 people & reached theoretical saturation. The unstructured interview measurement tool & questionnaire were of the Likert 10 spectrum type (numbering from 1 to 10).

The data analysis- After confirming the objective-content table, the ten-choice questionnaire (from zero to nine) in the Likert spectrum was prepared for specialists, which consisted of 41 questions. The Q factor analysis (component classification by experts) was done on the data and the results were extracted to prioritize and research and combine the initial proposed content and extract the functional components and expert views for field examination. Q factor analysis through correlation between individuals provides information about the similarities and differences of views on a particular topic. In fact, each common thinking view is a group of experts (e.g. 2 villages and 1 architecture teachers) according to the answers provided.

4. Research Findings

Analysis of Table 5: sample size adequacy index (K.M.o). It is a measure of the adequacy of pre-analysis sampling. (Table 5) adequacy of data through the K.M.O & Bartlett's test were measured, and the value reached 0.537, which, given the limitations of research, including quality, interdisciplinary and lack of expertise in rural business architecture in academic disciplines, as well as the lack of previous studies and categorized theories and indicators and the exploratory nature and factor analysis of Q, can be accepted. In the Bartlett's test of sphericity, the null hypothesis indicates that the correlation matrix is a single, homologous Matrix. If the meaning of the Bartlett test (sig.) is less than 0.05, the factor analysis is appropriate to identify the structure. And that means that the correlation value can be calculated.

Table 5. Kmo and Bartlett test for adequacy sample size

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.537
Bartlett's Test of Sphericity	Approx. Chi-Square	549.982
	Df	351
	Sig.	.000

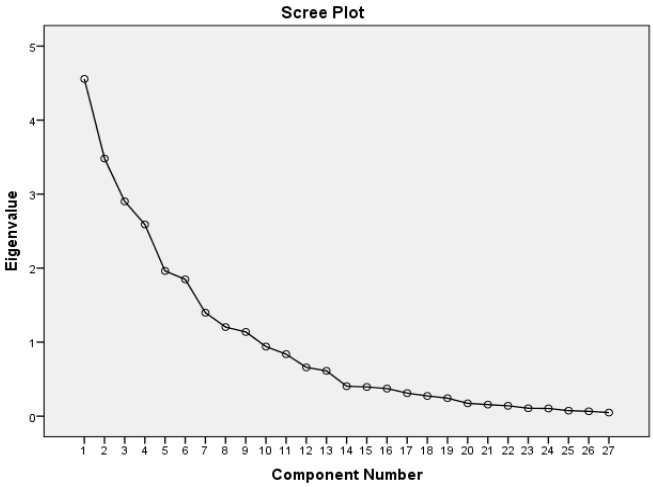


Figure 2. Chart of scree plot

Scree plot analysis: this test is one of the most famous graphical methods for selecting the appropriate number of factors in exploratory factor analysis (E.F.A) from special values. The test shows the results in the form of a graph, in which the operators or components are shown on the horizontal axis X and the special values on the vertical axis Y, so that the special values are also reduced along with the movement to the right. (Kalantari pour por et al., 2016).

So. whatever the length and slope of scree plot chart, Percentage of variance and coverage is higher and the lower the slope, the lower the percentage of coverage, and the more uniform the slope, the more uniform the impact of architectural factors on the prosperity of the village will be. Special value above one (Eigenvalue>1) in factor analysis causes 9 factors (the basis for factor selection is special value above 1.)

Table6. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.556	16.876	16.876	4.556	16.876	16.876	3.420	12.666	12.666
2	3.481	12.892	29.768	3.481	12.892	29.768	3.102	11.491	24.156

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
3	2.902	10.749	40.517	2.902	10.749	40.517	2.718	10.066	34.222
4	2.590	9.594	50.110	2.590	9.594	50.110	2.175	8.056	42.278
5	1.962	7.267	57.377	1.962	7.267	57.377	2.120	7.853	50.131
6	1.848	6.845	64.222	1.848	6.845	64.222	2.073	7.680	57.810
7	1.398	5.178	69.401	1.398	5.178	69.401	2.027	7.506	65.317
8	1.204	4.458	73.859	1.204	4.458	73.859	1.860	6.890	72.206
9	1.138	4.216	78.075	1.138	4.216	78.075	1.584	5.868	78.075
10	.940	3.481	81.555						
11	.838	3.102	84.657						
12	.659	2.442	87.099						
13	.613	2.269	89.368						
14	.405	1.500	90.868						
15	.395	1.461	92.330						
16	.373	1.381	93.710						
17	.311	1.151	94.861						
18	.273	1.012	95.873						
19	.243	.901	96.775						
20	.173	.642	97.417						
21	.156	.578	97.995						
22	.140	.519	98.514						
23	.107	.397	98.911						
24	.104	.386	99.298						
25	.075	.277	99.575						
26	.066	.245	99.820						
27	.049	.180	100.000						
Extraction Method: Principal Component Analysis.									

Analysis of Table 6: this table shows how many percent each factor covers from the expert's perspective. In the analysis of the screeplot graph, it was said that because the graph slope is uniform, the amount of coating of the factors is almost the same. Here factor 1 after rotation covers 12.67% from views of expert. Factor 2 is 11.49% and factor 3 is 10.07%, factor 4 is 8.06%, Factor 5 is 7.85%, factor 6 is 7.68%, Factor 7 is 7.5 percent, Factor 8 is 6.89 percent, and factor 9 is 5.87 percent from the views of experts, and a total of ten factors is 78.75 percent from the views of experts. This category can therefore be explained to achieve similar results in similar cases.

Table 7. Component Matrix[a]

	Component								
	1	2	3	4	5	6	7	8	9
sshf	-.717								
tahm	.678								
yghb	.609								
mmghl	.583								
mtar	.581								
shsbt	.525		-.478						
mdi	.504								
sbyt		.753							
shkb		.650							
vkhsr		.573							
mah		.537			.459				
slhi		-.531							

	Component								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
torksh	.451	-.491	.431						
khrs	.503		-.598						
vsdrm		.437	-.524						
kml	.420			-.682					
zamn			-.505	.651					
mkia				-.551		.470			
bdri					.721				
frhn				.465	-.477				
mhsn						.562			
mnrs						-.516		.457	
bhzd	.411					-.497			
fazz	.459						-.471		
shrfn			.417				.434		
emm			.441					-.442	
hmzn		.452							.457
Extraction Method: Principal Component Analysis.									
a. 9 components extracted.									

Table 7-determination of experts to determine the names of the agents:

This table generates the components of each factor based on the correlation coefficient sorted by the spss software and the software was asked to display only values above 0.4. Accordingly, the components of each factor (which are several masters) are displayed as gray cells. For example, the correspondence responses related to the codes *sshf, tahm, yghb, mmghl, mtar, shsbt, mdi,* which belong to 7 rural, or architectural experts, form the components of factor 1. Since only one expert had a coefficient of influence above 0.4 in Factor 9, this factor was removed from the analysis. Also, since Factor 8 had two components, one component, the *mnrs* code, also had an effect on Factor 6, and to have a common and meaningful chapter, one component should not be contributed to two factors, the *mnrs* code was used in only factor 8. Other factors were analyzed using software classification.

Naming factors (views)- Table 8 shows the summary of the naming of views. To determine the title, at the first, the expert responses of each factor extracted from Table 7 was placed next to each other in a table. Then the statements that were given by them a score of 8, 9 and, or 10 and were approved by them were selected. If more than 50% of the components and professors in each factor agreed on a topic (they gave a score of 8 or 9 or 10), that statement was considered a common chapter. Then, by combining the propositions of the common chapter of a factor, the description of the given name of the factor, and by comparing the common chapter, the name of each factor was determined separately from other factors.

Table 8. Naming factors

Percentage of view coverage	**Defining each factor independently**	**Expertise of experts related to perspective:**
%12.67	First view Requirements for multi-purpose spaces (second activity): separate, isolated, sanitary and Indigenous	4 villages expert -2 architect -1 urbanist
%11.49	View 2 : Second activity in the form of multi-purpose buildings or increasing the area for the construction of a sales place in rural buildings	2 villages -2 architect -1 urbanist
%10.07	View 3: The sales Place is equipped with isolation.	1 village entrepreneur, 2 Architects, 1 urbanist
%8.06	View 4: Sanitary and isolated interior architecture (cultivation space)	2 village

Percentage of view coverage	Defining each factor independently	Expertise of experts related to perspective:
%7.85	View 5: Indigenous model of Health and isolation	2 villages expert-1 architect
%7.68	View 6: Reconstruction of old buildings by equipping and separating and increasing business area	2 villages expert-1 architect
%7.51	View 7: Tourism as a second activity with new facades and interior architecture	1 architect expert
%6.89	View 8: Equipping to increase the sanitation area of cultivation, breeding and processing spaces	2 villages expert-1 architect

5. Discussion and Conclusion

The result section discusses how to name views 1 in Table 9. In this table, the answers of the expert of factor 1 extracted from Table 7 include the codes sshf, tahm, yghb, mmghl, mtar, shsbt, mdi in the lower rows of the table and at the top (row 4) their agreement is displayed in the form of a bold tick (strong agreement) and a faint tick (weak agreement). As you can see in the table, in Factor 1, which has the most coverage of the experts, out of 41 questions, only 24 questions agreed by 7 teachers as components of factor 1. These 24 questions relate to 11 content from Table 4 (target - content table).The third row wrote the total number of questions asked, which can be achieved by dividing the number of questions agreed. (Second row of table). Now, by selecting agreements over 50%, the common chapter of the factor 1 View category can be discovered.

According to this table, factor 1 emphasizes the content of multifunction (50%), second activity (75%), separation (80%), area increase (66%), isolation (100%), health (66%), nativism (100%) and comfort (50%), respectively, from left to right. Since the second activity in space is known as the multipurpose of space, and concepts such as separation, isolation, hygiene and nativism are known as the details of the construction plan, the title of view 1 can be proposed as: "requirements of multipurpose spaces (second activity): separate, isolated, sanitary and Indigenous". Thus, the names and titles of other effective views were also defined in Table 8.

Table 9. How to name View 1 as an example

Requirements for multi-purpose spaces (second activity): separate, isolated, sanitary and Indigenous

Content	Multifunctional	Multifunctional	Second activity	Second activity	Second activity	Second activity	Separation	Separation	Separation	Separation	Climbing	Equip	Increased area	Increased area	Isolation	Isolation	Isolation	Isolation	Isolation	Health	Health	Nativism	Comfort and	Place of sale
percent	**50%**		**75%**				**80%**				**33%**	**33%**	**66%**		**100%**					**66%**		**100%**	**50%**	**25%**
total	**4**	**4**	**6**	**6**	**6**	**6**	**5**	**5**	**5**	**5**	**3**	**3**	**3**	**3**	**5**	**5**	**5**	**5**	**5**	**3**	**3**	**1**	**2**	**4**
accept	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
sshf	8	6	8	6	6	8	8	7	7	5	6	7	6	6	6	5	7	7	6	5	5	8	4	8

Content	**Multifunctional**	**Multifunctional**	**Second activity**	**Second activity**	**Second activity**	**Second activity**	**Separation**	**Separation**	**Separation**	**Separation**	**Climbing**	**Equip**	**Increased area**	**Increased area**	**Isolation**	**Isolation**	**Isolation**	**Isolation**	**Isolation**	**Health**	**Health**	**Nativism**	**Comfort and**	**Place of sale**
percent	**50%**		**75%**				**80%**				**33%**	**33%**	**66%**		**100%**					**66%**		**100%**	**50%**	**25%**
tahm	6	4	9	7	7	8	4	5	8	8	4	4	6	8	7	7	7	8	6	9	5	7	7	7
mmghl	10	10	10	10	10	5	8	10	10	9	9	8	9	9	8	8	5	5	5	9	10	10	10	8
mtar	7	8	8	8	10	7	9	9	8	9	9	7	6	10	9	10	9	8	9	10	10	7	8	5
yghb	7	9	9	7	8	7	1	9	8	7	7	8	9	8	10	9	9	9	8	8	9	6	8	8
shsbt	8	9	8	9	9	10	6	8	8	9	9	9	8	9	7	10	9	9	10	9	10	9	10	10
mdi	8	8	9	10	8	8	8	9	8	8	9	8	8	8	10	8	9	8	9	10	9	8	10	8

The present study was aimed at examining the architectural and economic strategies of rural business spaces from the perspective of experts. In response to the research question of what is the classification and perspective of the community of experts on the architectural strategies of rural business spaces there are 7 views in this regard:

1- Requirements for multi-purpose spaces (second activity): separate, isolated, sanitary and Indigenous (12.67%).
2- Second activity in the form of multi-purpose buildings or increasing the area for the construction of a sales place in rural buildings (11.49%).
3- The sales Place is equipped with isolation (10.07%).
4- Sanitary and isolated interior architecture (cultivation space) (8.06%).
5- Indigenous model of Health and isolation (7.85%).
6- Reconstruction of old buildings by equipping and separating and increasing business area (7.68%).
7- Tourism as a second activity with new facades and interior architecture (7.51%).
8- Equipping to increase the sanitation area of cultivation, breeding and processing spaces (6.89%).

Exploring these perspectives can create a deep look at the indigenous architecture of rural business for planners and be effective in the prosperity of the indigenous business of the village.

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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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Original Article

راهبردهای معماری تحت تأثیر فضا و مکان کسب و کار روستایی (یک تحقیق دلفی در بابل‌کنار ایران)

مرتضی ملکی چرکوانی[۱]، فرهنگ مظفر*[۲]، محمدعلی خان محمدی[۳]، بهرام صالح صدق‌پور[۴]

۱. دانشجوی دکترای معماری، دانشگاه دانشگاه علم و صنعت ایران، تهران، ایران.
۲. دانشیار معماری، دانشگاه دانشگاه علم و صنعت ایران، تهران، ایران.
۳. دانشیار معماری، دانشگاه دانشگاه علم و صنعت ایران، تهران، ایران.
۴. دانشیار علوم تربیتی، دانشگاه تربیت دبیر شهید رجایی، تهران، ایران.

چکیده مبسوط

۱. مقدمه

معماری محل کسب و کار است و توجیه اقتصادی بزرگترین رابطه بین اقتصاد و معماری کسب و کار است، و هیچ کسب و کاری شروع نمی شود تا زمانی که هیچ توجیه اقتصادی وجود نداشته باشد. اما در شرایطی که اقتصاد ناپایدار است توجیه اقتصادی نیز موقتی و گذرا است، در شرایطی که روستا ظرفیت اقتصادی کمی برای سرمایه گذاری اولیه دارد، این توجیه اقتصادی ضعیف تر و شکننده تر و موقت خواهد شد از سوی دیگر، تفاوت در اهداف توسعه (توسعه ملی– روستایی) و سطوح مختلف توسعه و برنامه ریزی و معماری کسب و کار روستایی باعث می شود معماری با استانداردهای امروزین شهری قادر به انطباق مناسب با شرایط برنامه ریزی اقتصادی را نداشته باشد. اما راه حل چیست؟ دو فرضیه در این تحقیق وجود دارد: ۱-گفتگوی کشاورزی و روستاهای چند منظوره و در امتداد آن معماری چند منظوره ۲-معماری بومی سنتی و معاصر که توسط مردم محلی از نسل های مختلف تشکیل شده است و بیشتر با اقتصاد بومی سازگار است می تواند بخشی از راه حل این مشکلات باشد.

۲. روش تحقیق

به دلیل ماهیت میان رشته ای تحقیقات ، حدود ۴۶ مقاله در زمینه های مختلف شناسایی و طبقه بندی شدند. در مرحله کیفی برای این تحقیق از روش تحقیق دلفی برای دستیابی به دسته بندی اولیه و گروه های فکری مرتبط با موضوع تحقیق با استفاده از نظر متخصصان بین رشته ای استفاده شد. ابزار مورد استفاده جدول محتوای هدف و روش تجزیه و تحلیل عاملی Q و نرم افزار مورد استفاده Spss v.24 بود. جامعه آماری با استفاده از متخصصان در زمینه‌های روستایی، معماری، برنامه ریزی شهری و کارآفرینی انتخاب شد. در مورد حجم نمونه گیری، از آنجا که مطالعات دلفی بین ۱۰ تا ۵۰ نفر را شامل می شود، حجم نمونه به ۲۷ نفر افزایش یافته و به اشباع نظری رسیده است. تهیه جدول محتوا یکی از پیچیده ترین وظایف تحقیقاتی است که با استفاده از کدگذاری محوری و چندین طوفان ذهنی انجام می شود. از ترکیب دو محور تولید شده از کدگذاری باز ، جدول کدگذاری محوری ایجاد شد. از بررسی تقاطع کدهای افقی و عمودی در قطر از بالا سمت راست به پایین سمت چپ مفاهیم جدید سنتز شدند که پایه ای برای ایجاد یک جدول از محتواهای تحقیقاتی شد. ۹ محتوای به دست آمده از تقاطع کدگذاری محوری در این مرحله تکمیل شد و سه محتوای دیگر به محتوا اضافه شد و محتوا به سه مقوله فروش و گردشگری / کشت و پردازش/ برنامه ریزی و ترکیب طبقه بندی شد. در این مرحله، علاوه بر اهداف اولیه منبع سنتز تحقیق و خلا تحقیق ، ۳ هدف کلی از پتانسیل کشت و کسب مسکن معیشت نیز از خلاصه اجزای مکان با توجه به مدل تحقیق ایجاد شد. در کنار اهداف، مطرح شد که اهداف عمومی و اهداف خاص و میدانی منطقه ۷ بابل کنار نیز باید مورد مطالعه قرار گیرد. از تقاطع جدول هدف و محتوا، میزان تأثیر محتوای مختلف بر اهداف مرتبط در ۲۲۴ پرسشنامه بسته مرحله نخبگان درآمد و پس از انتخاب ۴۲ پرسشنامه با روش کدگذاری انتخابی توسط اساتید، تحقیق وارد مرحله پرسشنامه نخبگان شد. اعتبار ابزار پرسشنامه از جدول هدف- محتوا تأیید شد. در نهایت پرسشنامه مورد توافق معلمان به همه نخبگان داده شد و تجزیه و تحلیل فاکتور Q بر روی داده ها انجام شد و نتایج استخراج شد. پس از تأیید جدول هدف-محتوا ، پرسشنامه ده گزینه ای در طیف لیکرت برای متخصصان تهیه شد که شامل ۴۱ سوال بود.

*. نویسندهٔ مسئول:
دکتر فرهنگ مظفر
آدرس: گروه معماری، دانشکده معماری و شهرسازی، دانشگاه علم و صنعت ایران، تهران، ایران.
پست الکترونیکی: Email: Mozaffar.farhang@gmail.com

تجزیه و تحلیل فاکتور Q بر روی داده ها انجام شد و نتایج برای اولویت بندی و تحقیق و ترکیب محتوای پیشنهادی اولیه و استخراج اجزای کاربردی و دیدگاه‌های متخصص برای بررسی زمینه استخراج شد. تحلیل عاملی Q از طریق ارتباط بین افراد اطلاعاتی در مورد شباهت ها و تفاوت دیدگاه‌ها در مورد یک موضوع خاص ارائه می دهد. در واقع ، هر دیدگاه تفکر مشترک گروهی از کارشناسان با توجه به پاسخ های ارائه شده است.

۳. یافته‌های تحقیق

برای تعیین عنوان و نامگذاری عاملها، در ابتدا پاسخ های خبرگانی هر عامل در کنار یکدیگر در یک جدول قرار داده شد. سپس اظهاراتی که توسط آنها نمره ۸ ، ۹ و یا ۱۰ داده شده و توسط آنها تأیید شده بود انتخاب شد. اگر بیش از ۵۰ درصد از خبرگان در هر عامل در مورد یک موضوع توافق کردند، این موضوع به عنوان یک فصل مشترک در نظر گرفته شد. سپس، با ترکیب گزاره های فصل مشترک یک عامل، توصیف نام عامل داده شد. به عنوان مثال، در عامل ۱ بر محتوای چند منظوره، فعالیت دوم، تفکیک، افزایش فضا، ایزولاسیون، بهداشت ، بومی گرایی و آسایش تأکید می کند. از آنجا که عنوان دیدگاه ۱ را می توان به عنوان: "الزامات فضاهای چند منظوره (فعالیت دوم): تفکیک، ایزولاسیون، بهداشت و بومی گرایی"پیشنهاد کرد.

۴. بحث و نتیجه‌گیری

پژوهش حاضر با هدف بررسی راهبردهای معماری و اقتصادی فضاهای کسب و کار روستایی از دیدگاه خبرگان انجام شد. در پاسخ به پرسش پژوهشی طبقه بندی و دیدگاه جامعه کارشناسان در مورد راهبردهای معماری فضاهای کسب و کار روستایی چیست ؟ ۸ دیدگاه در این زمینه وجود دارد:

- الزامات فضاهای چند منظوره (فعالیت دوم): تجهیز، بهداشت، فعالیت دوم و بومی‌گرایی (۱۲.۶۷٪).
- فعالیت دوم بصورت بناهای چند منظوره یا افزایش مساحت جهت احداث مکان فروش در بناهای روستایی (۱۱.۴۹٪).
- مکان فروش مجهز ایزوله (۱۰.۰۷٪)
- معماری داخلی مجهز بهداشتی و ایزوله (فضای کشت و پرورش) (۸.۰۶٪).
- مدل بومی بهداشت و ایزولاسیون (مسکن معیشتی) (۷.۸۵٪).
- بازسازی بناهای قدیمی با تجهیز و تفکیک و افزایش مساحت کسب و کار (۷.۶۸٪).
- گردشگری به عنوان فعالیت دوم با نما و معماری داخلی نوین (۷.۵۱٪).
- تجهیز و افزایش مساحت بهداشت فضاهای کشت، پرورش و فرآوری (۶.۸۹٪).

بررسی این دیدگاه ها می تواند نگاهی عمیق به معماری بومی کسب و کار روستایی برای برنامه ریزان ایجاد کند و در رونق کسب و کار بومی روستا موثر باشد.

کلیدواژه‌ها: فضای کسب و کار روستایی، مکان کسب و کار روستایی، معماری کسب و کار روستایی، برنامه اشتغال پایدار سامانه بابلکنار، پرورش و فرآوری، فروش و گردشگری.

تشکر و قدرانی

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فهرست مندرجات

داوران این شماره به ترتیب حروف الفبا

دکتر منیژه احمدی (استادیار جغرافیا و برنامه‌ریزی روستایی دانشگاه زنجان)

دکتر علی‌اکبر عنابستانی (استاد جغرافیای انسانی و آمایش دانشگاه شهید بهشتی)

دکتر مازیار آصفی (استاد معماری و شهرسازی دانشگاه هتر اسلامی تبریز)

دکتر علی باقرزاده (دانشیار اقتصاد دانشگاه آزاد اسلامی واحد خوی)

دکتر حمیده بیگی (استادیار جغرافیا و برنامه‌ریزی شهری دانشگاه گیلان)

دکتر مهدی چراغی (استادیار جغرافیا و برنامه‌ریزی روستایی دانشگاه زنجان)

دکتر مهدی حسام (استادیار جغرافیا وبرنامهٔ ریزی روستایی دانشگاه گیلان)

دکتر ساره حسینی (استادیار منابع طبیعی دانشگاه علوم کشاورزی و منابع طبیعی ساری)

دکتر وحید ریاحی (دانشیارجغرافیا و برنامه‌ریزی روستایی دانشگاه خوارزمی)

دکتر حشمت الله سعدی (دانشیار ترویج و آموزش کشاورزی دانشگاه بوعلی سینا)

دکتر مسعود صفایی پور (استاد جغرافیا و برنامه‌ریزی شهری دانشگاه شهید چمران اهواز)

دکتر بهروز قرنی آرانی (استادیار جغرافیا و برنامه‌ریزی روستایی دانشگاه پیام نور)

دکتر ولی‌الله نظری (استادیار جغرافیا و برنامه‌ریزی روستایی دانشگاه فرهنگیان)

دکتراصغر نوروزی (استادیار جغرافیا و برنامه‌ریزی روستایی دانشگاه پیام نور)

دکتر زهرا یکتامهر (استادیار جغرافیا و برنامه‌ریزی شهری دانشگاه آزاد اسلامی مشهد)

۹. ۳. انواع نقل قول‌ها (مستقیم و غیر مستقیم)، نقل به مضمون و مطالب به دست آمده از منابع و مآخذ، با حروف نازک و استفاده از نشانه‌گذاری‌های مرسوم، مشخص شود و نام صاحبان آثار، تاریخ و شماره صفحات منابع و مآخذ، بلافاصله در میان پرانتز نوشته شود.

۱۰. مقالات برگرفته از رساله و پایان‌نامه دانشجویان با نام استاد راهنما، مشاوران و دانشجو به صورت توأمان و با مسؤولیت استاد راهنما منتشر می‌شود.

۱۱ . چنانچه مخارج تحقیق یا تهیه مقاله توسط مؤسسه‌ای تأمین مالی شده باشد، باید در بخش تشکر و قدردانی مشخص گردد.

۱۲ . شیوه ارزیابی مقالات: مقالات ارسالی که شرایط پذیرش را احراز کنند، برای داوران خبره در آن موضوع ارسال می‌شوند. داوران محترم، جدای از ارزشیابی کیفی مقالات، راهبردهای سازنده‌ای پیشنهاد می‌کنند. پیشنهادهای داوران محترم به طور کامل، اما بدون نام و نشان داور، برای نویسنده مقاله ارسال خواهد شد.

۱۳ . مجله حق رد یا قبول و نیز ویراستاری مقالات را برای خود محفوظ می‌دارد و مقالات مسترد نمی‌گردد. اصل مقالات رد یا انصراف داده شده پس از سه ماه از مجموعه آرشیو مجله خارج خواهد شد و مجله پژوهش و برنامه‌ریزی روستایی هیچ مسئولیتی در این ارتباط نخواهد داشت.

۱۴ . مسؤولیت ارائه صحیح مطالب مقاله بر عهده‌ی نویسندگان مقاله است. از این‌رو، نسخه‌ای از مقاله آماده چاپ برای انجام آخرین تصحیحات احتمالی به نشانی الکترونیکی نویسنده ارسال خواهد شد. چنانچه ظرف مدت یک هفته پاسخی از سوی نویسندگان واصل نگردید به معنای موافقت آنها با اصلاحات انجام شده تلقی و نسبت به چاپ آن اقدام می‌شود.

۱۵. دریافت مقاله صرفاً از طریق سامانه مجله (http://jrrp.um.ac.ir) خواهد بود و مجله از پذیرش مقالات دستی یا پستی معذور خواهد بود.

۱۶. نویسندگان گرامی، مقالاتی که مطابق فرمت مجله تهیه نشده باشند به نویسنده بازگردانده شده و در فرآیند ارزیابی قرار نخواهد گرفت.

۱۷. فایل های ضروری برای ارسال از طریق سامانه عبارتند از:

الف) فایل مشخصات نویسندگان: در محیط word شامل اسامی و مشخصات نویسندگان به فارسی و انگلیسی.

ب) فایل اصلی مقاله بدون مشخصات: در محیط word شامل متن اصلی مقاله بدون اسامی و مشخصات نویسندگان.

ج) فایل چکیده مبسوط (مکمل) مقاله: شامل چکیده مبسوط فارسی در قالب یک فایل در محیط Word.

۱۸. شرایط جزئی تر و دقیق تر نیز در فایل راهنمای نگارش و ارسال مقاله توسط نویسندگان ارائه شده است.

۱۹. مقاله پس از ارزیابی علمی به زبان انگلیسی برگردانده شده و نویسنده(گان) موظف به ترجمه آن در مراکز ویراستاری معتبر خواهند بود و تا قبل از انجام ترجمه، امکان ارسال گواهی پذیرش مقدور نمی‌باشد. لذا پیشنهاد می‌شود فارسی زبانان مقاله خود را به زبان فارسی تهیه و ارسال نموده و پس از طی فرایند ارزیابی علمی و پذیرش نسبت به ترجمه آن اقدام شود.

آدرس پستی: مشهد- میدان آزادی- پردیس دانشگاه فردوسی مشهد- دانشکده ادبیات و علوم انسانی- دفتر مجلهٔ پژوهش و برنامه‌ریزی روستایی.

کد پستی: ۹۱۷۷۹۴۸۸۸۳ تلفن و نمابر: ۰۵۱-۳۸۷۹۶۸۴۰ پست الکترونیکی Rplanning@um.ac.ir

وب سایت: http://jrrp.um.ac.ir/

فرم اشتراک (یک ساله/ دوشماره) **مجلهٔ پژوهش و برنامه‌ریزی روستایی**

این جانب ..... شغل ..... با ارسال فیش بانکی به مبلغ ..... ریال به حساب جاری شماره **۴۲۵۲۹۹۶۳۸** بانک تجارت شعبه دانشگاه مشهد کد ۴۲۵۰ به نام عواید اختصاصی دانشکده ادبیات و علوم انسانی، متقاضی اشتراک فصلنامه از شماره .....هستم. چنانچه صاحبان مقالات منتشر شده متقاضی دریافت مجلّه و تیراژه‌ی آن از طریق پست پیشتاز باشند، باید هزینه‌ی آن را به شماره حساب مذکور واریز و اصل فیش پرداختی را به نشانی دفتر مجلّه ارسال کنند.

نشانی: ..... کدپستی: .....

شرایط پذیرش مقاله

برای سرعت بخشیدن به امر داوری و چاپ مقالات، از همهٔ پژوهشگرانی که مایل به چاپ مقالات علمی خود در این نشریه هستند، درخواست می‌شود به نکات زیر توجه کافی داشته باشند:

۱ . مقالهٔ ارسال شده نباید قبلاً در هیچ نشریهٔ داخلی یا خارجی چاپ شده باشد. هیئت تحریریه انتظار دارد نویسندگان محترم تا هنگامی‌که جواب پذیرش از نشریه نرسیده است، مقالهٔ خود را به مجلهٔ دیگری برای چاپ ارسال نفرمایند.

۲ . مقالات انگلیسی با قلم نازک Times New Roman11 با نرم افزار Word تهیه شود. مقالات، روی کاغذ A4 (با حاشیه از بالا ۳ و پایین ۲ و راست ۲ و چپ ۲ سانتی‌متر) تایپ شود. متن به صورت دو ستونی با رعایت فاصله ۱ سانتی‌متر بین دو ستون و فواصل بین خطوط به صورت single باشد. ۳ . حجم مقاله نباید ازحدود ۹۵۰۰ کلمه و یا حداکثر ۱۵ صفحهٔ چاپی به قطع نشریه بیشتر باشد (با در نظر گرفتن محل جداول، اشکال، خلاصه فارسی و فهرست منابع).

۴ . عنوان مقاله با در نظرگرفتن فواصل بین کلمات نباید از ۶۰ حرف تجاوز کند و با قلم Times New Roman14 سیاه تایپ شود.

۵ . نام نویسندهٔ مقاله با قلم سیاه Times New Roman10 عنوان علمی یا شغلی او با قلم Times New Roman10 در زیر عنوان مقاله ذکر شود. ضمناً آدرس الکترونیکی و شماره تلفن نویسندهٔ مسؤول در پاورقی آورده شود.

۶ . چکیدهٔ مقاله ساختاریافته با قلم نازک Times New Roman 11 به صورت تک ستونی باشد.

۷ . شکل‌ها و نمودارهای مقاله حتماً اصل و دارای کیفیت مطلوب باشد. فایل اصلی اشکال (تحت PDF، Word،Excel) و با دقت ۳۰۰ dpi ارائه شود. اندازهٔ قلم‌ها خصوصاً در مورد منحنی‌ها (legend) به گونه‌ای انتخاب شوند که پس از کوچک‌شدن مقیاس شکل برای چاپ نیز خوانا باشند.

۸ . ساختار مقاله شامل عناصر زیر است:

۸. ۱ صفحهٔ عنوان: در صفحهٔ شناسنامه باید عنوان مقاله، نام و نام خانوادگی نویسنده (نویسندگان)، درجهٔ علمی، نشانی دقیق (کد پستی، تلفن، دورنگار و پست الکترونیکی)، محل انجام پژوهش، مسؤول مقاله و تاریخ ارسال) درج شود. عهده‌دار مکاتبات باید با علامت ستاره مشخص شود.

۸. ۲ چکیده: شامل چکیده‌های فارسی ساختار یافته (شامل هدف؛ روش؛ یافته‌ها؛ محدودیت‌ها؛ راهکارهای عملی؛ اصالت و ارزش و واژگان کلیدی (۳ تا ۶ کلمه)) است. تا حد امکان چکیدهٔ مقاله از ۳۰۰ کلمه تجاوز نکند . علاوه بر چکیده ساختار یافته، لازم است چکیدهٔ مبسوط فارسی بین ۷۵۰ تا ۱۰۰۰ کلمه نیز حاوی مقدمه، مبانی نظری، روش، نتایج و بحث، نتیجه‌گیری و کلیدواژه‌های مقاله تهیه شود، به طوری که حاوی اطلاعاتی از کل مقاله باشد و بتوان جداگانه آن را چاپ کرد. با توجه به این که مقاله بعدا به صورت کامل به انگلیسی برگردانده خواهد شد، نیازی به ترجمه چکیده مبسوط به انگلیسی نیست.

۸. ۳ مقدمه: شامل ۱-طرح مسئله؛ ۲-اهمیت و ضرورت؛ ۳-اهداف و سوالات اصلی تحقیق.

۸. ۴ ادبیات نظری تحقیق: شامل ۱- تعاریف و مفاهیم؛ ۲- دیدگاه‌ها و مبانی نظری؛ ۳- پیشینه نظری تحقیق و ... .

۸. ۵ روش‌شناسی تحقیق: در برگیرندهٔ ۱-محدوده و قلمرو پژوهش؛ ۲- روش تحقیق و مراحل آن (روش تحقیق، جامعهٔ آماری، روش نمونه‌گیری، حجم نمونه و روش تعیین آن، ابزار گردآوری داده‌ها و اعتبارسنجی آن‌ها)؛ ۳- سؤال‌ها و فرضیه‌ها؛ ۴- معرفی متغیرها و شاخص‌ها؛ ۵- کاربرد روش‌ها و فنون.

۸. ۶ یافته‌های تحقیق: ارائهٔ نتایج دقیق یافته‌های مهم با رعایت اصول علمی و با استفاده از جداول و نمودارهای لازم.

۸. ۷ بحث و نتیجه‌گیری: شامل آثار و اهمیت یافته‌های پژوهش و یافته‌های پژوهش‌های مشابه دیگر با تأکید بر مغایرت‌ها و علل آن، توضیح قابلیت تعمیم‌پذیری و کاربرد علمی یافته‌ها و ارائهٔ رهنمودهای لازم برای ادامهٔ پژوهش در ارتباط با موضوع، نتیجه‌گیری و توصیه‌ها و پیشنهادهای احتمالی.

۸. ۸ تشکر و قدردانی: قبل از منابع مورد استفاده ارائه شود و از ذکر عناوین دکتر و مهندس خودداری شود.

۹. نحوهٔ ارجاعات: منابع و مآخذ باید به صورت درون‌متنی و همچنین در پایان مقاله ذکر شود.

۹. ۱ ارجاعات در متن مقاله باید به شیوهٔ داخل پرانتز (APA) نسخه ۶ باشد؛ به گونه‌ای که ابتدا نام مؤلف یا مؤلفان، سال انتشار و صفحه ذکر شود. شایان ذکر است که ارجاع به کارهای چاپ شده فقط به زبان فارسی بوده و در اسامی لاتین معادل آن در زیر نویس همان صفحه ارائه شود. به عنوان نمونه: (شکوئی، ۱۳۸۷، ص. ۵۰) یا (وودز، ۲۰۰۵، ص. ۲۷).

۹. ۲ در پایان مقاله، منابع مورد استفاده در متن مقاله، به ترتیب الفبایِ نام خانوادگی نویسنده بر اساس الگوی فهرست نویسی APA تنظیم گردد.

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مجلّهٔ پژوهش و برنامه‌ریزی روستایی

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صاحب امتیاز: دانشگاه فردوسی مشهد

مدیر مسئول: دکتر حمید شایان

سردبیر: دکتر علی‌اکبر عنابستانی

دستیار سردبیر: مهدی جوانشیری

مدیر اجرایی: زهرا بنی‌اسد

ویراستار انگلیسی: مرکز ویراستاری ادبیات

حروف‌نگاری و صفحه‌آرایی: معصومه ایرانپاک

شمارگان: ۵۰ نسخه

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بها: داخل کشور: ۲۰۰۰۰۰ ریال (تک‌شماره) خارج کشور: ۲۵ دلار (آمریکا- سالانه)، ۲۰ دلار (سایر کشورها- سالانه)

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این مجلّه در پایگاه های زیر نمایه می‌شود:

- **پایگاه استنادی علوم جهان اسلام (ISC)**
- **پایگاه اطلاعات علمی جهاد دانشگاهی (SID)**
- **پایگاه بانک اطلاعات نشریات کشور (Magiran)**
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سال چهاردهم، شماره ۱، زمستان ۱۴۰۳، شماره پیاپی ۴۸

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