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Original Article

Exposition of the Socio-Economic Impacts of Tourism Development on Local Communities in Rural Areas (Case Study: Baft County)

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Abstract

Purpose- Rural tourism has various effects on the economic and social aspects of rural households. Considering the significant impact of tourism on the economic and social development of local communities, this research aims to investigate the economic and social effects of rural tourism in Baft County.

Design/methodology/approach- The statistical population consists of 2512 households in the rural of Baft Township, out of which 333 households were selected through simple random sampling based on Cochran's; formula. The primary tool for data collection was a questionnaire, the validity of which was examined through content and structural validity, and its reliability was assessed using composite reliability and Cronbach's; alpha ($\alpha = 0.90$). Data analysis was performed using SPSS and LISREL software. To examine the fit of the measurement model of economic and social effects on rural tourism; the collected data were analyzed using LISREL software and second-order confirmatory factor analysis.

Findings- The research findings indicate that the most significant impact is on the economic dimension, including employment and income, investment, and satisfaction. Moreover, the most prominent effects in the social dimension include social participation, protection of intangible heritage, sense of place, heritage and tradition preservation, tourist satisfaction, education and awareness, and ultimately, cultural elevation. The research findings also revealed that the absolute fit indices (AGFI = 0.91, GFI = 0.94), comparative fit indices (NNFI = 0.92, CFI = 0.95), and parsimonious fit indices (RMSEA = 0.054, X2/df = 2.63) confirm the excellent fit of the measurement model of economic and social effects on rural tourism with the observed data. Furthermore, the structural equation modelling results indicate that the most signicant impacts are in the economic dimension of employment and income and the social dimension of social participation.

Keywords: Local communities, Tourism development, Economic and social effects, Structural equation modeling, Baft County.

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1. Introduction

Tourism is a rapidly growing and expanding activity with various impacts on different industries, serving as a significant factor in the economic and socio-cultural development of various regions (Stepanova et al., 2023). Globally, tourism is considered one of the primary sources of economic growth and a crucial and prioritized sector in national economies (Ashrafi & Hadi, 2019: 73). Rural tourism, one of the main branches of tourism, offers advantages such as increased income, job creation, and improved satisfaction levels among local populations. Unlike other forms of economic development, enhancing living standards can be achieved through the influx of tourists and the rapid expansion of demand. Rural tourism development does not require complex technologies to provide basic facilities. Currently, rural tourism development plays a role in balancing the unique traditions of local communities with the tourism industry, attracting an unemployed workforce (POPȘA, 2020). Rural tourism, defined as a form of local innovative tourism, actively engages the local community, playing a significant role in endorsing and promoting this type of tourism (Andreea, 2022). Tourism activity, relying on its characteristics and effects, can effectively play a signicant role in the dynamism and vitality of various economic sectors in local communities, ultimately contributing to the growth and development of rural areas. Rural tourism development is a concept that utilizes the environmental and historical resources available in rural areas. This development strategy has the most negligible detrimental impact and, through upgrading, improves productivity in rural areas, creates employment, improves income distribution, preserves the rural environment and culture, attracts local participation, and provides suitable ways to align traditional beliefs and values with contemporary conditions, resulting in increasing benefits for rural areas (Habibi Kashkooei, 2020). Tourism can have different effects on societies, especially in developing countries (Bajrami et al., 2020). Today, the tourism industry is recognized as a novel approach for the coexistence and development of human and society, aiming at economic efficiency in the development of specific and suitable regions. Therefore, regions endowed with natural landscapes create unique attractions due to their geographical and environmental conditions regarding climate, topography, and hydrology. Recently, strategies focusing on the development and expansion of tourism in rural areas, which have the necessary potential for tourism growth, have gained attention worldwide and have even been implemented in some countries with positive outcomes (Moradi et al., 2014). The development of tourism in rural areas aims to address specic issues such as the return of migrants from urban to rural areas, increased population stability through improved living conditions (Grgi´c, 2017), facilitating conditions for new economic and commercial activities, and preserving the natural environment and local culture as tourist attractions. The balanced growth of rural areas through tourism can only be achieved when improving the living conditions of the local community is a long-term goal and is expressed through economic, social, and cultural interests. In recent years, for various economic, social, and ecological reasons, tourism has garnered attention as a tool for enhancing the development of rural areas that face economic and social challenges (Eftekhari & Pourtaheri, 2011). The expansion of tourism as a new strategy in rural development can play a crucial role in diversifying the economy of rural communities and creating new opportunities, such as generating profitable employment in non-agricultural sectors, increasing income, reducing income disparities between rural and urban residents, reducing rural migration to cities, and addressing the problems and issues of large cities.

Considering that Iran is among the top 10 countries globally in terms of tourist attractions, with diverse rural centers boasting numerous attractions and capabilities (Rezvani et al., 2012), identifying and introducing them for more signicant income and tourism development can be a valuable and practical step (Barzegar et al., 2016). The richness of Iran's rural in natural attractions, social resources, cultural potential, and environmental factors significantly influences the effectiveness of rural tourism development (Mohammad Sharifi et al., 2009).

Given that over 30% of the population in our country resides in rural areas, agriculture and livestock farming alone cannot provide sufficient employment and income for the rural population.Therefore, the expansion of tourism as a new strategy in rural development can play a crucial role in diversifying the economy of rural communities and catalyze creating new opportunities, such as generating profitable employment in non-agricultural sectors, increasing income, reducing income disparities between rural and urban residents, decreasing rural-to-urban migration, and alleviating the problems and challenges of large cities.Baft Township's; rural settlements are among the tourist destinations in Kerman Province, benefiting from a river, a healthy climate, and beautiful natural and mountainous attractions. Due to its mountainous nature, this Township attracts a considerable population, as it regulates the climate. Despite having the potential in terms of natural and human resources to attract tourists, the development of this Township has not been proportional to its capabilities and capacities, considering its historical background and potential. The untapped potential and numerous tourist attractions in this Township could be a significant and influential factor in the growth and development of the targeted rural tourism, acting as a positive stimulus for economic development. The presence of the UNESCO-registered Khabr National Park and other abundant natural attractions has created the potential for this Township to become a destination for both domestic and international tourists. However, realizing these advantages and desirabilities will only be possible with proper and focused planning to create the necessary infrastructure. Understanding the current state of tourism in the Township, identifying constraints and deficiencies, and appropriate planning can pave the way for better access to opportunities and development facilities for tourism in Baft Township. The primary research question arising from this is: What impact has the development of rural tourism had on the socio-economic development of local rural communities in Baft Township?

2. Research Theoretical Literature

Rural tourism in today's world is considered one of the significant sectors of economic activities. This pivotal economic activity has garnered attention from various perspectives. Some recognize it as a segment of the tourism market, while others designate it as a strategy for rural development. The nature of the tourism industry includes job creation, income generation, economic diversification, social participation, and the utilization of local resources. Given that a substantial portion of the challenges of rural underdevelopment is attributed to the lack of this industry, rural tourism can contribute to rural development by addressing these issues (Namati et al., 2020). Rural tourism is the most people-centric form of tourism and is a crucial source of economic and social growth, along with sustainable environmental development in rural areas (Lotfi et al., 2016). This tourism branch serves as part of the tourism market and a source of employment and income, making it a significant tool for economic, social, and ecological development in rural communities. In many countries, this is closely tied to agricultural policies and is often promoted as a strategic approach to preserving the environment and traditional rural culture. Tourism plays a fundamental role in the development and preservation of resources in rural areas due to its broad and public nature. With the increasing emphasis on local and regional development policies, rural tourism has received special attention (Hasan Nouran, 2020). The goal of tourism development, both at the international and national levels, is to facilitate the economic and social development of destination areas. For this reason, most countries worldwide recognize the significance of tourism in the global economy, considering its role in income generation and employment. Rural tourism, although constituting a relatively small portion of this market, plays a crucial role in the economies of rural areas (Bajrami et al., 2020).Tourism in rural areas and communities is gaining attention as an alternative option for two main reasons: A) the ability of tourism to contribute to solving problems and challenges faced by these areas, and B) the potential for economic development, improved infrastructure, and better access to employment and income opportunities (Figueiredo, 2015). Tourism is a lifeline for rural areas, helping combat poverty, migration, and socio-economic issues. In addition, tourism serves as a significant factor in enhancing infrastructure, promoting social and cultural exchanges, attracting mobile capital, and injecting it into the rural environment. According to researchers, tourism ourishing is seen as a strategy for achieving economic development by injecting

foreign currency, creating employment, and supporting comprehensive growth in rural areas (Corsale and Iorio, 2010). The blossoming of tourism as a strategy for injecting foreign currency, creating employment, and supporting comprehensive growth in rural areas is significant. This geographic expanse, with access to a substantial portion of national resources, allows the rural community to shape numerous opportunities in the country's rural areas effectively. One of these opportunities lies in rural tourism. Rural tourism contributes to the creation of employment, the development of small businesses, increased government and private investments in rural areas, infrastructure enhancement, optimal utilization of limited financial resources, and generating income for low-income households. Ecotourism entrepreneurship is one of the most crucial economic aspects (Sojasi Ghidari & Dalir Teizabi, 2017). Tourism has always had dual effects on the local communities of tourist destination rural. Rural tourism is considered a solution that has significant economic impacts and can, to some extent, contribute to slowing down the process of rural settlement evacuation and reducing migration. The development of tourism as a strategy for rural development is a relatively new concept that local policymakers in rural communities have recognized. One of the most significant benefits of the tourism industry in rural areas is the creation of income and wages for those employed in this sector, often consisting of residents. Furthermore, rural tourism development can play a crucial role in diversifying the economy of rural communities, serving as a foundation for sustainable rural development. On the other hand, it can serve as a means to stimulate national economic growth by overcoming underdevelopment perceptions and improving local living standards (Rayegani et al., 2010). The social and cultural effects of tourism are ways in which tourism brings about changes in value systems, behaviour patterns, family relationships, lifestyle, traditional ceremonies, and social organizations. Tourists establish connections and interactions with residents during their stays in tourist destinations, and the outcomes of these mutual relationships bring about changes in the quality of life, value systems, division of labor, family relationships, tendencies, behavioral patterns, customs, and traditions of the host society. Nevertheless, rural tourism development can encompass a range of social benefits for rural communities (Habibi Kooshkooi, 2020).Some of the negative socio-economic effects include the promotion of consumerism in the local community, an increase in crime rates, a decline in local community participation, an escalation in the destruction of cultural heritage, a widening gap between social classes, consumerism, moral laxity, land use conflicts, displacement of residents, and economic repercussions such as increased prices of local goods and lands, unequal income distribution, labour exploitation, and damage to agricultural products (Tran and Walter, 2014).

2.1 Review of Literature

Research Background Numerous studies have been conducted on rural tourism and its potential impacts on local communities. Stepanova (2023) conducted research in Russia and found that Russian tourism needs to align with global modern trends to enhance competitiveness in tourist service markets. The Russian Federation has ample opportunities for large-scale tourism development. Therefore, engaging in activities in this domain is not only aimed at creating an accessible and comfortable tourism environment but is also essential for the priority development of tourism activities in rural areas (Lestter Pelegrín Naranjo et al., 2022). A study aimed at determining the potential for rural tourism and agritourism development was carried out in the municipality of Camajuaní in Villa Clara province, Cuba. The research results indicate that this region has untapped natural attractions and a high potential for rural tourism and agritourism. Rural tourism and agritourism serve as innovative alternatives to revive the economy of rural areas and add value to agricultural activities. . Research conducted by Kofi Poku Quan-Baffour (2020) in Ghana, concerning tourism and the social-economic revitalization of rural, concludes that tourism is a source of income and employment in many countries. In many former European colonies, specic places and historical events still attract thousands of visitors who seek firsthand information. Based on the study, the Apo Festival has had a positive impact on the social and economic development of the country. The article suggests that local authorities enhance tourist attractions to attract visitors, contributing to the socio-economic revitalization of the village. These studies collectively highlight the importance of aligning tourism activities with global trends, exploring untapped natural attractions, and leveraging tourism as

a means of socio-economic development, income generation, and employment creation in rural areas.The purposes of rural tourism in China suggest that improvement in the livelihood diversity of most residents has been achieved through the adoption of a multi-activity strategy and the utilization of synergies between tourism and other income sources. Consequently, overall livelihood sustainability has increased. However, this has led to an income gap that has not received adequate attention from local authorities (Dodds, 2018). Dodds, in his study, concluded that the influx of tourists into rural areas has elevated the knowledge and awareness of rural residents. As a result, rural residents' inclination towards each other has increased, leading to higher levels of social interaction in sustainable village management (Habibi Kushkouyi, 2020). In an examination of the role of tourism in the development of rural areas in East Gilan, it was found that there exists a direct relationship between tourism and rural development at the village level in East Gilan. The research revealed correlations between increased income, job creation, cultural transformations, enhanced social interactions, increased environmental pollution, and spatial changes within the study area (Hassan Nooran, 2020). In examining the role of rural tourism in social, economic, and environmental developments, it has been concluded that these areas have consistently been influenced by various social, economic, and environmental dimensions of tourism. Tourism is one of the most significant factors in the social, economic, and environmental transformations of rural areas in this region. Any form of development, including tourism development, leaves diverse impacts on the local communities of the region. Various perspectives on the impact of tourism on the development of local communities have been expressed. Studies conducted on tourism in the study area have mainly discussed and investigated general tourism-related topics. So far, there has been no specific study focusing on the economic and social effects of tourism in this region. Therefore, the present research aims to explore and address this knowledge gap

3. Research Methodology

3.1. Geographical Scope of the Research

The research is conducted in the Township of Baft, covering an area of approximately 6,494 square kilometers in the southwest of Kerman Province. Geographically, it is situated between 28 degrees 6 minutes to 29 degrees 36 minutes north latitude and 55 degrees 56 minutes to 57 degrees 15 minutes east longitude, using the Greenwich Mean Time (GMT) reference. The Township, with an elevation of 2,250 meters, is the third-highest in Iran. The highest point is estimated at 4,349 meters, and the lowest is 1,100 meters above sea level. The Township comprises two urban areas, including the city of Baft and Bezjan, along with six rural districts and 1,210 settlements. According to the statistics of the year 2016, the population of Baft Township is estimated at 75,940, with 38,798 residing in rural areas and 37,142 in urban areas. The rural settlements of this Township are among the tourist attractions of Kerman Province. Endowed with a river, a healthy climate, and beautiful natural and mountainous landscapes, it attracts tourists throughout the year. Due to its mountainous terrain, which leads to climate moderation, the Township has a considerable population. This Township possesses significant potential, both in terms of natural and human factors, for tourism attraction. However, the economic success of tourism in the rural areas of Baft Township has not been substantial in terms of employment generation. Tourism has led to the creation of a limited number of service-related jobs, contributing to a reduction in unemployment rates and generating employment opportunities. Socially, tourism significantly influences rural participation, social justice, education, promotional activities, and the improvement of the educational and health status of rural areas. It enhances people's awareness, promotes external relations with other rural and neighbouring regions, reduces rural migration due to better and more extensive services, and increases the attachment of rural residents to their own rural. Despite its historica background and potential capabilities, the development of this region has not been proportionate to its capacities. One of the impactful challenges on the tourism of Baft Township is the lack of optimal planning for tourism development. Despite the natural, social, historical, and cultural assets of the Township for tourism development, the industry still suffers from a lack of practical, purposeful, and effective planning. Unfortunately, it has not received the special attention it deserves. The unsuccessful tourism planning in Baft Township stems from various reasons, including differences in values, perspectives on planning, the position and importance of planning, planning systems and policies, decision-making structures and processes, evaluation systems, lack of transparent, up-to-date, and accurate databases and information, and

challenges in different economic, social, and cultural sectors, presenting obstacles to this sector.

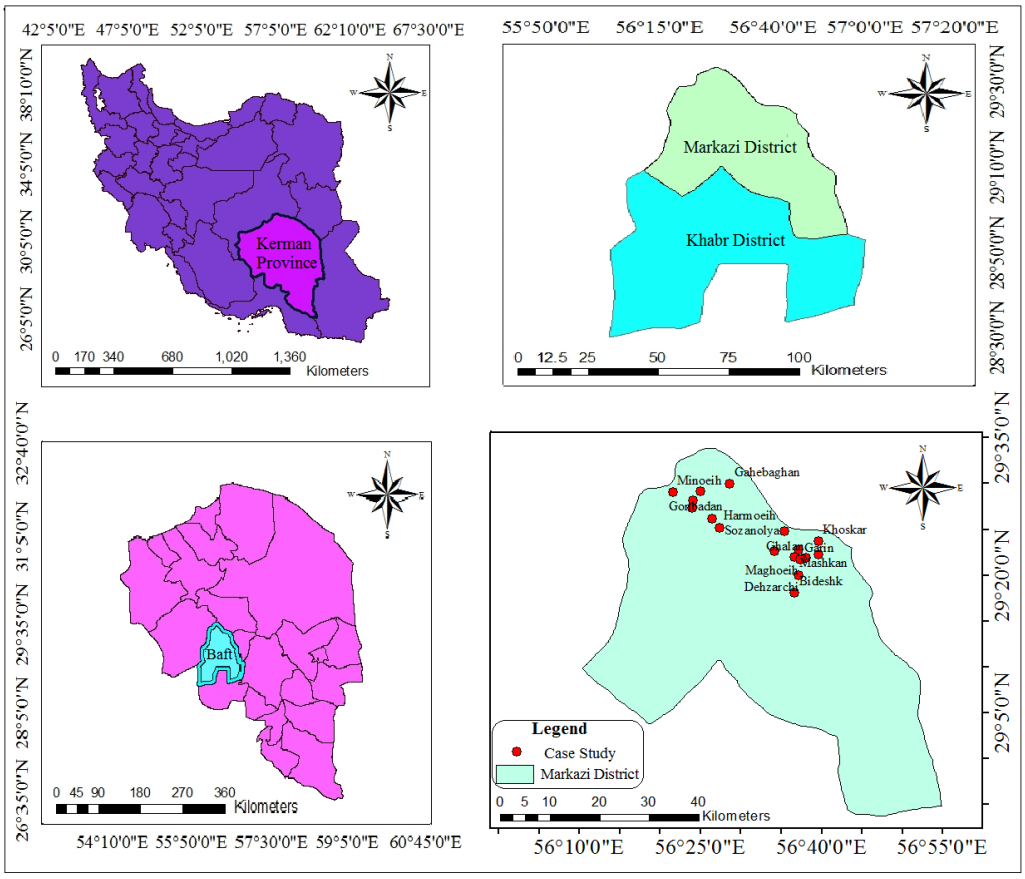

Figure 1. The geographical location of the study area

3.2 Research Method

The research is of an applied nature, utilizing a descriptive-analytical methodology. Data and information were gathered through document analysis (books, articles, and reports) and field surveys (questionnaires and observations). The library method was employed to expand and explain the theoretical aspect of the problem using available documents. After extracting a list of research indices and variables (Table 1), a household-level questionnaire was administered in the studied rural during the field study, utilizing Likert's five-point scale [Very Low (1), Low (2), Moderate (3), High (4), Very High (5)]. The statistical population of this research includes 18 tourism-friendly rural with tourism potential in the central part of Baft Township. All 18 rural were selected for distributing and completing the questionnaires, and the number of households is 2512. Finally, using Cochran's formula, a sample size of 333 individuals was selected.

The sampling from the target population was conducted through a multi-stage method. The validity of the questionnaire was confirmed by a group of experts, and then, using Cronbach's alpha, the reliability of the questionnaire was examined, resulting in a high-reliability coefficient (Cronbach's alpha 0.964). Simple random sampling was employed to select rural households for the research. In such a way that each of the rural is categorized based on the population density and distribution, and accordingly, using this method, the sample size is selected within each of these categories (rural). The validity (face and content) of the questionnaire has been confirmed by a group of specialists with a background in similar studies. A pilot study was conducted in the statistical community area with 30 questionnaires, and using Cronbach's alpha formula, the reliability of the

entire questionnaire was calculated as 0.975. For data analysis, SPSS and LISREL (Structural Equation Modeling) software have been utilized.

Table1.The indicators of measuring Socio-Economic dimension of tourism.

Table 1. The indicators of measuring the Socio-Economic dimension of tourism

Dimension	Component	Index	Reference
Social dimension	social participation	establishing social justice, women's participation rate, participation in decision-making and planning, people's participation in the implementation of tourism development plans and programs, and people's participation in introducing tourist attractions to tourists.	Karroubi & Bazarafshan, 2016; Ruknuddin Iftikhari et al., 2006; Sebele, 2010; Mansuri & Rao, 2004; Vila et al., 2016
	Locality	The inverse ratio of the migration rate from the village, the tendency to stay in the region.	
	Education and Awareness	Education and increasing people's awareness of their environment, increasing advertising activities to attract tourists, participating in training courses to serve tourists, designing training courses related to tourism in the region, and training to start and manage businesses. i t is related to tourism.	
	Protection of tangible heritage	protection of historical buildings, preservation of the originality of native architecture, preservation of natural heritage, and protection of native arts.	Ertuna & Kirbas, 2012; Cawley & Gillmor, 2008; Bornemeier, Victor, & Durst, 1997; CeballosLascurain,1996; Smith, 2012; Jackson & Ingles, 1998
	Protection of intangible heritage	Preservation of local language and dialect, adherence to social norms, and preservation preservation of historical and cultural identity.	
	Preservation of heritage and traditions	Support of handicrafts, preservation of customs and revival of unique traditional village ceremonies, the extent of change in the values and culture of local people due to the arrival of tourists.	
	Investment Cultural promotion	tThe possibility of transferring positive cultural values to other societies, mutual respect between people with different cultures, building local restaurants, and promoting the sale of handicrafts.	
Economic dimension	Employment and income	Increasing the employment rate, attracting skilled workers in tourism, increasing the income of workers in the tourism sector, increasing employment opportunities for young people, attracting surplus labor from the agricultural sector in tourism-related activities, creating local economic units, increasing the value of land in the village. And around it, increasing purchasing power and supporting the local community	Pourahmad et al., 2015. Bhuiyan Siwar et al., 2011; Hussin & Kunjuraman, 2014; Ibrahim & Razzaq, 2010; Perez et al.2013
	Investment	Increasing support for small local investors, government investment in the tourism sector, and private sector investment in the field of tourism.	
	Satisfaction with income and job opportunities	Satisfaction of the local community with the income obtained from tourism, and satisfaction with job opportunities related to tourism.	

4. Research Findings

The descriptive characteristics of the study sample indicate that out of 333 respondents, 293 individuals (88%) are male, and 40 individuals (12%) are female. The highest frequency, with 153 individuals (45.9%), falls within the age range of 40 to 64 years. In terms of education level, 66 individuals (19.8%) are illiterate or have elementary education, 15 individuals (4.5%) have guidance school education, 88 individuals (26.4%) have a high school diploma, 42 individuals (12.6%) have post-diploma education, and 122 individuals (36.6%) have a bachelor's degree or higher. To prioritize the economic and social impacts on rural tourism, the coefficient of variations statistic has been employed. The results of this section are presented in Table 2. As evident from the table results, in the economic dimension, the most significant impacts are on employment, income, and investment, ultimately leading to satisfaction. In the social dimension, the highest impacts are on social participation, followed by the preservation of intangible heritage, sense of belonging, conservation of heritage and traditions, tourist

satisfaction, education, and awareness. The cultural upliftment, however, has the most negligible impact.

Table 2. Social, economic effects on rural tourism indicators

Dimension	Component	Mean	Standard deviation	Coefficient of Variation
social	social participation	3/75	0/97	0/258
	Locality	3/54	0/89	0/251
	Education and Awareness	3/12	0/95	0/304
	Protection of intangible heritage	3/67	0/96	0/261
	Protection of tangible heritage	3/50	1/08	0/308
	Preserving heritage and traditions	3/49	0/89	0/255
	Cultural promotion	2/84	0/88	0/309
Economic	Employment and income	4/09	0/74	0/180
	Investment	3/85	0/75	0/194
	Satisfaction with income and job opportunities	3/81	0/73	0/191

In order to examine the validity of the structural questionnaire and the fit of the measurement model related to the "Economic and Social Effects on the Development of Tourism in the Rural Areas of the Central District of Baft Township," the collected data were analyzed using the LaserL software and subjected to confirmatory factor analysis. The purpose of this method is to determine whether the number of measured factors aligns with what was expected based on theory and theoretical models. In other words, it tests the level of conformity and harmony between the constituent variables and the experimental research structure. In this stage, for evaluating the economic and social effects on rural tourism development, a second-order factor analysis method was employed. Based on the results obtained in Table 3, the t-values for all study variables were more signicant than 1.96, indicating the significance of the relationships between these variables and their respective factors. In other words, the findings of this section indicate that all selected indicators for measuring the economic and social effects on the tourism of rural communities in the Baft Township have sufficient and necessary accuracy; therefore, it can be stated that the utilized indices demonstrate an acceptable alignment with the theoretical foundation of the research. Additionally, as evident from the table results, in the social dimension, the highest impact on participation is related to cultural promotion with a factor loading of 0.98%, while the lowest impact pertains to cultural elevation with a factor loading of 0.23%. In the economic dimension, the highest impact on employment and income is associated with a factor loading of 0.88%.

Table 3. Factor Loadings of indicators and structural effects of Social, and economic on the development of tourism in the form of a measurement model

Dimension	Component	Mean	Factor Loadings	t-value	R^2
social	social participation	MO1	0/98	-	0/95
	Locality	TA1	0/76	15/84	0/65
	Education and Awareness	ED1	0/34	18/22	0/76
	Protection of intangible heritage	HM1	0/60	15/73	0/59
	Protection of tangible heritage	HMN1	0/79	15/46	0/58
	Preserving heritage and traditions	HMI1	0/65	14/63	0/54
	Cultural promotion	EF1	0/23	4/18	0/38
Economic	Employment and income	EC1	0/88	-	0/77
	Investment	SR1	0/86	17/79	0/73
	Satisfaction with income and job opportunities	RZ1	0/80	16/53	0/32

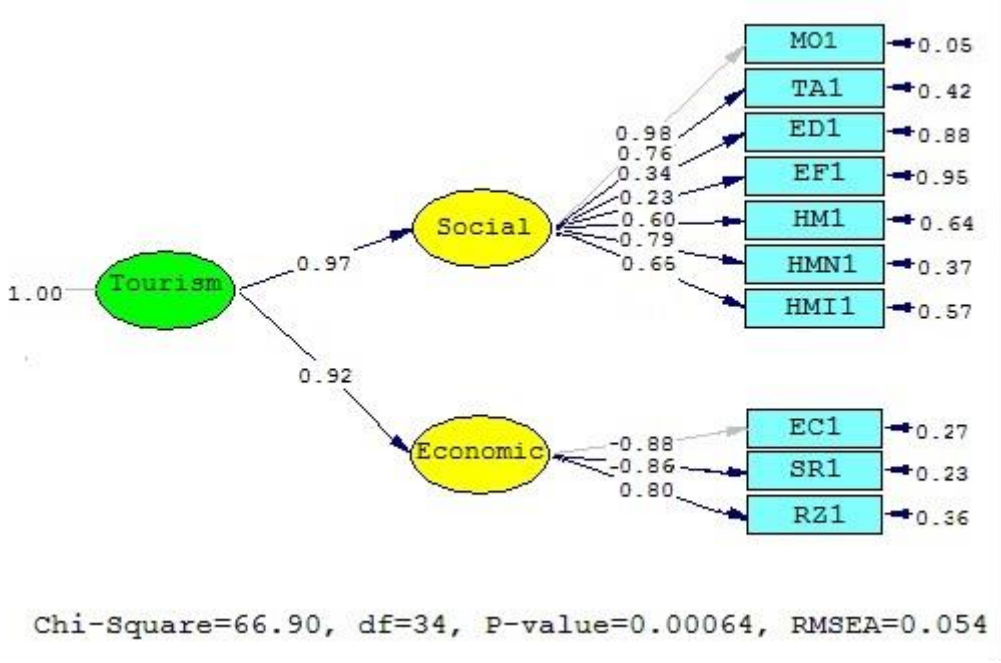

Figure 2. Standardized coefficients of the measurement model components of the effects of Social, and economic on the development of tourism in the standard state

Moreover, considering the representativeness indices presented in the table, it can be asserted that the measurement model of the economic and social effects on rural tourism development in the Baft Township (Figure 2) is valid and acceptable for fitting the relationships between the indices and their corresponding indicators.

Table 4. Fitness indices of the measurement model of the effects of Social, and economic on the development of tourism

Index	X^2/df	RMR	NFI	NNFI	CFI	IFI	GFI	AGFI	RMSEA
Proposed criterion	3 ≤	5 ≤	0.90 ≤	0.90 ≤	0.90 ≤	0.90 ≤	0.90 ≤	0.90 ≤	≤ 0.08
Reported criterion	2.63	0.049	0.94	0.92	0.95	0.95	0.94	0.91	0.054

Based on the results obtained from Table 4, one of the fit indices of the model is the Root Mean Square Error of Approximation (RMSEA). The recommended criterion for this index is less than or equal to 0.08. In the current model, this index equals 0.054, indicating a satisfactory fit of the model under study with the observed data. Another index is the Goodness of Fit Index (GFI) and the Adjusted Goodness of Fit Index (AGFI). The closer these indices are to 1, the better the model fits, and here, their values are 0.91. Also, the ratio of Chi-square to degrees of freedom (χ^2/df) is less than 3, indicating an excellent fit of the measurement model of the research with the observed data. Other fit indices also indicate a suitable and excellent fit of the model. Therefore, considering the results obtained, it can be stated that the overall fit of the measurement model is in a desirable condition and is compatible with the data used. In other words, the overall quality of the fit of the measurement model is considered satisfactory. As demonstrated in Figure 3 and Table 4, the significant part of the coefficients and parameters obtained illustrates the measurement model of the economic and social effects on Baft in the central district of Baft Township. If the significance value is more signicant than 1.96 or less than -1.96, the relationship in the research model will be significant. Figure 3 indicates that all relationships are significant, confirming all hypotheses. Based on this, it can be said that the economic and social components significantly represent a considerable portion of the structure of rural tourism development in the studied area. Therefore, it can be

concluded that the economic aspect has had a more signicant impact on tourism development in the rural areas of Baft Township.

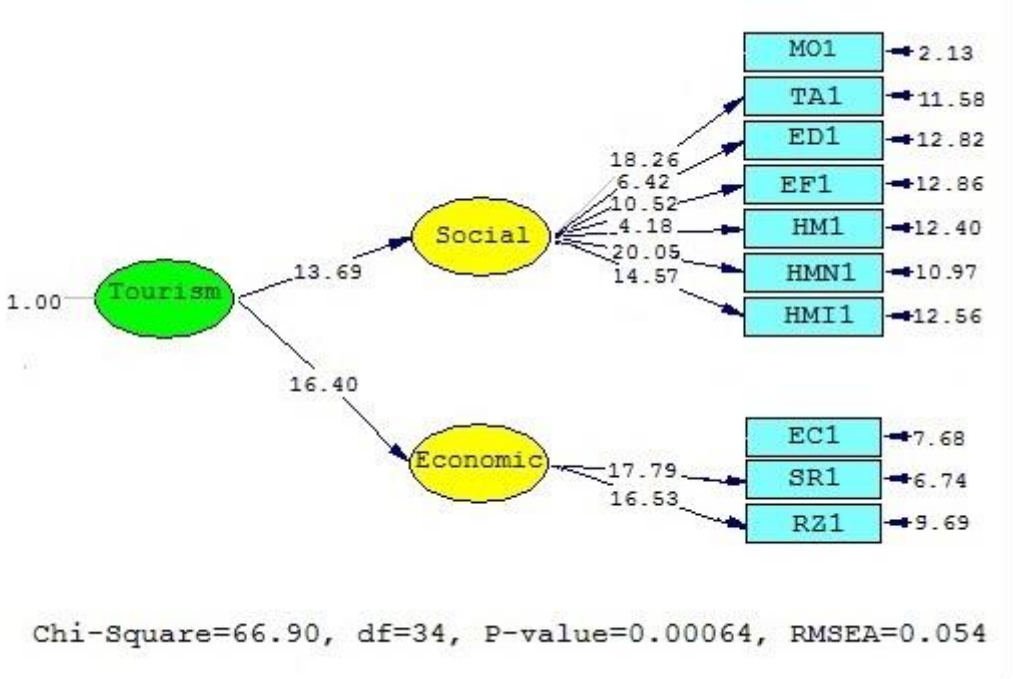

Figure 3. Measurement model of the components of the effects of Social, and economic on the development of tourism in a significant state

5. Discussion and Conclusion

The tourism industry is considered one of the most significant economic activities at the national level. Rural tourism, as a complementary market to rural areas and a crucial source of employment for less dynamic communities like rural societies, holds considerable importance. Employment in this industry does not require high skills and expertise, allowing residents with minimal skills to engage in service-related occupations. This not only leads to increased economic opportunities but also enhances the desirability of the local community's perspective. On the other hand, rural tourism catalyzes cultural, socio-economic, and other forms of development, preventing the transformation of rural areas into impoverished and deteriorating regions. Rural tourism, given its complex nature, has led to fundamental developments in the economic, socio-cultural dimensions of the target rural in recent years. All these changes have impacted the structure and lifestyle of rural residents. Baft Township is one of the promising areas for tourism It attracts a significant number of tourists annually, not only due to its beautiful natural attractions, favourable climate, and the presence of the international Khabar Park but also being situated along the route to Bandar Abbas Township. This research aims to elucidate the economic and social effects of tourism on the rural communities of Baft Township. In addition to achieving this primary goal, the study seeks to expand theoretical frameworks and apply them to analyze the economic and social impacts of tourism on the rural communities of Baft Township. The fndings are presented as follows. Given the obtained results, it can be stated that the overall fit of the measurement model for assessing the effects of tourism on local communities is satisfactory and compatible with the utilized data. In other words, the overall fit of the measurement model is deemed desirable and well-evaluated in this research. As observed, the research findings indicate that, based on the confirmed factor analysis values derived from field data among the examined indices, rural

tourism has a significant impact on the economic and social dimensions of rural areas. However, among these dimensions, employment, income, and social participation showed the highest levels of susceptibility. Tourism flows in the region, endowed with high natural beauty, have led to considerable social and economic consequences. Economically, tourism has contributed to increased income, job creation, investment, and ultimately economic satisfaction. Countries investing in various sectors of this industry, especially rural tourism, and developing its various infrastructures, aim to generate income and foster their development for maximum benefit. Therefore, considering the employment and income generated for rural investing in this sector, tourism is considered one of the critical factors in the growth and development of rural areas. Furthermore, tourism in the rural areas of the Township accelerates economic development in various sectors, including housing and hotel construction, manufacturing and service industries, handicrafts, and more. Regarding the social impacts of tourism, aspects such as social participation, preservation of intangible heritage, and a sense of place attachment can be highlighted. The findings of this research align with the studies conducted by Rastayi et al. (2021), Hasan Nouran (2020), Jalalabadi (2019), Shafiei et al. (2018), and Saghaei et al. (2017). The most important recommendations that can improve the tourism situation in the rural areas of the Township include the following: Improved and expanded government services in infrastructure, such as transportation, water, electricity, sports and health Facilitation.Facilitation of access to the region's rural, enhancement of rural road quality, widening and securing asphalt roads between rural and urban areas. Development and construction of roadside services, such as fuel stations, upgrading the quality of physical and service facilities, restaurants, and other accommodation centers in the area. Enhancement of hygiene standards in accommodation and hospitality centers.Price control and prevention of price gouging in the region.Establishment of order and public discipline in recreational and tourist centers, especially during peak tourist seasons. Promoting tourism culture in the region and introducing tourism as an industry, highlighting its effects on the local community. Educating tourists about rural tourism. Conservation of natural and human tourism resources against any destructive and irresponsible interference. Improvement of existing tourist resources, both natural and historical. Increased attention from local authorities and tourism officials to environmental hygiene. Implementation of policies and measures to prevent land use changes in the region.

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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.

References

1. Abdul Qader Rastayi, Z., Hadiani, Z., & Sayyadi Tayebnia, S. (2021). Analysis of the Effects of Tourism on the Host Community of Rural Areas: A Case Study of Tamin Village in Mirjaveh Township. *Rural and Sustainable Development Journal*, 2(4), [In Persian].
2. Andreea, N., Liliana, S., & Eugenia, N. C. (2022). Tourism in Bucovina, the Victim of the New Coronavirus Pandemic (COVID-19). In *Navigating Through the Crisis–A special Issue on the Covid 19 Crises: The 2020 Annual Griffiths School of Management and IT Conference (GSMAC) Vol 1 11* (pp. 133-151). Springer International Publishing. https://link.springer.com/

3. Ashrafi, A., & Hadi, F. (2019). The impact of tourism on developing Shiraz rural women entrepreneurship. *Universidad y Sociedad*, *11*(4), 72-76. https://rus.ucf.edu.cu/index.php/rus/article/view/1294
4. Bajrami, D. D., Radosavac, A., Cimbaljević, M., Tretiakova, T. N., & Syromiatnikova, Y. A. (2020). Determinants of Residents' Support for Sustainable Tourism Development: Implications for Rural Communities. *Sustainability*, *12*(22), 1-16. https://doi.org/10.3390/su12229438
5. Barzegar, S., Rezaei, T., Janbabanezhad, M. H. (2016). The Effects of Local Tourism on Sustainable Development in Rural Areas: A Case Study of Farsian Village. *Heritage and Tourism Journal*, 1(3), 165-178. [In Persian] www.magiran.com
6. Bhuiyan, M., Siwar, C., Ismail, S., & Adham, K. (2011). Green Tourism for Sustainable Regional Development in East Coast Economic Region (ECER), Malaysia. *OIDA International Journal of Sustainable Development*, *5*(7), 69-78. https://www.elsevier.com/legal/cookienotice
7. Bornemeier, J., Victor, M., & Durst, P. B. (1997). Ecotourism for forest conservation and community development: *proceedings of an International Seminar held in Chiang Mai*, Thailand 28-31 January 1997. *(No Title)*. https://cir.nii.ac.jp/crid/1130282271659984512
8. Cawley, M., & Gillmor, D. A. (2008). Integrated rural tourism:: Concepts and Practice. *Annals of tourism research*, *35*(2), 316-337. https://doi.org/10.1016/j.annals.2007.07.011
9. Ceballos-Lascurain, H. (1996). *Tourism, ecotourism, and protected areas: The state of nature-based tourism around the world and guidelines for its development*. Iucn. https://www.cabdirect.org/
10. Dodds, R., Ali, A., & Galaski, K. (2018). Mobilizing knowledge: Determining key elements for success and pitfalls in developing community-based tourism. *Current Issues in Tourism*, *21*(13), 1547-1568. https://doi.org/10.1080/13683500.2016.1150257
11. Ertuna, B., & Kirbas, G. (2012). Local community involvement in rural tourism development: The case of Kastamonu, Turkey. *PASOS Revista de Turismo y Patrimonio Cultural*, *10*(2), 17-24. https://doi.org/10.25145/j.pasos.2012.10.023
12. Figueiredo, V., & Brochado, A. O. (2015). Assessing the main determinants of entrepreneurship in Portugal. *Tourism & Management Studies*, *11*(1), 182-190. https://www.tmstudies.net/
13. Grgi´c, I., Hadelan, L., Krznar, S., Zraki´c, M. (2017). Could Rural Tourism Revitalize Rural Areas in Croatia?. *Agroeconomia Croatica*, 7, 98–108 https://hrcak.srce.hr/190567
14. Habibi Kooshkooi, H. (2020). *The Role of Tourism in Rural Development in the East of Gilan Region with an Emphasis on Entrepreneurship*. Shahid Beheshti University, Faculty of Earth Sciences. [In Persian] https://jshsp.rasht.iau.ir/
15. Hasan Nouran, S. S. (2020). Examining the Role of Rural Tourism in Social, Economic, and Environmental Changes in Deh Shahr-e Dara Region. Urmia University, Faculty of Literature and Humanities. [In Persian]
16. Hussin, R., & Kunjuraman, V. (2014). Sustainable community based tourism (CBT) through homestay programme in Sabah, East Malaysia. *Proceeding of the Social Sciences Research ICSSR*, *2014*, 41-61. https://www.researchgate.ne
17. Ibrahim, Y., & Razzaq, A. R. A. (2010). Homestay program and rural community development in Malaysia. *Journal of Ritsumeikan Social Sciences and Humanities*, *2*(1), 7-24. https://d1wqtxts1xzle7.cloudfront.net
18. Iorio, M., & Corsale, A. (2010). Rural tourism and livelihood strategies in Romania. *Journal of rural studies*, *26*(2), 152-162. https://doi.org/10.1016/j.jrurstud.2009.10.006
19. Jackson, W. J., & Ingles, A. W. (1998). *Participatory techniques for community forestry: A field manual*. IUCN. https://books.google.com/
20. Karoubi, M., & Bazrafshan, S. (2016). Tourism Development and Cultural Shifts in Rural Areas: A Case Study of Aseb Sar Village, Behshahr Township, Mazandaran Province. *Iranian Journal of Cultural Research*, 8(2), 73-94. [In Persian] http://ensani.ir/
21. Lotfi, H., Moradi, A., Khalife, E., Haghighi Motlaq, Z. (2016). Explaining the Effects of Tourism on Rural Sustainability (Case Study: Shemshak Village, Tehran Province). *Studies on Human Settlement Planning*, 11(37), 133-149. [In Persian] https://jshsp.rasht.iau.ir/

22. Mansuri, G., & Rao, V. (2004). Community-based and-driven development: A critical review. *The World Bank Research Observer*, *19*(1), 1-39. https://doi.org/10.1093/wbro/lkh012
23. Mohammad Sharif, S., Ardestani, Z., & Gourdarzi, M. (2009). Investigating the Effects of Tourism on Rural Regional Planning. *Human Geography Research*, 41, 99-113. [In Persian] https://jhgr.ut.ac.ir/
24. Moradi, V., & Qasemi, A. (2014). The Role of Tourism in the Economic Development of Rural Settlements in Behshahr City. *Journal of Space Economy and Rural Development*, 3(8), [In Persian] 10.30495/JZPM.2022.4025
25. Naranjo, L. P., Fernández, B. M. N., Torres, L. L. P., Entenza, N. P., & Pérez, A. V. (2022). Rural Tourism As An Engine For Socio-Economic Reactivation: Camajuaní Case In The Central Zone Of Cuba. *Journal of Positive School Psychology*, 6958-6969. https://www.journalppw.com/index.php/jpsp/article/view/8734
26. Nemati, V., alizadeh, M., oroji, H., & Mousavi, S. S. (2020). Explanation and determining optimal model interaction between Film tourism and rural tourism development (Case study: Soulaghan village, Tehran province). Journal of Tourism Planning and Development, 9(33), 109-128. doi: 10.22080/jtpd.2020.18257.3233
27. Pérez, E., Fernandes, R. C., Delgado, R. G., García-Benito, R., Sánchez, S. F., Husemann, B., ... & CALIFA collaboration. (2013). The evolution of galaxies resolved in space and time: a view of inside-out growth from the califa survey. *The Astrophysical Journal Letters*, *764*(1), L1. DOI 10.1088/2041-8205/764/1/L1
28. POPȘA, R. E. (2020). THE IMPACT OF RURAL TOURISM ON THE SOCIO-ECONOMIC DEVELOPMENT OF LOCAL COMMUNITIES. *Revista Economica*, *72*(4). http://economice.ulbsibiu.ro/revista.economica/archive/72405popsa
29. Pourahmad, A., Hosseini Siyahgoli, M., & Safdari Mollan, M. (2016). Evaluation of Sustainable Tourism Development Indicators in Host Communities: A Case Study of Sari City. *Spatial Planning Journal*, 6(21), 160-172. [In Persian] https://gps.gu.ac.ir
30. Quan-Baffour, K. P. (2023). Cultural tourism and socio-economic regeneration of rural communities: the Apo festival of Bono Takyiman, Ghana. *African Identities*, *21*(1), 134-149. https://doi.org/10.1080/14725843.2020.1856644
31. Rayegani, S. M., Bayat, M., Bahrami, M. H., Elyaspour, D., Azhari, A. M. I. N., & Valaei, N. (2010). Comparison of dry needling and physical therapy modalities in treatment of myofascial pain of upper trapezius muscle. *Pejouhesh dar Pezeshki*, *34*(3). https://www.cabdirect.org/cabdirect/abstract/20113210140
32. Rezvani, M. R., Jafari Moghadam, S., Rahimi Afhami, H. (2012). The Impact of Tourism on Strengthening Entrepreneurial Attitudes in Rural Areas. *Rural Research Quarterly*, 3(10), 153-174. [In Persian] 10.22059/JRUR.2012.25101
33. Roknaldin Eftakari, A., & Mahdavi, D. (2006). Rural Tourism Development Strategies Using SWOT Model: A Case Study of Lowasanat Kuchak District. Modares Human Sciences Journal, 2, 130. [In Persian] www.ensani.ir
34. Saghaei, M., Javanbakht Ghaffarkhi, Z., & Eidi, M. (2016). Formation of Social-Centric Tourism in Rural Areas of Golestan Province. *Geography Journal*, 4(49), 95-113. [In Persian] https://mag.iga.ir/article_700867.html
35. Sojasi Gheydari, H., Delir Tizabi, E. (2017). Analysis of Social Responsibility Level of Tourists in Target Rural of Tourism (Case Study: Tourists of Khaf Township Rural). Tourism Social Studies, 5(9), 29-55. [In Persian] http://journalitor.ir/
36. Sebele, L. S. (2010). Community-based tourism ventures, benefits and challenges: Khama rhino sanctuary trust, central district, Botswana. *Tourism management*, *31*(1), 136-146. https://doi.org/10.1016/j.tourman.2009.01.005
37. Shafiei Sabat, N., Ghorbani, J., & Bahmani, R. (2018). Historical Tourism Capacities and Their Impact on Sustainable Rural Development: A Case Study of Sultanieh Region, Zanjan Province. Human Sciences Research Journal, 10(37), 94-108. [In Persian] https://scj.sbu.ac.ir/

38. Smith, K. (2012). The problematization of medical tourism: a critique of neoliberalism. *Developing world bioethics*, *12*(1), 1-8. https://doi.org/10.1111/j.1471-8847.2012.00318.x
39. Stepanova, E., Rozkova, A., Yushkova, L., & Balisheva, M. (2023). Development of rural tourism in the regions of Russia as a factor of sustainable development of rural areas. In *E3S Web of Conferences* (Vol. 376). EDP Sciences. doi.org/10.1051/e3sconf/202337602030
40. Tran, L., & Walter, P. (2014). Ecotourism, gender and development in northern Vietnam. *Annals of Tourism Research*, *44*, 116-130. https://doi.org/10.1016/j.annals.2013.09.005
41. Vila, M., Costa, G., Angulo-Preckler, C., Sarda, R., & Avila, C. (2016). Contrasting views on Antarctic tourism:'last chance tourism'or 'ambassadorship'in the last of the wild. *Journal of Cleaner Production*, *111*, 451-460. https://doi.org/10.1016/j.jclepro.2014.12.061

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Original Article

تبیین اثرات اقتصادی-اجتماعی توسعه گردشگری بر جوامع محلی در نواحی روستایی (مطالعه موردی: شهرستان بافت)

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چکیده مبسوط

۱. مقدمه

از مزایای اصلی گردشگری روستایی؛ افزایش درآمد، ایجاد شغل، و بهبود سطح رضایت جمعیت ساکن در جوامع محلی است. اما در مقایسه با سایر اشکال توسعه اقتصادی، بهبود استانداردهای زندگی را می توان از جریان گردشگران و گسترش سریع تقاضا به دست آورد. در گردشگری هیچ فناوری پیچیده ای برای ایجاد امکانات اولیه مورد نیاز نیست. در حال حاضر توسعه گردشگری روستایی نقش ایجاد توازن بین سنت های خاص جامعه محلی و صنعت گردشگری را ایفا می کند و می تواند نیروی کار بیکار را جذب کند . سکونتگاه‌های روستایی شهرستان بافت، یکی از تفرجگاهای استان کرمان است که با وجود رودخانه ،هوای سالم و جاذبه های طبیعی و کوهستانی زیبا، از قدرت جذب گردشگر در فصول مختلف سال برخوردار است و به دلیل کوهستانی بودن این شهرستان که تعدیل هوا را به دنبال دارد، میزان جمعیت قابل ملاحظه ای را به این شهرستان می کشاند. این شهرستان دارای پتانسیل های بالقوه ای از نظر طبیعی و انسانی برای جذب گردشگر است، اما به رغم سابقه تاریخی و توانهای بالقوه، توسعه این شهر متناسب با توانمندیها و ظرفیتهای آن صورت نگرفته است. توانهای بالقوه و جاذبه های متعدد گردشگری و توسعهٔ این صنعت میتواند عامل مهم و تأثیرگذاری دررشد و توسعهٔ و محرک خوبی در توسعهٔ اقتصادی روستاهای هدف گردشگری شهرستان باشد. سؤال اصلی تحقیق در ذهن به وجود می‌آورد که: توسعه گردشگری روستایی چه تاثیراتی بر توسعه اقتصادی-اجتماعی جوامع محلی شهرستان بافت داشته است؟

۲. مبانی نظری تحقیق

گردشگری در مناطق و جوامع روستایی به عنوان یک گزینه ی جایگزین به دو دلیل مورد توجه است :الف) توانایی توریسم در کمک به حل مسائل و چالش های پیش روی آنها ب)توسعه ی اقتصادی، زیرساختی و دسترسی بهتر به فرصت های اشتغال و درآمد راه های نجات روستا از فقر، مهاجرت و مشکلات اقتصادی و اجتماعی به شمار می رود و .علاوه بر این،گردشگری به مثابه یک متغیر تأثیرگذار در افزایش زیرساخت ها، ارتقاء تبادلات اجتماعی و فرهنگی، جلب سرمایه های سرگردان و به جریان انداختن آن در محیط روستا، در راستای نیل به سطحی از توسعه اقتصادی تلقی می شود و به زعم محققین، شکوفایی گردشگری به عنوان یک راهبرد در راستای تزریق ارز، ایجاد اشتغال و حمایت و پشتیبانی از رشد همه جانبه در نواحی روستایی می باشد شکوفایی گردشگری به عنوان یک راهبرد در راستای تزریق ارز، ایجاد اشتغال و حمایت و پشتیبانی از رشد همه جانبه در نواحی روستایی می باشد این گستره جغرافیایی در قلمرو سرزمینی با در اختیار داشتن بخش وسیعی از منابع ملی، جامعه روستایی می تواند در شکل گیری فرصت های بسیار زیاد در مناطق روستایی کشور موثر واقع شود .از جمله این فرصت ها در بخش گردشگری روستایی است . کمک به ایجاد اشتغال، توسعه کسب و کارهای کوچک، افزایش سرمایه گذاری های دولتی و خصوصی در روستا، تقویت زیرساخت ها، بهره گیری از منابع مالی محدود، کسب درآمد برای خانوارهای فاقد درآمد یا کم درآمد، از مهمترین جنبه های اقتصادی کارآفرینی اکوتوریستی است.

۱. نویسنده مسئول:
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۳. روش تحقیق

نوع پژوهش کاربردی و روش‌شناسی مورداستفاده توصیفی -تحلیلی میباشد. در پژوهش حاضر جهت گردآوری اطاعات و داده ها از روش اسنادی (کتاب‌ها، مقالات و گزارش‌ها) و پیمایش میدانی (پرسشنامه و مشاهده) استفاده شده است. در شیوه کتابخانه‌ای به کمک اسناد موجود به بسط و تبیین نظری مسئله پرداخته شد. در نهایت پس از استخراج فهرستی از شاخص‌ها و متغیرهای پژوهش، در مرحله‌ی مطالعه‌ی میدانی به کمک پرسشنامه در سطح خانوار روستاهای مورد مطالعه در چارچوب لیکرت و به صورت پنج طیفی عملیاتی شد. بررسی روایی پرسشنامه توسط گروهی از متخصصین که سابقه مطالعات مشابه داشتند مورد تأیید قرارگرفته است. مطالعه آزمایشی در منطقه جامعه آماری با تعداد ۳۰ پرسشنامه صورت گرفت و با استفاده از فرمول آلفای کرونباخ، پایایی کل پرسشنامه ۰/۹۶ به دست آمد. همچنین از پایایی ترکیبی نیز استفاده گردیده است که بر اساس هر دو آماره پایایی متغیرها از مقدار قابل قبولی برخوردار بود .جهت تجزیه و تحلیل داده‌ها از نرم افزار *Spss* و *Lisrel* (مدل‌سازی معادلات ساختاری) استفاده شده است.

۴. یافته‌های تحقیق

نتایج پژوهش نشان داد که براساس مقادیر شاخص‌های تحلیل عاملی تاییدی به دست آمده از داده‌های میدانی در میان شاخص‌های بررسی شده، بیانگر آن است که گردشگری روستایی تاثیرات اقتصادی و اجتماعی بر جوامع محلی داشته‌اند. براساس آماره ضریب تغییرات مربوط به گردشگری روستایی در بعد اقتصادی بیشترین تأثیر بر اشتغال و درآمد، سرمایه گذاری و رضایت مندی، داشته است. به علاوه بیشترین اثرات در بعد اجتماعی مشارکت اجتماعی، حفاظت از میراث ناملموس، تعلق مکانی و حفظ میراث ها و سنت ها، رضایت مندی گردشگران،آموزش و آگاهی و در نهایت اعتلای فرهنگی بوده است.

۵.بحث و نتیجه‌گیری

نتایج پژوهش نشان می‌دهد گردشگری بیشترین تاثیر را بر بعد اقتصادی داشته است بنابراین پیشنهاد می‌شود شرایطی فراهم شود تااز حداکثر پتانسیل‌های گردشگری روستایی استفاده شود . و هم تعداد گردشگران به روستا افزایش یابد تا شرایط اقتصادی ساکنین روستا نیز با افزایش تعداد گردشگران بهبود یابد همانطور که در همانطور که در پژوهش مشخص گردید گردشگری باعث افزایش اشتغال شده است. بنابراین پیشنهاد می‌شود برنامه‌های آموزشی توسعه مهارت‌های کارآفرینی و خدمات رسانی برای مردم محلی افزایش یابد تا ساکنین بتوانند با افزایش آگاهی خود و و بهبود مهارت‌ها به نقش آفرینی موثر در این صنعت بپردازم فقدان مهارت‌های کارآفرینی در روستاهای شهرستان بافت عمده‌ترین محرومیت آنها از کسب و کار گردشگری و منافع حاصل از آن است، استفاده هوشمندانه از تغییرات حاصل از ورود گردشگران به نحوی که بتوان رفتارهای اجتماعی افراد را به سمت و سوی تغییرات مثبت سوق داده و از تغییرات مثبت حاصل از ورود گردشگران حمایت و با تغییرات منفی و مخرب مقابله کرد.

کلیدواژه‌ها: جوامع محلی، توسعه گردشگری، اثرات اقتصادی اجتماعی مدلسازی معادلات ساختاری، شهرستان بافت.

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Original Article

Identifying Strategies to Make Villages Smarter with the Aim of Improving the Quality of Life (Case Study: Kalar County, Sulaymaniyah Province, Kurdistan Region)

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Abstract

Purpose- The widespread use of virtual platforms has become a common practice in present management, and rural areas are identified as a sector that can greatly benefit from this technology. Statistic data in the field of communication and information technology exhibit a significant increase in internet access in rural areas, a trend that is on the rise globally. The successful implementation of smart village initiatives in Asia shows a promising way to improve life in rural areas, overcome existing challenges, prevent the collapse of social structures, and counteract the problem of rural exodus. It can be argued that by advancing information technology and smart village initiatives, life quality in rural areas can be positively impacted.

Design/methodology/approach- The research population comprised the entire statistical community of four districts in Kalar County. Three villages were randomly selected from each district, resulting in a total of 150 samples from 262 households, using the Cochran formula with a 5% error rate. The reliability of the questionnaire was confirmed through content validity and Cronbach's alpha.

Finding- The results of this study indicated that the existing infrastructure for smart village development in the rural areas of Kalar County is in an unsatisfactory condition. Additionally, the level of knowledge and information of residents regarding the smartification process in the study area is insufficient. Moreover, the effectiveness of this emerging process in improving the life quality for the local population was not as impactful as expected. The driving and inhibiting factors affecting the development of smart villages in Kalar County do not align with optimistic expectations hindering the desired outcomes.

Keywords: Smartification, Smart village, ICT strategy, Rural development, Kalar County.

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1. Introduction

Information and Communication Technology (ICT) is a broad term encompassing a diverse range of technologies, from simple ones such as text messaging services to advanced items, namely sophisticated software solutions. Due to its cost-effectiveness, ICT has been widely adopted in rural areas and the agricultural sector, with the highest usage prevalence observed in rural regions. The advantages of utilizing ICT in rural areas include providing an affordable means of connectivity, facilitating cost-effective execution, online storage and transfer of information, and the emergence of efficient new business models. Additionally, it leads to innovative collaboration methods and increased demand for agricultural and rural information services, all of which directly impact the improvement of rural residents' life quality (György et al., 2011: 352). As part of the global digitalization trend, the Internet of Things (IoT) facilitates the transfer and secure sharing of data by connecting physical entities to the internet and offers the potential to enhance the quality of rural life (Dlodlo and Kalezhi, 2015: 16-17). Moreover, the benefits of investing in the development of smart villages are claimed to be twofold. These initiatives benefit residents by making their lives more straightforward while contributing to the creation of a more powerful, resilient, independent, and interconnected community. Smart villages also assist in the efficient utilization of available resources, fostering community and belonging development, and independence (Smart Villages, 2020).

Although the concept of smart villages is often associated with agriculture, it extends beyond that scope. In other words, it encompasses a broader range of heterogeneous activities primarily supported by technology, serving as a tool to enhance services in rural areas. It facilitates rural performance, leading to overall progress for rural residents and an enhancement in their life quality. (Plochá, 2019: 595-594). The European Commission (EC) refers to smart villages as rural communities that utilize their current benefits, strive for their digital development, and simultaneously support daily activities related to improving the life quality and living standards. This involves reassessing public services and considering environmental aspects in every practical aspect of it (Food, Farming, Fisheries. European Commission, 2020). In a similar vein, The European Network for Rural Development (ENRD) defines this concept as follows: smart villages pertain to communities in rural areas that strategically use local strengths and opportunities. Through innovative solutions, they enhance their resilience, aiming to develop and implement strategies for the improvement of their economic, social, or environmental conditions. Embracing solutions provided by digital technologies, they rely on the creation of innovation and a participatory approach to execute their strategies (ENRD, 2020). Furthermore, they benefit from collaboration and cooperation with other communities and stakeholders in rural and urban areas. The initiation and implementation of smart village strategies may be based on existing innovations and funded by various governmental and private resources. The participatory approach involves active community participation in formulating smart village strategies and decision-making. During the implementation phase, the participatory approach ensures that capacity-building needs and training for individuals are adequately addressed (European Union Pilot Project, 2019). Utilizing digital technologies solely is insufficient for creating smart villages. Alternatively, digital technologies such as ICT, the use of big data or innovations in connection with the IoT are also required. These technologies serve as a lever enabling smart villages to become more agile, better utilize their resources, and enhance the appeal of rural areas and the life quality for their residents (European Union Pilot Project, 2019).

Trinity College Cambridge defines smart villages as a modern global approach for off-grid communities. This concept aims to assist policymakers, donors, and economic and social planners in electrifying rural areas worldwide, with a special focus on Asian and African countries (Alternative Energy Solution for the 21st Century, 2015).

In other words, this notion aims to overcome real barriers to energy access in rural areas, especially in developing countries, using technological, financial, and educational methods. Countries of the third world and rural areas have the potential to enhance the quality of rural life through the improvement of information technology and the

smartification of villages (Bahramian, 2019: 37). For instance, in India, the quality of rural life improved when the smartification of villages was achieved (Rao, 2007: 75).

Kalar County is located within the administrative region of Garmian Province, approximately 120 km south of Sulaymaniyah Province. This area is situated along the Sirwan River, less than 25 km away from Qasr-e Shirin city on the Iran-Iraq border. There has been an increased focus on information technology and internet usage in these rural areas, recently. Considering these circumstances, adopting strategies that contribute to the process of smartifying villages is of paramount importance. As it can lead to an improvement in the lives of rural dwellers and a general improvement in their life quality. The aim of this study was therefore to identify strategies for smart villages in Kalar County, Sulaymaniyah in the Kurdistan Region to improve the life quality of rural residents. The research questions are as follows:

A. What is the level of knowledge and information of the local population on smartification in the villages of Kalar County?

B. What affects does the villages smartification have on the life quality of indigenous people in the villages of Kalar County?

C. What managerial components are effective in achieving smartification in the villages of Kalar County?

2. Research Theoretical Literature

Class-based creativity and smartification: Slee et al. (2015) in Scottish villages and Scalluna-Orkaw et al (2016) in other rural areas of Europe focused on the redefinition of the class by McCranahan and Wu (2007a; 2007b). Accordingly, it can be assumed that the different size of the creative class in rural areas is related to different economic performances. However, it is not clear whether a higher level of development results from the presence of a larger creative class or whether a creative class moves to an area because of higher economic output. Nevertheless, the presence of a higher percentage of individuals in the creative class may logically be used as an exploratory hypothesis to examine the relationship between the size of the creative class and smart and less smart villages.

Social capital and smartification: Social capital has been identified as a key determinant of different economic performances in the south and north of Italy (Putnam, 1993). Hence, social innovation can be viewed as a robust outcome of social capital, indicating a willingness among individuals to engage in civic initiatives that exert a positive influence on economic performance. This potentially explains different economic performances (i.e., smartness) at the micro-level. Nevertheless, as reported by Putnam (1993), social capital is positioned alongside other forms of capital that are likely to undergo spatial variations. However, variations in social and human capital, particularly disparities in the bridging and bonding aspects of social capital, could serve as exploratory hypotheses distinguishing between smart and less smart villages.

Social capital, innovation, and smartification: Many of these theories converge in acknowledging substantial spatial differences, which can be attributed to factors like economic structural elements, shifts in human and social capital, and local knowledge. Considering these differences, can place-based development (Barca, 2009; Barca et al., 2012) be regarded as a means to comprehend the diversity of capabilities in space and formulate subtle regional or local strategies? In larger regions, it may be challenging to shape place-based development strategies for empowered villages. Definitely, in dominant discourses based on technology regarding smart villages, apart from the largely discredited linear modernization theory, there is little presence connecting to any of these main theories. Indeed, single-line theories criticized by Van der Ploeg and Long (1993) are primarily considered irrelevant to more distant and peripheral areas. Whereas, they are widely supported within the framework of digitally-based smart village models. However, the discourse of social capital/innovation has strong theoretical roots, well demonstrated in Putnam et al (1993) and other studies.

2.1. Literature Review

ICT can enhance urban-rural relationships. In smart villages, this relationship is primarily based on economic variables. The increase in economic power in providing services to citizens, attention to providing information and individual experiences in the construction of residential structures, utilizing urban experiences in rural area improvement, and increasing services in villages

for leisure activities are among the impacts of ICT in rural areas. Additionally, the increase in personal investment in urban and rural infrastructure, along with enhancing the role of urban and rural institutions in improving urban-rural relations, contributes significantly to the transformative effects of ICT in rural areas (Roumiani et al., 2018). A study by Anabestani & Javanshiri (2024) on smart growth, aims to examine smart development in rural areas of the county and provide a framework for this strategy. The results presented that in the hierarchical analysis process, economic indicators had the greatest impact on the formation of smart rural development. Additionally, examining various smart development indicators at the village level, indicated less favorable conditions for physical and environmental indicators in villages (Anabestani & Javanshiri, 2016). Furthermore, Khajeh Shahkooi demonstrated that the economic, social, physical, and environmental dimensions of IT significantly impacted the rural life quality (Khajeh Shahkooi, 2013).

The development of rural areas is achived through the concept of a smart village, considered as one of the best ideas for improving the life quality by focusing on the intelligent planning of rural spaces. This development includes economic and social variables of rural areas (Nofi & Eila, 2019). Rachmawati et al (2018) investigated in Indonesia, and expressed that smart cities and smart villages are distinct entities with varying sizes and regional challenges. They also highlighted that not all elements present in smart cities are universally applicable in all regions (Rachmawati, 2018). The concept of a smart village has evolved into a complementary option for rural development in the contemporary global era. In other words, this concept provides a solution to enhance the life quality in rural areas, creating opportunities for villages to engage in complementary activities or generate added value for their existing activities (Ahlawat, 2017: 202).

The notion of the "smart village" was extended by Van Gool & Holmes, who argued that by developing various sectors such as health, education, food security, environment and general quality of life, the improvement of rural areas becomes feasible through smart village initiatives (Van Gool & Holmes, 2020). In sustainable urban and smart village research, Visvizi & Lytras (2018) provide a comprehensive overview of social issues, and various economic and social aspects pertinent to smart cities and smart villages. They claim that policy design, strategic formulation, case studies, technology-related issues, tools, and applicable systems are crucial tools for improving life quality in smart villages. Accordingly, policymaking in rural areas under the influence of information technology can lead to improvement (Visvizi & Lytras, 2018).

Smart villages within the European Union and beyond have concluded that the smartification of villages can mitigate population decline and rural migration, serving as a tool for population retention (Visvizi & Lytras, 2018). Patnaik et al. (2020) published an article entitled “Smart rural technology: concepts and developments” which proposed various approaches to sustainable smart village development. They also provided examples illustrating how smart village concepts connect with technology, agricultural management, and water resources. Then, they presented the concepts of renewable energy management and concluded by exemplifying the use of smart technology to address rural challenges (Petnaik et al., 2020). Similarly, Kwar et al (2020) demonstrated how the implementation of IoT solutions in smart villages can lead to improved life quality for rural residents (Kwar et al., 2020). Besides, Zawratnek et al () focused more on individuals living in these areas, emphasizing that technology should serve the people rather than the other way around. They argue that in some rural areas, the use of IT has contributed to an increase in social indicators such as inequality and the digital divide, leading to a decrease in the life quality for certain groups (Zavratnik et al., 2020).

Sadeghloo et al. (2023) published a paper entitled “Analyze of the factors influencing the acceptance of ICT in rural communities, Case study: Shandiz region villages”. They concluded that the level of acceptance of new technologies among the studied villagers is moderate, with the most influential factors being educational and facility-related, cultural and belief-related, economic, and personal factors. Furthermore, Anabestani & Javanshir (2024) published the “Effectiveness of digital technology on the formation of creative rural infrastructures in peri-urban settlements, focusing on Mashhad”. They documented that from the perspective of rural creative infrastructures, using

government incentives, such as tax exemptions and housing and employment facilities, to attract and prepare the young population can be suggested. Similarly, In their article titled "Drivers of electronic marketing in rural areas (Case study: Khoshab County)," Jalalian et al (2023) argued that the government's efforts to achieve non-discriminatory access to information technology and electronic marketing are primarily characterized by the enactment of necessary laws. They also emphasized the intermediate modification of legal and regulatory structures, the quality and ease of access to supporting institutions, market competitiveness in agriculture, the increase in the share of electronic transactions, the enhancement of trust in this type of marketing, network security in electronic marketing, and other factors, respectively, hold subsequent significance. In another study, Fathi & Azizpanah (2021) published a paper titled "Investigating factors affecting the use of ICT -based training in agriculture in northern Khuzestan" claimed that considering the greater impact of agricultural income on the use of ICT-based training, it recommended to adjust the cost of the Internet for web-based agricultural training platforms as much as possible.

3. Research Methodology

The present research, considering the nature of the subject, is practical and developmental, in terms of scope, it is a case study. Methodologically, it falls into the category of descriptive-analytical research. To elucidate the findings, a descriptive method was employed, and for hypothesis testing, an analytical approach was utilized. Furthermore, to assess the level of usage and deployment of facilities in the investigated villages, key indicators and formulated questionnaires were employed, and evaluated through a survey method based on documentary studies.

The statistical population included the villages of Zamangeh, Cheh Mah Besmila, Zhaleh-ye Seh Far, Piazajareh, Dormilan Kharavv, Kool-e Jooi Hamzeh Khan, Seh-ye Mahmoud, Pirehsh, Zhaleh-ye Hajighader, Bistaneh, Tehm Tehmeh, Bahrageh La, totaling 262 households (information provided by the Garmiyan Governorate as of November 20, 2013).

Considering the similarity of villages within each district in terms of geography and information technology facilities, three villages from each district were randomly selected as a simple random sample, resulting in a total of 12 villages for sampling. The sampling in each village was based on a systematic random method (based on household units). The sample size determination used Cochran's formula, resulting in 150 households with a 5% margin of error. The distribution of the sample size at the district level was proportionate to the number of villages in each district, taking into account their access to facilities and also considering the distance and proximity of the county's villages from the county center. Hence, the list of villages and necessary maps were obtained from the Garmiyan Regional Office (Governorate agency of the region). The villages were selected proportionately in a manner that maximized alignment with current conditions and minimized possible errors(table 1).

Table 1. Research sample

County	Village name	Household	Population	Sample number
Nahevand(Central)	Zamavengah	46	216	27
	Che me besmila	16	93	9
	Zhale se fer	14	95	8
Rezgari	Piaze jar	30	245	8
	Dormilan kharoo	10	57	6
	Koole joy Hame khan	13	67	12
Pebaz	Se y Mahmood	42	170	10
	Pirehsh	17	110	19
	Zhale haji ghader	11	55	6
Sheikh tavil	Bistane	31	151	18
	Te me te me	21	102	6
	Be re gel	11	40	12
Total		262	1401	150

To obtain the samples, the statistical section of the governorate was consulted, and the statistical list for the year 2013 was prepared. The samples were selected by dividing them regionally into four districts, and three villages were chosen from each district. Subsequently, the first sample was randomly selected, and the remaining samples were chosen systematically based on the level of facilities (in three levels). Therefore, in the selection of samples in each district, there were three levels of access to facilities.

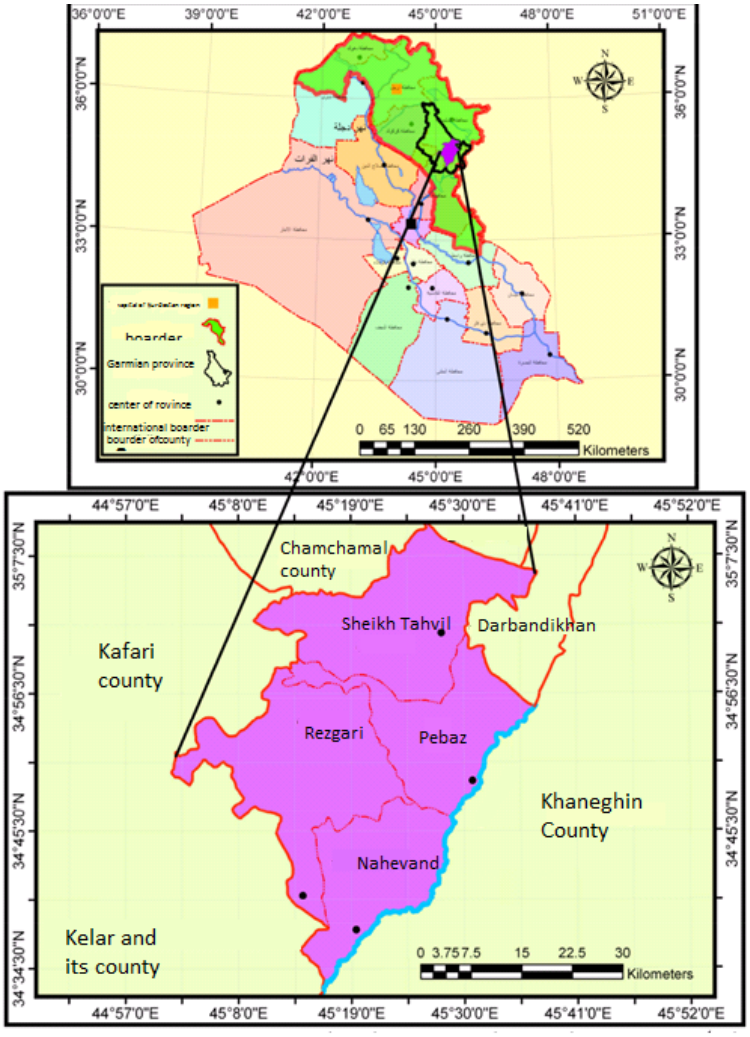
In the present study, two methods of data collection, namely documentary and field methods, were employed to gather information and identify samples from the residents of the target villages. The obtained data were analyzed using a descriptive-analytical approach. In the initial stage, descriptive statistics such as tables, means, frequencies, and percentages were utilized to describe the data. Subsequently, Spearman's correlation and regression were used for further analysis (Table 2).

Table 2. Dimensions, aspects, and indicators of the smart village model

	Dimensions	Aspects	Indicators
1	Government	Public services	Management services
			Using ICT to provide services to society
			Complaint handling services
		Transparency	Transparency of government information
			Financial transparency
		Policy	leadership
			Public participation
2	Technology	ICT	Internet accessibility
			Information technology infrastructure
		Suitable rural technologies	sensor
			Cloud computing
3	Resources	Natural resources	Earth status
			Water availability
			Energy consumption
		Financial resources	Agriculture
			Fishing
			livestock
		Human Resources	Rural society
			Education level
			Open-mindedness
4	Village services	Necessary services	Health services
			Educational services
		Economic services	Entrepreneurship
			Job availability
			Economic institutions
			Distribution/logistics facilities
5	Village services	Economic services	Entrepreneurship
			Job availability
			Economic institutions
			Distribution/logistics facilities
5	living	Security and welfare	Waste management
			Environmental protection
			Public security
			Crisis Management
		Access to public facilities	Green space facilities
			Sports area facilities
			Banking facilities
			Road and bridge facilities
6	Tourism	Village capability	The identity of the village
			Tourist destinations
			Brand design for the village (branding platform)

	Dimensions	Aspects	Indicators
		The brand name of the village	Culture and traditions

Kalar County belongs to the Sulaymaniyah Province of Iraq. This area is located in the eastern part of Garmian Province, within the administrative divisions related to the Kurdistan Region. The Sirwan River, with a length of 69 km, is the eastern border of the county, neighboring Khanqin County in the eastern region. Furthermore, Kalar is bounded to the northeast by Darbandikhan County and the mountain ranges of Qarah Dagh County, to the northwest by Chamchamal County, and the west and southwest by Kofri County. This county constitutes 17.6% of the total area of Garmian Province, which is divided into four districts (sub-counties), namely Central, Rozgari, Peybaz, and Sheikh Tavil (Ministry of Planning of Kurdistan Region Iraq, 2013: 35) (Figur 1).



Figur 1. location Kalar county, on Iraq map

4. Research Findings

The formulated questions were designed to comprehensively cover all influential aspects of establishing an intelligent online system and utilizing emerging ICT. These aspects include attention to the diversity of government services in the information technology and communications area, improvement of infrastructures, regional

development strategy, internet access levels, deployment of services, and interaction with internet-based social networks and their management, as well as support and security for the use of this technology. It was formulated in nine items and an equal number of questions. The results are presented in Table 3.

Table 3. The current infrastructure status for villages smsrtification of Kslar city

Number	Effective variables in current infrastructures for smartification	Mean	Standard deviation	Variation coefficient	T test	Sig
1	Expansion and dispersion of government services based on ITC	3.38	1.11	0.33	4.173	0.000
2	The antenna coverage level of the village based on mobile phones used in all areas	3.75	1.15	0.30	8.006	0.000
3	Internet availability in villages	2.22	0.79	36.0	-12.044	0.000
4	Using internet services and social networks in villages	2.77	0.83	0.30	-3.440	0.000
5	Adequate management of internet services	2.76	0.76	0.27	-3.883	0.000
6	Distribution of important logistics facilities required by ITC	4.56	0.62	0.14	30.901	0.000
7	Improvement of infrastructure based on ITC	2.17	0.74	0.34	-13.690	0.000
8	Regional development strategy based on ITC	4.52	0.56	0.12	32.992	0.000
9	Internet security in villages	2.02	0.78	0.39	-15.363	0.000

As for existing infrastructure indicators for smart rural development in Kalare County villages, the results revealed some key insights. In the under-study villages, a notable expansion in the utilization of information technology has been observed through the development of government infrastructures. However, the distribution of information technology services was uneven, with some areas having better coverage than others. This phenomenon caused a significant disparity in the utilization of information technology benefits among users. On the one hand, information technology, and communication are exclusively found within the framework of smartphones, and there has been no presence of information technology and internet networks outside of these devices, including wired and wireless connections. This discrepancy has led to significant differences in the use of information technology in certain villages due to blind spots and areas outside of internet coverage. Additionally, internet usage has popularized social networks such as Facebook, Twitter (X Network), WhatsApp, etc., despite e-government in Iraqi Kurdistan being simple and rudimentary. Therefore, when discussing information security, concerns are not particularly significant among the people because there is not much financial exchange on the internet. However, the bandwidth (referred to as internet speed in common terms) is satisfactory, and users express contentment with it. Ultimately, there is no civil strategy for the development of information technology and communications in Iraq. Consequently, the expansion of the internet in rural areas lacks a clear framework. The Kurdistan government does not have a coherent policy on this matter.

4.1. The Level of Indigenous People's Knowledge and Information for Smartification in Kalar County's Villages

Three items such as the public knowledge level to utilize internet services, generating interest, encouraging voluntary internet-centric activities and services, and establishing environmental education through the internet were influential factors in the indigenous people's level of knowledge and information for smartification in the villages of Kalar County (Table 4).

Table 4. The knowledge and information level of local people for smartification in the villages of Kalar city

Number	Effective variables in current infrastructures for smartification	Mean	Standard deviation	Variation coefficient	T-test	Sig
1	Encouraging and motivating Internet-based volunteer activities and services	2.94	0.93	0.32	-0.7	-0.485
2	Having general knowledge of using Internet services	4.04	0.90	0.22	14.244	0.000
3	Environmental training through the Internet	2.86	0.93	0.32	1.85	0.066

4.2. Impacts of villages smartification on the life quality for indigenous people in Kalar county's villages

As for items of follow-up by officials in planning and implementing digitization and smartification, a majority of the sample members expressed satisfaction with the local authorities' actions. Whereas, addressing complaints and providing responses through the internet was a relatively new concept for many participants. Some were not aware of such services, and the results indicated a lack of seriousness in acknowledging the existence of such services. The level of public (and financial) transparency in the implementation of government plans through the internet was also indicative of the absence of transparency in this regard. Furthermore, the plans proposed by the authorities did not address whether the selection of relevant officials was based on their knowledge of information technology. In the question regarding support for rural elderly individuals through information technology, apart from cultural support, there was a lack of planning and execution in this regard. Attention to the role of women and the promotion of technology-based knowledge for them were also evidently neglected, as confirmed by the obtained results (Table 5).

Table 5. Effects of village smartification on the people's life quality in the villages of Kalar County

Number	Effective variables in current infrastructures for smartification	Mean	Standard deviation	Variation coefficient	T-test	Sig
1	Necessary coordination between local managers and implementation of joint activities	2.86	0.76	0.26	-2.256	0.026
2	Tracking officials in the planning and implementation of digitalization and making things smarter	2.05	0.74	0.36	15.67	0.000
3	Complaint handling and answering services through the Internet	4.20	0.95	0.23	15.549	0.000
4	Public (and financial) transparency in the implementation of government plans and programs through the Internet	4.71	0.46	0.10	45.757	0.000
5	The knowledge about IT in the selection of relevant officials	4.66	0.49	0.10	41.558	0.000
6	Supporting the rural elderly through IT	4.37	0.82	0.19	20.348	0.000
7	Attention to the women contribution and promotion of knowledge based on ITC	4.43	0.76	0.17	22.995	0.000
8	Implementation of plans and actions of officials through ITC	2.78	0.76	0.27	-3.552	0.001
9	The priority of virtual education and training services	3.93	0.89	0.23	12.881	0.000
10	Exchange of opinions and opinions of residents in the village through the Internet	2.35	0.82	0.35	9.769	0.000

Number	Effective variables in current infrastructures for smartification	Mean	Standard deviation	Variation coefficient	T-test	Sig
11	Improving the healthcare system through the use of the modern internet and its compatibility with the world's modern knowledge	2.67	0.74	0.28	-5.426	0.000
12	Reforming and improving the formal education system using ITC	4.41	0.60	0.12	28.566	0.000
13	Appropriate business plans and programs on the Internet	40.06	0.84	0.21	15.505	0.000
14	Creating job opportunities based on the Internet	3.72	1.11	0.30	7.974	0.000
15	Using the internet of economic institutions to earn a living	2.15	0.82	0.38	-12.565	0.000
16	Reforming and improving the welfare system and virtual and online social services	4.11	0.85	0.21	15.898	0.000
17	Utilization of crisis management from ITC	4.17	0.87	0.20	16.42	0.000
18	Strengthening virtual tourism infrastructure	4.63	0.56	0.11	37.936	0.000
19	The existence of websites catering to rural tourism enthusiasts	4.72	0.45	0.10	46.76	0.000
20	The presence of suitable programs for more effective online sales of agricultural products	4.35	0.70	0.16	23.799	0.000
21	The availability of suitable programs for more effective online sales of agricultural products	4.55	0.54	0.12	35.191	0.000
22	Establishment of exclusive online programs and support by authorities for manufactured products	4.58	0.55	0.11	35.393	0.000
23	Showing traditional relations and rituals continuously on the Internet	4.59	0.55	0.12	35.393	0.000
24	Development and enhancement of regional culture, considering the characteristics and needs specific to each area on the internet	4.60	0.54	0.1176	26.296	0.000

As for findings derived from an examination of the prioritization of virtual educational and training services through the internet, it is noteworthy that while this item attracted heightened attention globally concomitant with the relative increase in internet utilization attributable to the COVID-19 pandemic, such services were not favorably received within the investigated region.

Residents generally had a positive view of exchanging opinions through the Internet and online social networks. The shift towards digital health programs, including online registration and traceable conditions, was seen as a positive development in enhancing healthcare services. However, the outlook for reforming the formal education system using ICT appeared less optimistic, with survey responses expressing dissatisfaction and skepticism about potential improvements. While entrepreneurial initiatives on the internet typically evolve organically in many societies, the acceptance level within the studied area was not accepted. Creating job opportunities through internet-based platforms faced challenges due to lower education levels and limited scientific literacy. On the other hand, the use of the Internet by economic entities for livelihood purposes was more accepted. Efforts to improve the social welfare system through virtual and online services revealed inadequacies. Despite the acknowledged importance of leveraging ICT for crisis management globally, its integration was insufficient in the studied area. Improving online tourism facilities, especially now and particularly after the COVID-19 pandemic, which has made countries heavily dependent on the tourism industry, was not effective. The investigation into the existence of virtual banking facilities within the administrative system of Iraq highlighted explicit restrictions. Tourist information sites about villages, though present to some extent, lacked purposeful functionality, supported by obtained

findings .Programs aiming to enhance online sales of agricultural products faced dissatisfaction among farmers. Moreover, exclusive internet programs and official support for manufactured goods failed to attract significant investments. The display of traditional rituals and ceremonies on the internet, while present in an unplanned manner, lacked purposeful functionality. The obtained results confirmed it. Similarly, the development of regional culture on the internet, considering the unique characteristics and needs of each locale, occurred in a fragmented and unplanned manner, lacking purposeful functionality.

4.3. Effective management components for achieving smartification in Kalar County villages

The level of proper utilization of ICT in providing services, as an encouraging factor for future internet service usage, was moderately satisfactory. Whereas, observations on the management structure for enhancing the level of ICT use indicated a lack of proper planning and management structure. Additionally, observations suggested the absence of necessary and sufficient planning and management structure. Regarding public participation and support on the Internet platform, the mean value of this indicator was appropriate. This result can be attributed to the use of social networks, regional political parties, and the increasing use of the internet in daily life.

In utilizing natural resources for educational programs on the internet, this item also fell below an appropriate level. It can be claimed that the existing natural capacities in these regions have not been optimally utilized (Table 6).

Table 6. Distribution of effective management components on the villages' smartification of Kalar County

Number	Effective variables in current infrastructures for smartification	Mean	Standard deviation	Variation coefficient	T test	Sig
1	Proper use of ITC in providing services	2.67	40.7	80.2	-5.526	0.000
2	Optimal management of the resources needed to use IT	4.32	0.67	0.15	24.174	0.000
3	Adequate management to improve the IT using	4.2	0.84	0.20	17.592	0.000
4	Public participation and their support on the Internet	2.57	10.8	0.31	-6.487	0.000
5	Using natural capacities for educational programs and plans on the Internet	54.3	0.73	70.1	22.513	0.000

Table 6 shows that the digitization of rural areas is influenced by the level of local knowledge. Higher knowledge levels are correlated with increased potential for using information technology. Infrastructure and its development play a significant role in making information technology more accessible. When infrastructure improves, there is greater use of information technology. Consequently, local management and participation are essential solutions for bringing more technology to rural areas(table7).

Table 7 - Correlation of Variables (Smart Village Development as the Dependent Variable)

Dependent variable	Independent variable	Correlation coefficient	Sig
Rural Smartification	Native knowledge level	0.73	0.003
	Infrastructures	0.77	0.00
	Management	0.80	0.002

Table 8 demonstrates the impact of digitization on the quality of rural life. As the smartification of rural areas improves, there is a corresponding enhancement in the overall life quality.

Table8. the impact of digitization on the quality of rural life

Dependent variable	Independent variable	Correlation coefficient	Sig
Life Quality	Rural smartification	0.79	0.002

A stepwise regression analysis was conducted to assess the relative importance of variables, revealing a coefficient of determination of 0.62. The outcomes revealed that the level of local knowledge stands out as the most influential variable in the progression of rural smartification. In the next phase, infrastructure plays a decisive role, closely followed by management (Table 9).

Table 9.regression

Variables	B value	β
Constant value	1.75	
Native knowledge level	0.39	0.48
Infrastructures	0.27	0.39
Mangement	0.33	0.42

5. Discussion and Conclusion

The results demonstrated that all influential aspects structurally exist to establish a smart internet system and leverage innovative ICT in the villages of Kurdistan, Iraq. However, serious challenges in utilizing ICT persist. Constraints in governmental services related to ICT, the necessity for infrastructure improvement, regional development strategies, internet accessibility, and the deployment of services and interaction with internet-based social networks and their management, as well as support and security for technology use, are essential. Nevertheless, a considerable general knowledge among villagers of utilizing internet services has been observed. Initiatives taken by governmental and non-governmental agencies in rural areas include creating interest and promoting voluntary activities on the Internet, as well as environmental education through the Internet for scientific development and more effective use of ICT services. However, internet usage in villages is limited to social networks and communication platforms.

Electronic governance has not significantly developed in Iraq. Further, ore, internet-based financial transactions and marketing activities do not substantially take place in rural areas. Therefore, it can be argued that the lack of alignment between smartification and the life quality for indigenous people in the villages of Kalar County is apparent.

For the development of ICT and the enhancement of the current utilization of ICT, coherent management, public participation, and the utilization of existing natural capacities are necessary.

In summary, internet usage is primarily limited to social networks and other applications. Despite the development of ICT, the smartification conditions of the villages in the study area are generally unfavorable, and the process of smartifying villages is still in its early stages. While partial aspects seemed proportionate in several dimensions, the overall findings indicate a lack of planning and purposefulness in this regard. The Kurdistan Regional Government must adopt comprehensive policies for the development of smart villages by formulating appropriate strategies and models.

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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.

References

1. Ahlawat, J. (2017). Smart villages, information communication technology and geographical information system. *International Journal of Current Trends in Science and Technology*, *7*(8), 20232-20238. https://api.semanticscholar.org/CorpusID:134285569
2. Alternative Energy Solution for the 21st Century. (2015). Retrieved November 7. (http://www.altenergy.org/)
3. Anabestani, A. &, Javanshiri, M. (2024). Analysis of the effectiveness of digital technology on the infrastructure of creative village formation in peri-urban settlements (Case: Mashhad metropolis). *Rural Development Strategies*, 10(2), 137-164. [In Persian] http://DOI:10.22048/rdsj.2022.338764.2013
4. Anabestani, A., & Javanshiri, M. (2016). Investigating and analyzing smart rural development indicators. *Journal of Research and Rural Planning*, 5(16), 187-212. https://doi.org/10.22067/jrrp.v5i4.61113
5. Bahramian, Sh. (2009). The role of information and mass media in development. Available on the Information Reform Information Center website. [In Persian]
6. Barca, F., McCann, P., & Rodríguez-Pose, A. (2012). The case for regional development intervention: place-based versus place-neutral approaches. *Journal of Regional Science*, 52(1), 134–152. https://DOI:10.1111/j.1467-9787.2011.00756.x
7. Cvar, N., Trilar, J., Kos, A., Volk, M., & Stojmenova Duh, E. (2020). The use of IoT technology in smart cities and smart villages: similarities, differences, and future prospects. *Sensors*, *20*(14), 3897. https://www.mdpi.com/1424-8220/20/14/3897
8. Dlodlo, N., & Kalezhi, J. (2015, May). The internet of things in agriculture for sustainable rural development. In *2015 international conference on emerging trends in networks and computer communications (ETNCC)* (pp. 13-18). IEEE. https://ieeexplore.ieee.org/abstract/document/7184801/
9. Escalona-Orcao, A. I., Escolano-Utrilla, S., Sáez-Pérez, L. A. & Sánchez-Valverde García, B. (2016). The location of creative clusters in non-metropolitan areas: A methodological proposition. *Journal of Rural Studies*, 45:112-122 https://DOI.10.1016/j.jrurstud.2016.03.007
10. Fathi, R., & Azizpanah, A. (2022). Investigating factors affecting the use of information and communication technology-based education in North Khuzestan agriculture. *Rural Development Strategies*, 8(1), 55-69. [In Persian] https://DOI:10.22048/rdsj.2021.271002.1914
11. Food, Farming, Fisheries. European Commission. (2020). Available online: https://ec.europa.eu/info/food-farming-fisheries_en (accessed on 8 August).
12. György, T.; Bagazonzya, H.; Ballantyne, P.; Belden, C.; Birner, R.; Castello, R.D. (2011), Edge, P. ICT in agriculture: Connecting smallholders to knowledge, networks, and institutions. World Bank, 64605, 1–428. https://documents1worldbank.org/curated//646050ESW0P1180lture0e0Sourcebook12.pdf
13. Jalalian, H., Sultanabadi, M., & Afrakhteh, H. (2024). Drivers of electronic marketing in rural areas (Case study: Khoshab County). *Journal of Village and Sustainable Development of Space*, 4(4), 65-89. [In Persian] https://DOI:10.22077/vssd.2023.6130.1172
14. Khajeh Shahkooei, A. (2013). Analysis of the impact of ICT on the life quality of villagers: A case study of Qoranabad and Esfahankaleh villages, Gorgan city. *Geographical Space Planning*, 3(1), 103-120. [In Persian] https://gps.gu.ac.ir/article_5386.html
15. Ministry of Planning (Planning Organization). (2013). Central Statistical Organization, Total Statistics for 2013, p. 35. [In Persian]
16. Need of Smart Villages. (2020). Available online: https://www.dailyexcelsior.com/need-smart-villages/ (accessed on 14 September).
17. Novi. R. N., & Ella, S. (2019). Pengembangan model smart rural untuk pembangunan kawasan perdesaan di Indonesia. *Jurnal Borneo Administrator*, *15*(1), 41-58. https://doi.org/10.24258/jba.v15i1.394
18. Pelucha, M. (2019). Smart Villages and Investments to Public Services and ICT Infrastructure: Case of the Czech Rural Development Program 2007–2013. *European Countryside*, *11*(4), 584-598. https://sciendo.com/article/10.2478/euco-2019-0032
19. Patnaik, S.; Sen, S., & Mahmoud, M.S. (2020). *Smart Village Technology: Concepts and Developments* (Volume 17); Springer Nature: Cham, Switzerland. https://doi.10.1007/978-3-030-37794-6

20. Pilot Project (2020). Smart Eco-Social Villages: Final Report; Directorate-General for Agriculture and Rural Development (European Commission), ECORYS, Origin for Sustainability, R.E.D: Brussels, Belgium, April. https://agriculture.ec.europa.eu/common-project_en
21. Putnam, R. (1993). *Making Democracy Work: Civic Tradition in Modern Italy*. Princeton University Press. https://press.princeton.edu/books/paperback/9780691037387/making-democracy-work
22. Rachmawati, R. (2018). *Pengembangan Smart Village Untuk Penguatan Smart City Dan Smart Regency* (Jurnal Sistem Cerdas vol 01) no. 02 pp. 12–18. https://DOI:10.37396/jsc.v1i2.9
23. Rao, N.H. (2007). Aframework for implementing information and communication technologies in agricultural development in India. *Journal of Technological Forecasting & Social Change*. https://DOI:10.1016/j.techfore.2006.02.002
24. Roumiani, A., Einali, J. & Asari Zamani, A. (2008). The application of information and communication technology (ICT) in strengthening urban-rural relations: A case study of Zanjan city and its surroundings. *Urban Structure and Function Studies*, 5(17), 47-68. [In Persian] https://DOI:10.22080/SHAHR.1970.2110
25. Sadeghloo, T., Jafari, F., & Bateqasrabi, H. (2024). Analysis of factors influencing the acceptance of information and communication technology in rural communities: A case study of the villages of Shandiz County. *Village and Development Journal*, 26(1), 1-20. [In Persian] https://DOI.10.30490/rvt.2022.354648.1361
26. Slee, B., Hopkins, J., & Vellinga, N. (2015). Could the Creative Class be a factor in Scottish rural development? *Scottish Affairs*, 24(2), 207–226. https://DOI.10.3366/scot.2015.0067.
27. The European Network for Rural Development (ENRD)-European Commission. (2020), Available online: https://enrd.ec.europa.eu/smart-and-competitive-rural-areas/smart-villages/smart-villages-portal_en
28. Van Gevelt, T., & Holmes, J.A. (2020). Vision for Smart Villages; 2015; Available online: https://e4sv.org/wp-content/uploads/2015/08/05-Brief.pdf
29. Visvizi, A., & Lytras, M. D. (2018). It's not a fad: Smart cities and smart villages research in European and global contexts. *Sustainability*, *10*(8), 2727. https://doi.org/10.3390/su10082727
30. Zavratnik, V., Podjed, D., Trilar, J., Hlebec, N., Kos, A., & Stojmenova Duh, E. (2020). Sustainable and community-centred development of smart cities and villages. *Sustainability*, 12(10), 3961. https://doi.org/10.3390/su12103961

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Original Article

شناسایی راهبردهای هوشمندسازی روستاها با هدف بهبود کیفیت زندگی (مطالعه موردی: شهرستان کلار، استان سلیمانیه، اقلیم کردستان)

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چکیده مبسوط

۱. مقدمه

در آسیا تجارب موفقی در زمینه هوشمندسازی رخ داده و نتایج به دست آمده از این تجارب، روزنه امیدی است به بهبود زندگی در مناطق روستایی و ترمیم مشکلات به وجود آمده و جلوگیری از بهم ریختگی ساختارهای اجتماعی روستاها و مقابله با پدیده روستاگریزی و به نحوی می‌توان ادعا کردکه با بهبود فناوری اطلاعات و هوشمندسازی روستاها کیفیت زندگی روستاییان بهبود می‌یابد. بکارگیری فناوری‌های نوین برای ساکنین یک حوزه جغرافیای امریست که در دنیای امروزی به صورت گسترده‌ای با در زندگی روزمره مردمان آمیخته است . در این باره نظر به تعاریفی که در مقدمه بحث اشاره شد دهکده هوشمند و تسهیل در تغییر و ترقی روستاهای با بافت سنتی به روستاهای پیشرفته مقارن با مشخصه‌های تعاریف یک روستای هوشمند امری است که در جوامع امروزه جهانی در بخش تدابیر و اقدامات طرح‌های توسعه روستای در برنامه بیشتر کشورها قرار دارد این پژوهش در صدد پاسخگویی به این سوال کلیدی می باشد که عوامل تاثیرگذار در هوشمند سازی روستاهای شهرستان کلار به چه نسبتی در سطح روستاهای حوزه نمونه‌گیری توزیع و به کارگرفته شده‌اند و با شناسایی سطوح اقدامات هوشمند سازی در سطح روستاها به دنبال ارائه یک برنامه‌ای مناسب بر اساس مطالعات پیشرو خواهیم بود.

۲. مبانی نظری تحقیق

مفهوم "دهکده هوشمند" نیز توسط ون گولت و هولمز کشف شد. آنها با توسعه بخش‌های مختلف مانند بهداشت، آموزش، امنیت غذایی، محیط زیست، کیفیت زندگی چشم انداز بهبود روستا را پیشنهاد کردند (وان جیویلت و هولمس، ۲۰۲۰). توسعه روستایی: دانش و تخصص در امر حکومت (۲۰۱۵) توسط کریستوف ون اشکی درک درستی از سیاست‌های روستایی در مورد چگونگی اجرای آنها تا آن زمان و کارهایی که می‌توان در آینده انجام داد ارائه می‌دهد. در تحقیقات شهرهای هوشمند و دهکده‌های هوشمند، نویسندگان وایسویزی و لیتراس(۲۰۱۸) با پرداختن به مشکلات سطح جامعه، نمای کلی از موضوعات و جنبه‌های مختلف اقتصادی اجتماعی را برای شهرهای هوشمند و دهکده‌های هوشمند ارائه می‌دهند. آنها با ارائه کتابی ادعا کردند که این کتاب خود شامل مواردی مانند طراحی سیاست، تدوین استراتژی، مطالعات موردی، موضوعات مرتبط با فناوری، ابزارها و سیستم‌های کاربردی است. یکی دیگر از کتابهای آنها، روستاهای هوشمند در اتحادیه اروپا و فراتر از آن، بر اساس واقعیت کاهش جمعیت روستاها، عمدتاً با تمرکز بر روستاهای اتحادیه اروپا ساخته شده است و این مشکل را بررسی می‌کند و یک چارچوب مفهومی‌برای حل آن با استفاده از ICT فراهم می‌کند.

۳. روش تحقیق

جامعه آماری پژوهش، چهار دهستان شهرستان کلار بودکه از هر دهستان سه روستا به صورت تصادفی ساده انتخاب و در مجموع با بکارگیری فرمولکوکران با خطای ۵ درصد از مجموع ۲۶۲ خانوار این محدوده ۱۵۰ نمونه در جهت جمع آوری اطلاعات تهیه گردید و با بررسی روایی پرسشنامه و به کمک آلفای کرونباخ به دست آمده پایایی پرسشنامه نیز تأیید گردید.

۴. یافته‌های تحقیق

یافته ها نشان می دهند که در وضعیت زیرساخت های موجود برای هوشمندسازی در روستاهای شهرستان کلار تنها منحصر به توسعه شبکه تلفن همراه بوده است و زیرساخت های دیگر فناوری اطلاعات و ارتباطات اعم از امنیت شبکه، تجارت الکترونیک و کارآفرینی ضعیف است. در عین حال سطح دانش و اطلاعات مردم بومی برای

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هوشمندسازی در روستاهای شهرستان کلار مناسب است اما تاثیرات هوشمندسازی روستاها بر کیفیت زندگی مردم در روستاهای شهرستان کلار محدود بوده است و فناوری اطلاعات و ارتباطات بیشتر جنبه تفریحی و تفننی دارد. در این زمینه توسعه زیرساخت ها و سمن ها و ایجاد دولت الکترونیک از اهمیت زیادی برخوردار است. همچنین توسعه آموزش الکترونیک و پزشکی از راه دور نقش مهمی در توسعه فناوری اطلاعات دارد.

۵. بحث و نتیجه‌گیری

نتایج این تحقیق نشان دادکه زیرساختهای موجود برای هوشمندسازی در روستاهای شهرستان کالر در وضعیت نامناسبی است و سطح دانش و اطالعات مردم بومی برای هوشمندسازی در روستاهای شهرستان کلار در وضعیت نامناسبی بوده و متأسفانه هوشمندسازی روستاها به صورت کارآمد برکیفیت زندگی مردم بومی آنچنان که باید تأثیرگذار نبوده وهنوز توسعه فناوری اطلاعات و ارتباطات نیاز به زمان و سرمایه گذاری فراوان دارد. فناوری اطلاعات و هوشمند سازی تنها منحصر به استفاده از گوشی های هوشمند است و دیگر زیرساخت های فناوری اطلاعات رشد چندانی نکرده است.

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کلید واژه‌ها: هوشمندسازی، دهکده هوشمند، استراتژی در ICT، توسعه روستایی، شهرستان‌کلار.

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Original Article

A Conceptual Framework for Groundwater System Dynamics Evaluation by Combining Adaptive Cycle Theory and Social-Ecological System

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Abstract

Purpose- The groundwater system is subject to drastic changes. Nonlinear changes in the groundwater system and management have made it difficult. There has been no study on groundwater dynamics assessment and most studies have examined the variables of salinity control, pollution, water volume and water demand. In addition to filling the study gap, the difference of the research is that it has studied the capacity and the elements of the groundwater system as indicators in the groundwater dynamics.

Design/methodology/approach- In this study, using studies and literature on the groundwater Social-Ecological System (SES), a framework for evaluating groundwater SES dynamics by combining the groundwater adaptive cycle is presented. SES Groundwater consists of three subsystems: the aquifer, natural environment, and community. The elements of these three subsystems move in a four-stage adaptive cycle of exploitation, protection, release, and reorganization, in which potential change, connections, and adaptive capacity make the system dynamic.

Findings - In assessing the dynamics of the groundwater system, the threshold of concern is an important concept for indicators for which capacity can not be defined or when and where the indicators change.

Originality/value - The groundwater system dynamics assessment framework can be useful for proper management and timely actions to protect water and aquifer services in different areas.

Keywords: Adaptive Cycle, Groundwater, System Dynamics, Social-Ecological System, Evaluation.

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1. Introduction

The SES system is a relatively new framework for groundwater management. This system has different subsystems including aquifer, land surface ecosystem and above aquifer community (Bouchet & et al, 2019., Mathias & et al, 2020) socio-economic and political system, users, resource systems, governance systems. SES has been used by many researchers to study various issues (Petit & et al. 2017). SESs are constantly evolving. SES has the feature of nonlinear dynamics, resilience, and self-organization (Zhang & et al, 2021) which causes the dynamics and change of water services (Bouchet & et al, 2019).

The nonlinear dynamics of SES are rooted in the resilience and relationships of elements and groundwater subsystems. In many cases, the intervention and response of the groundwater system are not temporally and geographically consistent (Walkeret et al., 2004; Wycisk et al., 2008; Adobor, 2020). Intervention may take place in the short to medium term (5 to 7 years), but the system response includes self-regulation, adaptation, and immediate resistance, or it may take decades. Another issue in assessing the dynamics of the SES system is the spatial incompatibility of system intervention and system response. Interference may be at one particular geographical point and the system response in another place. The third problem is the existence of complex relationships between the actors and the elements of the groundwater system with each other (Zazueta & Garcia, 2021). The behavior of the elements of the system may be such that it causes damage to other elements because the elements of the system, in addition to internal relations, are also related to external factors of the system. We also refer here to the system's involvement and response to the behavior of different social groups. In most cases, especially the behavior of human elements is influenced by the external processes of the groundwater system. The response of the human elements of the groundwater system may not be appropriate to the goals of the aquifer, and this response may occur without considering the sustainability of the aquifer system, and certain social groups pursue their interests regardless of the interests of other social groups in the aquifer. These inconsistencies and non-compliance of the intervention with the system response at the time spatial scale and social groups, make it difficult to assess groundwater dynamics.

Regarding the evaluation of SES dynamics in various fields, many studies have been conducted to explore the tipping point route of natural systems, changes in urban sustainability, changes in the stability of lakes, oceans, forests, and other natural ecosystems of grassland systems, urban density (Walker et al., 2002., Mathias et al, 2020., Zhang & et al, 2021., Zazueta & Garcia, 2021). However, no study has been conducted to assess the dynamics of SES groundwater. To assess the dynamics of a groundwater SES, we need an effective method that not only assesses the long-term dynamics of groundwater stability but also identifies critical times and areas for improving groundwater management. In this paper, by combining SES with adaptive cycle theory, we seek to provide a framework for assessing groundwater SES dynamics.

The theory of the adaptive cycle was proposed by the French mathematician Ren´e Thom (Ekeland, 2002). Many researchers have used this theory in various fields (Li & et al, 2017., Zhang & et al, 2021., Adobor, 2020., Linnenluecke and Griffiths, 2010., Williams et al., 2019). The goal of adaptive cycle theory is to understand how systems change (Zhang & et al, 2021; Adobor, 2020). This cycle evaluates the movement of the system in three dimensions: potential, connectedness, and adaptive capacity (Holling, 2001) in four stages: exploitation, protection, release, and reorganization. At the exploitation stage, the system is in a state of rapid growth. In the protection phase (accumulation of resources and connectedness), the resilience of the system decreases. In the release phase, the connection between the various components of the system is weakened and the ability to adjust and control the system is reduced, which leads to system uncertainty. & et al, 2019). Moving the system from the exploitation phase to the protection phase increases resources and connections, but resilience decreases because too much connectedness causes cascading disturbances. In the context of assessing the dynamics of the ACSES (Adaptive cycle of Social and Ecological System), we have three sub-systems of aquifer, ecosystem, and community above the aquifer that a matrix with the components of the adaptive cycle creates and

potential, connectedness and "adaptive capacity" changes in stages shows various exploitation, protection, release, and reorganization. To do this, we first detected the SES of groundwater, then defined the adaptive cycle about groundwater, next identified the indicators for assessing the potential, connections, and resilience of the dynamics of the SES of groundwater, and afterward presented the ACSES matrix. Finally, we stated the conclusions and lessons.

2. Research Theoretical Literature

2.1. Components of Groundwater SES

The main components of SES are groundwater exploiters, institutions, and natural resources. In the SES system, groundwater can be considered a complex resilient system (Bouchet & et al, 2019) in which there is a set of interventions and responses. Interference and response in SES occur in subsystems, and interference in a subsystem may take the form of harvesting, contamination, and salinization by operators, organizations, and other components of SES (Bouchet & et al, 2019). The response may occur in the operation of another subsystem and after years or decades in terms of time. This process reveals the complexity of groundwater system dynamics and the difficulty of assessing dynamics.

SES Groundwater consists of three subsystems of the aquifer, the natural environment, and the human community above the aquifer. The aquifer subsystem consists of layer elements (Blomquist, 2020), pores (Xu & et al, 2013), and underground faults that are subject to both interference and response capacity and resilience against the interference of factors outside the system. The upper aquifer environment also includes rivers (Boulton & Hancock, 2006), springs, rainfall, lakes and wetlands, and land cover, which are exposed to interference and response like aquifer elements. The response of these elements may be to slow and fast variables in the form of self-regulation, adaptation, and resistance. The third subsystem is human society which is likely to be the main interfering with aquifer elements and the natural environment above the aquifer. Key elements of this community also include exploiters, government agencies, NGOs, and companies. The forms of involvement of these elements are salinization, pollution, and harvesting, and their response to changing water services is adaptation and resistance.

2.2. Functionality and internal relationships of SES elements against change

The protection of groundwater services is the main objective of SES. The function of the elements of SES subsystems is to protect, store and treat water against the variables of salinity, pollution, harvesting, and water demand (Biggs & et al, 2015. Bouchet & et al, 2019). Aquifer layers in groundwater SES are responsible for purifying, protecting, and storing water flow in the aquifer. Underground pores also play a role in water protection for the system (Xu & et al, 2013). In-ground faults are responsible for supplying water to the aquifer. Of course, the quality of underground faults depends on how they elongated in relation to the course of rivers and surface water flows. If the elongation of the faults coincides with the direction of surface water flow, the feeding rate of the rivers decreases and vice versa.

The function of the elements of the natural environment above the aquifer in groundwater services is to purify and nourish. Rivers play a role in water injection and treatment, but their relationship with groundwater is complex (Petit & et al, 2017). The flow of water in the course of rivers purifies possible polluted water and in the process of flowing water in the riverbed, it enters the aquifer. Of course, the rate of river water nutrition depends on tectonic factors and the width and slope of the riverbed (Allen & et al, 2004). The looseness of the riverbed and its wide width increase the amount of water feeding in the aquifer, but the slope of the river has an inverse role in feeding, in contrast to water treatment playing a constructive role in the sustainability of groundwater services.

The function of lakes and wetlands in the protection of water services is their nourishing role (Kløve & et al, 2011). These water levels store running water and inject it into aquifers over time. The role of these elements in the protection of water services depends on the quality of water and the proximity of its bed layers with adjacent aquifer layers. Ideally, the role of lakes and wetlands in feeding aquifers is to align aquifer layers with lake bed layers and their freshwater, which probably rarely come together - this largely determines the fragility of aquifers about these water sources. It shows. In the presence of these two conditions,

lakes and wetlands have a very useful role in protecting groundwater services.

Precipitation is another element of the sub-environment system above the aquifers. The role of this element in water services is further determined by its nutrition (Earman & Dettinger, 2011). The amount of aquifer feeding by rainfall depends on the type (snow and rain) (Jasechko & et al, 2014), its amount (volume), and time.

Land use is involved in pollution, salinization, and groundwater demand. Rangeland, horticultural, agricultural and man-made land uses are effective in the amount of surface water infiltration and rainfall (Foster & et al, 2010). Intensive agricultural uses in water pollution and extraction hurt groundwater and the path to its involvement in water services is negative. Intensive agriculture using various chemical fertilizers and pesticides are the most important surface contaminants in groundwater (Popa & et al, 2019. Lerner & Harris, 2009). Man-made surfaces also hurt water storage, increasing the flow of water on the surface and reducing the permeability of the earth.

The role of the fountain in groundwater can be interesting. Fountains is effective in maintaining the balance of groundwater with surface water and reducing groundwater pollution. Groundwater outflow from fountains (in the absence of water extraction wells) leads to balanced use of groundwater. In addition to protecting groundwater, these natural phenomena make water available to users. In addition to protecting water, fountains play an important role in reducing salinity and groundwater pollution. The outflow of water from the fountain brings pollution and salinity to the surface of the earth and places it in a cycle of artificial treatment (treatment plants) and natural (combined with surface oxygen) and prepares the aquifer for the possible entry of safe water.

Human society is involved in adaptation and resistance to changing water services. In addition, the function of these elements in demand and harvest is debatable. Water abstraction and demand level are important as two control variables (Biggs & et al, 2015) in water services. In this regard, groundwater users are divided into three categories: Enthusiastic exploiters, moderate exploiters, and pro-environmental exploiters (Mathias & et al, 2020). Extremist exploiters prefer personal interests to collective interests and reinforce the tragedy of the masses. Moderate exploiters are those who are more adaptable to changing water and try to adapt to changes in strategy and activities. Pro-environmental exploiters play the role of resisting change and generally try to reduce demand and harvest. Their flexibility is more of a resistance type than an adaptation.

Exploiters' performance against water services is more affected by processes outside the system than changes within the system. Economic growth, population growth, and economic and livelihood policies in the performance of users against water services are very important to the processes and changes within the system (Bouchet & et al, 2019). This is due to the immediate effects of external processes on the livelihoods of users, as opposed to changes within the system, the effect of which occurs mainly in the long run.

The function of government agencies in protecting groundwater services is to protect public rights and the future. These institutions play a role in monitoring water harvesting and demand, pollution, and salinization (Bresci & Castelli, 2021). Their regulatory tools are laws that facilitate and restrict water use. These institutions determine the demand and withdrawal of water by direct exploiters in a way that maintains the balance of feeding and harvesting. This is done by preventing well drilling and over-harvesting of farmers' water rights. In addition to the above role, organizations are active in adapting activities, such as resistance measures to change activities, change livelihoods, artificial nutrition, water treatment and land-use change against pollution and salinity and water extraction (Habiba & et al, 2014).

Non-governmental and non-governmental organizations also have the role of supervising the water divider. These organizations distribute water based on the share of users. They also monitor and report on water pollution and salinization to protect public rights and the environment.

2.3. Groundwater Adaptive Cycle Background

The adaptive cycle was proposed by Holling (1986). This cycle operates in a three-dimensional space of potential, connection, and flexibility that has been considered in various studies (Sundstrom & Allen, 2019., Randle et al., 2014., Fath et al., 2015., Zhang & et al, 2021., Escamilla Nacher et al, 2021) In the adaptive cycle, the potential refers to the system's capacity to select options for

resilience to change. The higher the system potential, the smaller the change capacity, but eventually it changes and moves to the next stage of the cycle (Figure 1).

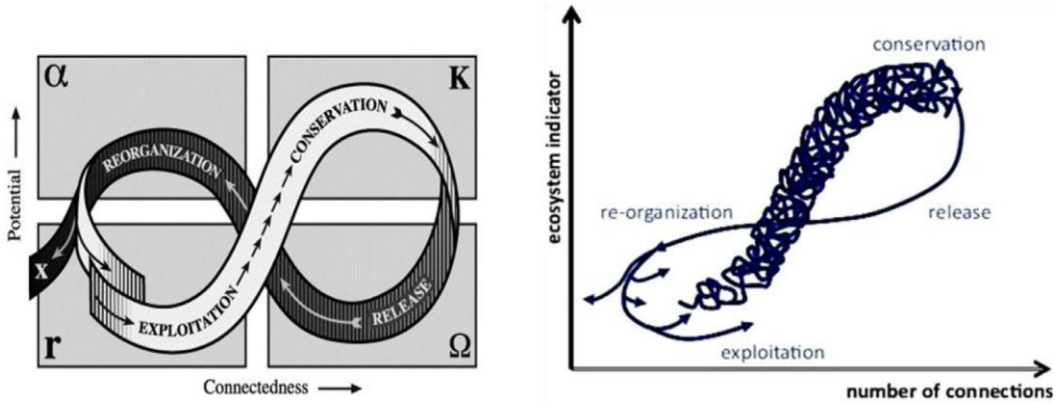

Figure 1. Adaptive cycle. Retrieved from: Sundstrom & Allen, 2019

The system resilience dimension shows the system's sustainability to change (Holling & Gunderson, 2002). Resilience includes the components of adaptation, self-regulation, and resistance (Bouchet & et al, 2019). The higher the degree of adaptation, resistance, and self-regulation of system elements, the lower the variability capacity of the system. The process and extent of potential change, connectedness, and adaptive capacity occur in four stages: 1- Exploitation (r) 2- Protection (k) 3- Release (Ω), and 4- Reorganization (α) (Holling & Gunderson, 2002). In the exploiter's phase, the potential of the system is very high and the growth capacity of the system is at a good level. At this stage, the connectedness is wide, but the intensity of resilience is minimal due to the absence of determinants and changes in system services (Grundmann & et al, 2012). With the expansion of use and consumption of resources, the growth potential of the system in the operation phase is minimized and the system is transferred to the protection phase. In this phase, the potential is high (Holling, 2001) but the high potential is increased through resilience and not through the inherent resources of the system. In the connectedness protection phase, it reaches its maximum (Sundstrom & et al, 2019) and the intensity of resilience, i.e., compatibility and resistance through high interventions and their high speed compared to the self-regulating speed, causes problems for the system. When the system in the protection phase reaches a point where the connectedness and connections are damaged and this connectedness is no longer constructive and useful in the system as a whole, an external disturbance transports the system to the release phase (Thapa & et al, 2016., Daedlow & et al, 2011) and at this stage, the system is freed from connectedness and connections.

In the release phase, the resources and the type of resilience against the disturbances and changes related to the protection phase are reduced. But another kind of resilience is formed in the face of new conditions. This resilience is related to the openness of the system about the new routine that is different from the previous system. In the reorganization phase, resources and connections increase (Holling & Gunderson, 2002) not the resources that were in the previous phases but new resources and connectedness that can be completely different from the previous system.

- Dimensions of the adaptive groundwater cycle

The adaptive cycle is a good way to evaluate the dynamics of ecological social systems. This theory has been used by various researchers in evaluating the dynamics of different systems (Grundmann & et al, 2012. Thapa & et al, 2016. Daedlow & et al, 2011. Zhang & et al., 2021., Escamilla Nacher et al., 2021). We have used this cycle here to evaluate the SES dynamics of groundwater. First, we introduce the dimensions of potential, connections, and adaptive capacity of the water adaptive cycle, then we would examine these dimensions in the stages of operation, protection, release, and reorganization.

2.4. Potential of the groundwater system

Potentials are indicators of tracking change and dynamism (Adobor, 2020). Groundwater system potentials include; Adjustment of aquifers, subterranean pores, lakes, wetlands, rivers, land use, temperate and ecological users, public institutions, good laws, springs, underground faults perpendicular to the surface water flow path. Aquifer nourishablity allows choosing to adapt and resist slow and fast variables. The porous layers of the pore also determine the feeding capacity and also play the role of purifying polluted and saline water. Basement layers and pores increase the suction power of surface water resources. Groundwater faults are an excellent source and potential for feeding and preventing aquifers from draining. These faults lead to more water infiltration into the ground and increase the capacity of the aquifer in the face of change (Behyari & et al, 2020). Lakes, ponds, and rivers also feed the aquifer. These water resources, provided they have healthy water conditions with less salinity and pH, prevent salinization, decrease the volume of aquifer water, and increase the capacity of aquifer resistance to change water services and interventions that change water services. The land cover also plays a role in protecting and destroying water resources. The positive role of land cover is to prevent evaporation and permeability of the land, which can play an important role in the resistance of the Trader aquifer to change.

Environmentalist exploiters have a very good capacity under the aquifer human society subsystem. These exploiters have high resilience and adaptability to conditions outside the system to protect water services (Mathias & et al, 2020). They also have a high capacity for participation in water management. Next to them, public institutions are an important resource in water conservation (López-Gunn, 2012). These institutions prevent excessive extraction by closely monitoring and dividing water by share, and increasing adaptive capacity and resistance to water discharge and salinization. In addition, good and efficient groundwater laws have great potential. Good laws play a role in preventing disruptions to water services (Foster & van der Gun, 2016; Molle & Closas, 2020) and also in building public trust and participation in adaptive measures and resistance to change.

3. Research Methodology

3.1. Groundwater connectedness

The groundwater system has sub-systems of the community, aquifers, and ecosystems that are interconnected (Bouchet & et al, 2019., Blomquist, 2020). The main form of communication for system stability is reciprocity. In interactions, energy is traded and transferred (Silberstein & Maser, 2013). The transaction and transfer of energy occur between the internal elements of the system with each other and with elements outside the system. The internal relations of the system are very important in the stability of system services and the connection of external elements can play the role of disturbance in the connections of the groundwater system, which leads to the confusion of the connections of internal elements and the balance of the system.

In the discussion of connections, traders of origin and destination, the subject and route of the transaction are discussed (Kernberg, 1988). Here, for traders, ie aquifers with society and the natural environment, the subject of the transaction and its results are important. Regarding the relationship between aquifer elements and the natural environment, the subject of the transaction is water, which plays an effective role in protecting aquifer services. The relationship between the two subsystems is largely positive (Lerner & Harris, 2009; Bishop & et al, 2017) and reinforces each other's role in water conservation. But the aquifer's relationship with society is debatable, and the issues they deal with are water and materials. In the relationship between these two subsystems, there is a negative effect on water services, which leads to a decrease in the capacity of the aquifer in providing safe water services and weakens the ability of the aquifer to resist and adapt to change (Table 1).

Table 1. Connectedness of aquifer elements with the community and natural environment above the aquifer

	Elements of the community subsystem and the upper aquifer environment	The subject of the relationship	Route of losses and gains for aquifers and protection of water services
Aquifer	River/Lake/ Wetland	Water	Mutual nourishment (+), water purifier (+)
	Land use/land cover	Water	Water pollution (+), water protection (+), evaporation reduction (+), high water extraction (-), increase in permeability intensity (+), water purification (+)
	The amount and type of rainfall	Water	Feeding with healthy water (+)
	Lakes and wetlands	Water	Feeding each other (+)
	beneficiaries	Water and materials	Extraction (-), Pollution (-), Salinity (-), Protection (+)
	government institutions	Water	Water treatment (+), transfer (-), protection (+), and artificial water feeding (+)
	Popular institutions	Water	Water protection (+), monitoring the division and extraction of water (+)
	Law	Water	Water protection (+), distribution and extraction monitoring (+), water pollution and salinity monitoring (+)

(+) A positive role in protecting water services and strengthening adaptive capacity, self-regulation, and aquifer resistance to change
(-) Negative role in protecting water services and strengthening adaptation capacity, self-regulation, and aquifer resistance to change

The community's relationship with the aquifer above the natural environment "probably" acts as a nuisance in the relationship between the aquifer and the environment. The word "probably" means that this relationship sometimes plays an important role in protecting groundwater services and leads to enhanced resistance, adaptation, and self-regulation of the aquifer and the natural environment above the aquifer against change. But most of the time it plays a destructive role in the relationship between aquifer and ecosystem, which is the result of the influence of elements outside the system such as population growth, urbanization, food security, and economic growth (Bouchet & et al, 2019) that the government seeks to respond to these processes.

In many cases, the interests of groundwater exploiters conflict with the interests of surface water users and prevent the protection and strengthening of the aquifer (Foster & van der Gun, 2016). The relationship of the aquifer with the elements of the natural environment above the aquifer is sometimes captured by the power relationship between surface water users, the government, or public institutions with groundwater users. Because surface water has higher benefits than groundwater for investors in transmission, canalization, and dam construction that does not exist in groundwater. This undermines government rules and practices in monitoring the rights of aquifers and groundwater users. So, what is meant here is the law, the public and government institutions that are effective in protecting water services (Foster & van der Gun, 2016), and nothing else.

Table 2. Connections of community elements with elements of the natural environment above the aquifer

	Elements of the upper aquifer environment	The subject of the relationship	Results route of losses and gains for aquifers and protection of water services
Exploiters	River	Water and materials	Extraction (-), water transfer (-), canalization (-), protection (+), pollution (-).
	Land use/land cover		Land-use change (-), cultivation of irrigated crops (-), land cover strengthening (+), degradation (-), pollution (-)
	The amount and type of rainfall	Water	Storing and directing water to storage facilities (+)
	Lakes and wetlands	Water and materials	Pollution, water rights protection (+), privacy (+)

	Elements of the upper aquifer environment	The subject of the relationship	Results route of losses and gains for aquifers and protection of water services
Efficient government institutions	River	Water and materials	Inter-basin transfer, water treatment (+), water distribution monitoring (+), protection (+), extraction and pollution monitoring (+)
	Land use/land cover		Protection and reinforcement of land cover (+), change monitoring (+)
	The amount and type of rainfall	Water	Storing and directing water to storage facilities (+)
	Lakes and wetlands	Water and materials	Privacy (+), pollution, and water rights (+)
NGO	River	Water and materials	Water sharing (+), consumption monitoring (+), protection (+)
	Land use/land cover		Protection and strengthening of land cover (+), change monitoring (+)
	The amount and type of rainfall	Water	Storing and directing water to storage facilities (+)
	Lakes and wetlands	Water and materials	Protection of privacy, pollution, and water rights (+)
Good law	River	Water and materials	Determining water rights (+), determining privacy (+), and determining the share of exploitation (+)
	Land use/land cover		Land cover protection (+)
	The amount and type of rainfall	-	-
	Lakes and wetlands	Water and materials	Protection of privacy, pollution, and water rights (+)

(+) A positive role in protecting water services and strengthening adaptive capacity, self-regulation, and aquifer resistance to change
(-) Negative role in protecting water services and strengthening adaptation capacity, self-regulation, and aquifer resistance to change

The transaction process takes place between the elements of the subsystems. In this transaction, most of the time, what is good for one element may not be good for other elements and may cause harm to other elements (Silberstein & Maser, 2013). This is where the debate over resilience comes into play. Because "loss" is considered as interference in the states of that element and this intervention has a self-regulatory response of adaptation and resistance, which is the third dimension of assessing the dynamics of the groundwater system.

- Resilience of groundwater system

Stability against groundwater control variables is achieved through compatibility, service, and resistance of system elements. In adapting the system to change variables, changing the type of groundwater use, changing the pattern of cultivation or transfer of water to valuable crops, reducing the volume of water use, reducing dependence on groundwater resources by changing the way of life by individuals, society and government It happens (Habiba & et al, 2014).

The use of natural treatment plants includes nutrient uses such as the conversion of arable land to forests and grasses, prevention of change of natural uses, prevention of encroachment on rivers (Lerner & Harris, 2009), change of irrigation system, and modification of harvesting rules, some of the Resistance is from human society (Bresci & Castelli, 2021). In addition, changes in the rules for wells and water abstraction (Liu & et al, 2006), and the issuance of pollution licenses to farmers, factory owners, and municipalities increase the sustainability of groundwater resistance to pollution.

Increasing the nourishment role of rivers, lakes, and wetlands in the presence of humid climates, and increasing suction by the aquifer (Sandwidi, 2007) are important self-regulatory processes against change. Artificial freshwater feeding (Molle & Closas, 2020), prevention of saline

infiltration into the aquifer, saline water treatment, reduction of chemical fertilizer use in agriculture (Foster & et al, 2018., Pulido-Bosch & et al, 2018), amendment of laws The use of groundwater, the improvement of riverbeds can increase the amount of groundwater recharge and improve the quality of groundwater. Finally, the development of sustainable and organic agriculture and the use of treated saline water in the agricultural sector will prevent the change in groundwater services.

Purification of pollutants such as metals, organic matter, etc. by the earth's layers and its constituents when water enters the aquifer is one of the measures of self-regulation of the aquifer system. In addition, the riverbed with its constituents mainly prevents the entry of polluted water. Rivers engage the aquifer with oxygen before it enters the aquifer and reduces the amount of pollution in the water, which overall delays the change in water services and creates relative stability.

3.2. Groundwater SES Dynamic Evaluation Indicators

The resources and capacity of the system are an excellent guide for evaluating the dynamics of the system against the variables of slow salinity, pollution, water volume, and water demand, which are defined as the factors influencing the change in water services (safe and sufficient water). However, in selecting indicators based on sources for dynamic evaluation of groundwater systems in the comparative cycle, there can be several important issues: 1- The type of indicator that can determine the impact on dynamics 2- Data collection and information for indicators, 3 - Time to change index values and 4- Place to change index values.

Various indicators affect the dynamics of the groundwater system and it is difficult to determine the exact amount of their impact on the dynamics of the whole system. There is no specific standard that can recommend an "appropriate" index to assess the dynamics of SES in the adaptive cycle. Because the value of indicators is affected by a set of index relationships that are very difficult and sometimes impossible to abstract from each other, using all of them also faces another problem.

The independence of the index and the dependence of the index on other indicators determine the threshold of concern and the peak of the index and water services. Any independent variable is a good indicator to evaluate because it alone can affect system services. However, if the index is highly dependent, a "Threshold of concern" can be used for it, and this worry is the ratio of the number of changed indices to unchanged indices. The higher the value, the higher the Threshold of concern. But the choice of indicators does not depend only on the type and nature of the variable. Data collection for all of these indicators is another issue that makes dynamic evaluation difficult. The data either do not exist or are mainly available to various sources such as various governmental, non-governmental organizations, and private exploiters, which are not always possible to collect in most countries and regions, making it difficult to assess dynamics at any time and place. Another issue is that dynamic data is not always specific to a specific place and time that can be used to study SES change. It may be in adjacent places and aquifers that are located in the political sphere of other countries and other administrative regions, which make it difficult to access for evaluation at all times and therefore cannot be relied on.

In selecting the indicators in evaluating the dynamics, the type of indicator in terms of speed and volume of groundwater system change should be considered. Some indicators create high speed in dynamics and others may have low speed and their volume of change is very deep and wide. Changes in indicators may have social roots, some have natural roots, and some have human and natural roots. Therefore, paying attention to the roots of change can be important in selecting indicators to evaluate dynamics. Another issue in selecting indicators is whether the values of your indicators change internally and externally. SES change indicators may be rooted outside the water management location, which is very difficult to monitor and manage change. In the meantime, system resources are a good guide for selecting the index that has been used in this text.

- Aquifer subsystem (AS) dynamics assessment indicators

The most important aquifer resources that extend the choice and resilience of aquifers to changing water services are pores, aquifer layers, aquifer shape, groundwater flows, and aquifer faults. The amount of space in the layers and pores of the aquifer is important in water treatment and the amount of water storage (Vrba & et al, 2007). According to the laws of physics, the amount of porosity in the aquifer is inversely related to the

strength and resistance of the aquifer to the reduction of groundwater volume. The larger the pores of the earth, the greater the change in aquifer and groundwater services as soon as the volume of water decreases. Aquifer subsidence is the culmination and reorganization stage of this element of SES (Vrba & et al, 2007). Therefore, the root of change in this element depends on the nature of the element, the ratio of the amount of artificial natural nutrition to the amount of extraction, and the speed of artificial and natural nutrition to the extraction groundwater rate.

Another indicator of SES dynamics is groundwater flow (Henriksen & et al, 2008). The higher the groundwater flow, the faster the rate of change and passage through the climax and the occurrence of the release and reorganization phase in the adaptive cycle. Groundwater flow may be different in two administrative areas and may be challenging to manage because decisions in other locations for the aquifer are uncontrollable. Of course, the amount of water flow in the aquifer is strongly influenced by the shape of the aquifer. Therefore, another indicator in assessing the variability of groundwater flow is the ratio of the shape of the egg carton to the shape of the aquifer pool. In the form of an egg's carton, the underground flow of water is less than in the form of a pool, and therefore the speed and location of the change in the place of the eggs will be higher.

The basement faults' elongation stretch relative to the surface water flow path affects the rate at which the aquifer is fed. Therefore, the higher the angle of the faults relative to the surface water travel path, the closer the degree of change of SES water services to delay and the greater the flexibility of the aquifer against change. Because in this case, the power of the aquifer is at a good level.

The rate of spring water is another indicator that shows the rate of change and dynamism of SES (Vrba & et al, 2007). The amount of watering of fountains can be a threshold of concern and the tipping point of aquifer change. Of course, the location of the fountains relative to the height of the layers is the control indicator of the springs. The lower the location of the fountains relative to the pores and layers, the amount of discharge can be a good indicator to assess the threshold of concern and the tipping point or release stage of the adaptive cycle.

Table 3. Definition of variables and concepts

Variables	Indicators	index
Earth pores	The degree of porosity in the aquifer is inversely related to the strength and resistance of the aquifer to the reduction of groundwater volume	AS_1
Aquifer shape	The ratio of the area of the egg carton to the pool	AS_2
Groundwater flow	The ratio of aquifer area within the administrative area to aquifer area in the adjacent office area	AS_3
	The ratio of aquifer area in the administrative area to the total aquifer area	AS_4
Basement faults	The angle of the faults about the path of surface water movement is more than 45 degrees and close to 90 degrees.	AS_5
fountains	The rate of change of watering fountains in each year compared to the previous year	AS_6
	Average height of fountains to aquifer height	AS_7

4. Research Findings

4.1. Dynamics assessment indicators of Environmental Subsystem (ES)

The basic resources of the natural environment are in expanding the sustainable capacity of groundwater services, rivers, wells, lakes, wetlands, and rainfall. Changes in these resources indicate the capacity for change in groundwater systems and water services (Table 4).

River discharge (Vrba & et al, 2007), riverbed, and the number of days of water flow per year are among the indicators that are important in assessing the dynamics of groundwater SES. Changes in river discharges over the years determine the rate of aquifer feeding (Henriksen & et al, 2008.,., Gejl & et al, 2020). By changing the flow of rivers due to the transfer of water to other basins and creating a dam, the rate of feeding of aquifers decreases. The feeding rate of rivers also depends on the level of the riverbed. The higher the width of the riverbed due to the encroachment on the riverbed by the human community, the lower the width of the river and the less the river feeds.

In arid and semi-arid regions, the rivers that feed the aquifer are not permanent and are seasonal. In these areas, the number of days of water flow is a measure that determines the dynamics of the groundwater system. The number of days of water flow in the river varies in different years and depends on the amount of rainfall and the type of rainfall. The closer the ratio of the number of water days in the river to the number of days in the year, the higher the rate of river nutrition, and vice versa. Groundwater wells, the density of water wells, average depth of wells, and average discharge of wells above aquifers are suitable indicators for assessing the dynamics of groundwater SES. The density of water wells can vary depending on the content of pores and soil layers, and the amount of rainwater fed and leaking from rivers. In places where there is naturally nourishing and leakage and the volume of layers and pores of the earth is high, higher density is not effective in rapid change, but in areas with low aquifer volume and low natural and artificial nutrition, well density increases the speed of water service change. Therefore, if the ratio of natural nourish to water depletion from the aquifer with good density, well depth, and well discharge, if changed together, will greatly change the water service and system dynamics and the adaptive groundwater cycle.

Water quality and level of lakes and wetlands; it is also an indicator of the SES dynamics of groundwater. Lakes and wetlands are important sources of groundwater recharge (Kopeć & et al, 2013. Gejl & et al, 2020). Pollution rate, salinity, and water level are very important in the dynamics of groundwater services. With the decrease of water in lakes and wetlands, their level of pollution and salinity will increase and the amount of polluted and saline water in the aquifer. Therefore, SES reduces the resilience of groundwater and increases the passage rate from the peak point and the protection phase of the adaptive cycle.

Changes in precipitation and type of precipitation; other indicators are very effective in groundwater dynamics. Rainfall is involved in the aquifer's natural nourishment. Therefore, reducing or increasing rainfall is important for the sustainability of groundwater services (Hund & et al, 2018). Rainfall and snowfall increase the SES 'resilience to salinity, pollution, water volume, and water demand, and reduce the transition velocity and stages of the adaptive water cycle.

Ground cover; is another effective indicator of groundwater dynamics (Foster & et al, 2010). Land cover density is directly related to natural nourishment (Kopeć & et al, 2013). The ratio of plant density of the aquifer to the total area of the aquifer determines the amount of aquifer nourishment. The higher the density of rangeland and agricultural vegetation, the higher the aquifer nourishment rate which increases the flexibility of the groundwater system and delays the passage of the peak point and the change of the adaptive cycle stage of the groundwater.

Table 4. Indicators of the natural environment subsystem above the aquifer

Variables	Indicator	index
River	Changing the width of the riverbed compared to a few years ago	ES_1
	Changing the ratio of the number of days of water flow to dehydration in the long run	ES_2
	Changes in river discharge over the long term	ES_3
Wells	Changing the density ratio of water wells at the top of the aquifer compared to a few years ago	ES_4
	Changes The average depth of water wells to a few years ago	ES_5
	Changes The average flow of wells from a few years ago	ES_6
Lakes and wetlands	Changing the water level of lakes and wetlands	ES_7
	Changes in the salinity of lakes and wetlands in the long term	ES_8
Rainfall	Change the rainfall every year to the long-term average	ES_9
	Changing the ratio of snow to rain in the long run	ES_{10}
Land cover	Changes in land vegetation density in the long run	ES_{11}

4.2. Social subsystem (SS) indicators to assess the dynamics of SES groundwater

Human indicators of groundwater systems are the performance of society regarding groundwater management. Environmental users, low water consumption cultivation pattern, deterrent laws, continuous monitoring, artificial groundwater recharge, government management institutions,

public water distribution institutions, population density and per capita population, occupational dependence and income of human communities to groundwater, activity diversity, water transfer, water transfer canals are important social elements of SES groundwater (Table 5).

Table 5. Indicators of the social subsystem above the aquifer

Variables	Indicators	index
Exploiters	Changing the ratio of environmentally oriented farmers to moderate farmers compared to previous years	SS_1
	Change in the ratio of moderate exploiters to extremist exploiters compared to previous years	SS_2
	Changing the ratio of environmentally oriented exploiters to extremist exploiters compared to previous years	SS_3
	Changing the level of satisfaction of groundwater users from the decisions of surface water users	SS_4
Cultivation pattern	The ratio of low water consumption cultivated land area to high consumption land area	SS_5
Deterrent rules	Changing stakeholder satisfaction with water laws	SS_6
Continuous monitoring	Changing the level of stakeholder satisfaction with the supervision of public and governmental institutions regarding the operation and the rate of evacuation	SS_7
Artificial groundwater recharge	The ratio of the amount of artificially charged water to the amount of discharge	SS_8
Government management institutions	Change the number of managerial and decision-making institutions to non-decision-making institutions	SS_9
	Satisfaction with the political will of government institutions in groundwater management	SS_{10}
NGOs distributing water	Changing the ratio of public institutions to government institutions involved in groundwater	SS_{11}
Population density and population per capita	Change in population density above the aquifer	SS_{12}
Off-farm inputs	Changing the ratio of fertilizer and pesticide use to organic inputs	SS_{13}
Variety of activities	Changing the degree of job dependence and income of human communities to groundwater compared to the long term	SS_{14}
transferring water	Changing the ratio of water transfer to total renewable groundwater over the long term	SS_{15}

Source; (Molle & Closas, 2020., Foster & et al, 2010., Foster & van der Gun,2016., Konikow, 2013., Dietz et al. 2003., Vrba & et al, 2007., Henriksen & et al, 2008., Majidipour & et al, 2021)

4.3. The framework of the adaptive cycle of the ecological-social system

The framework for assessing the dynamics of the adaptive cycle of the ecosystem system (ACSES) of groundwater is as follows. In this model, SES is divided into three AS aquifer subsystems, ES natural environment subsystem, and the community (SS) subsystem. The characteristic of the framework for assessing the dynamics of the adaptive cycle of the ecosystem-social system (ACSES) of groundwater is as follows. First: In this SES model, it is divided into three sub-systems AS aquifer, ES natural environment subsystem, and community subsystem (SoS). Second: the adaptive cycle of these three subsystems in four operating processes (R), protection (K), Release (Ω), and reorganization (α) are evaluated based on changes in potential, connections, and adaptive capacity with groundwater SES indices. Third: Index values are in the range of zero to 100%. Based on dividing a cycle (possibly a complete cycle) into four quadrants, each quarter accounts for 25 percent of the total cycle, and changes to the entire system per quadrant will be 25 percent. Therefore, if we divide the distance from zero to 100 into four parts in the cycle, then the rate of change of variables will show up to 25% of the change capacity (Figure 2).

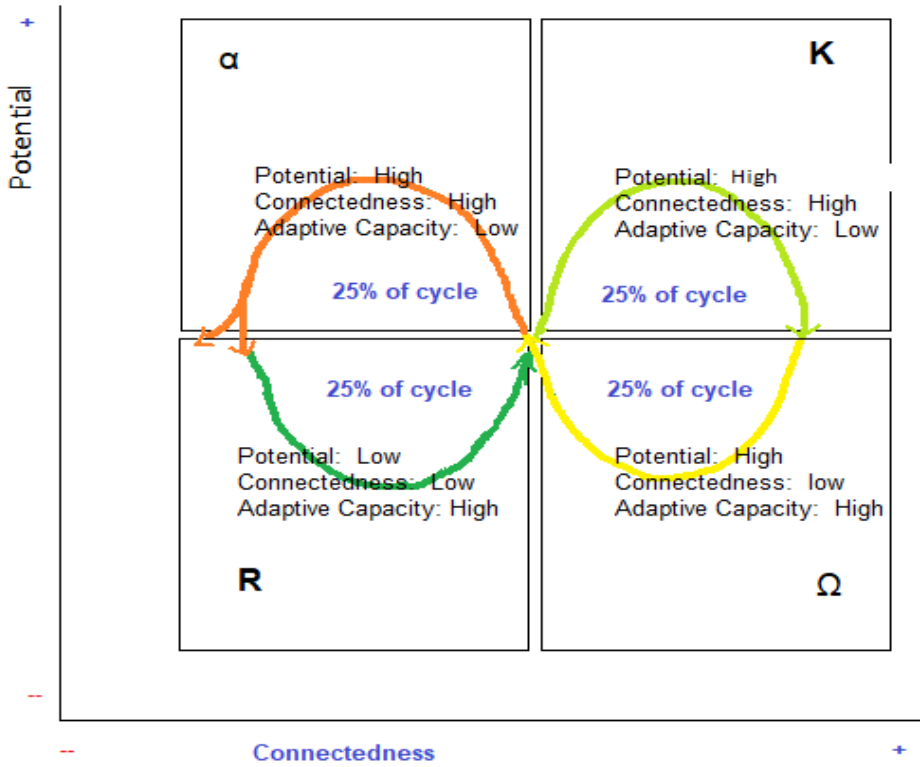

Figure 2. Adaptive groundwater cycle and the amount of change in each stage

Fourth: The important point here is that for some indicators the capacity from zero to 100 cannot be determined. Therefore, we considered low capacity less than 25% and high capacity between 25 and 100. The speed of change of elements is also different from each other some of them may go to the next stage and others may remain in the previous stage. Here we will use the concern threshold and the climax to assess change because of the difference in the speed of change.

Two important aspects help us determine system dynamics: the number of elements and the capacity of the elements that represent change (Table 6).

Table 6. How to change the elements of subsystems in the stages of the adaptive cycle based on resources, connections, and adaptive capacity

SES ↓	Adaptive Cycle →	Exploitation	protection	Release	Reorganization
Aquifer subsystem	Indicators AS_1 AS_2 .AS_7	-Changing potential indicators is less than 25% of resource capacity / 25% of resources used.	Between 25 and 100% of resources are used / the rate of change between 25 to 100% occurs in resources.	The potential is destroyed and only less than 25% of the capacity remains. / 25% of resources remain.	New resources and capacity are formed / 25 to 100% of the system elements are changed and new elements are formed.
Natural environment subsystem	ES_1 ES_2 .ES_{11}	Connections are less than 25% of capacity / 25% of elements are associated with elements outside the system	25 to 50% of the elements are connectedness	Between 25 and 100% of the elements are connectedness to elements outside the system. The	Connectedness is minimal / Less than 25% of new elements are related to elements outside the system

SES	Adaptive Cycle →	Exploitation	protection	Release	Reorganization
The subsystem of human society	SS_1 SS_2 . . . SS_{15}	The rate of compatibility/resistance and self-regulation of the indicators is 25 to 100 resilience capacity of the elements	to elements outside the system / the relationship between elements inside and outside the system varies between 25 to 100. Compatibility, resistance, and self-regulation capacity reaches less than 25% of capacity.	relationship of the elements with the external elements has changed from 25 to 100. Adaptability, resistance, and self-regulation capacity reach less than 25% of capacity.	Adaptability, resilience, and self-regulation capacity are at a high level. Between 25 and 100% capacity is used for resilience / 25 to 100% elements have resilience capacity.

Fifth: There can be two types of dynamics in the system: 1- change in the number of system elements, possibly the elements of the system in the process of interactions are completely changed due to connectedness and transferred to the next stage of the adaptive cycle, and 2- possibly, the potential of the element Increase or decrease. For example, the pores of the earth are an asset of the aquifer system. It is possible that due to the discharge of water with subsidence of a few centimeters to a few meters, its capacity will decrease or it will be completely blinded and destroyed due to discharge. Another example; the volume of groundwater is another source in the aquifer. There are two types of change in this element; first, the volume of water is likely to decrease, and second, the quality and salinity of water may change. In any case, if the change of all elements of the system reaches more than 25% of capacity, number, quality, and volume, the system will be transferred to the next stage. In the next stage, the amount of change will be more than 25% compared to the previous stage. This theorem can be applied to all elements of the system and the dynamics and changes of the groundwater system can be measured.

Sixth: There is an important point in measuring the change of elements of the groundwater system: not all qualitative and quantitative capacities of the system are the same in all elements and do not change at the same time or place (Walkeret al., 2004; Wycisk et al., 2008. Adobor, 2020). Some quantitative and qualitative features of the system are likely to change in the long run and others in the short term. Some characteristics also change in places outside the jurisdiction (Zazueta & Garcia, 2021). In addition, some elements may be transferred to another stage of the adaptive cycle but others may remain in the previous stage. In this case, it will be difficult to measure the change in system and transfer it to the new phase of the adaptive cycle. For these conditions, we propose a threshold of concern for managing system change. The threshold of concern has been used by various people in their research (Bouchet & et al, 2019). Concern thresholds are used to assess resource dynamics, connections, and adaptive capacity at different stages. The threshold of concern is used when there is a change in the elements in a region and the time and amount of change can not be accurately measured. The threshold of concern is the capacity at which the maximum quantitative and qualitative change of elements for each stage is considered up to 25%, after which the change reaches its tipping point and the stage change occurs.

The threshold of concern in the connectedness dimension is the maximum capacity at which up to 25% of the elements of each system communicate bilaterally or multilaterally with elements outside the system. If more than 25% of the system elements are connected outside the system, the system is transferred from one stage to the next of the adaptive cycle. In the adaptive cycle, the duration of quantitative and qualitative change of elements depends on the degree of resilience of the elements and the system (Ajjur & Baalousha,

2020). The threshold of concern in the flexibility dimension is the reverse point of connectedness. The closer the cycle is to the connectedness, the less resilience the capacity is (Figure 3). At each stage of the adaptive cycle, if the flexibility of each element is reduced to 25% of their total capacity for adaptation, resistance, and self-regulation, the likelihood of change is greater. This change reaches 50% in the second stage of the adaptive cycle. Because the amount of quantitative and qualitative change of elements increases during the cycles, it causes more fragility to the system and increases the speed of change.

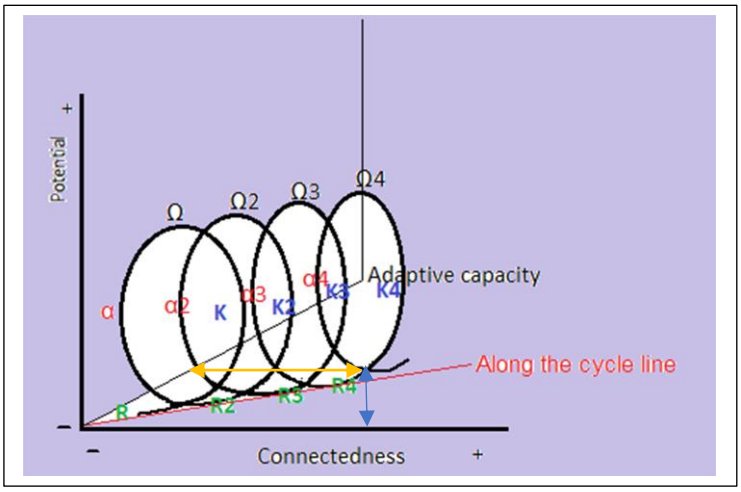

Figure 3. Adaptive groundwater cycle concerning resilience line and connectedness
Adaptive cycle line distance with connectedness axis Adaptive cycle line distance with resilience axis

Seventh: Determining the tipping point of each element is also important in the adaptive cycle to evaluate the dynamics. The tipping point probably cannot be used in the stages of the adaptive cycle because the tipping point is where the element changes completely, and this will probably be the destruction or complete change of the element. Thus, a series of repetitions of the threshold of concern moves the element to the peak point and the system reaches the stage of reorganization. At that time, the system is no longer the previous system and a new system has been formed. In other words, the stage of exploitation (R2), protection (K2), liberation (Ω2), and reorganization (α2) are formed and a new cycle is created in which the elements will probably be created with a new function (Figure. 3).

5. Discussion and Conclusion

The purpose of this paper provides a framework for assessing the dynamics of the groundwater system. According to the review of sources in this regard, little or no studies have been done. In this framework, we defined SES for groundwater and constructed its components. We also defined the SES framework based on the adaptive cycle theory and answered the question: How do the elements of the groundwater system change at different stages of the adaptive cycle and cause the system to move from one stage to another?

In this paper, based on the SES literature, we identify three subsystems of the aquifer, the natural environment, and the human community, and explain how they change in the process of exploitation, conservation, liberation, and reorganization using the concept of potential, connectedness, and adaptive capacity. And we showed that connections and flexibility are very important in system stability and their relationships are inverse in the cycle. The results of the study show that the model presented in this research is compatible with the comparative models of Holling & Gunderson (2002), Thapa & et al (2016) Daedlow & et al (2011).

As Walkeret et al (2004) and Adobor (2020) showed that the intervention and response of the groundwater system is not consistent in terms of time and geography and there is a need for a study in this field that this research can cover that gap. Given the various issues regarding water in different geographical areas, this paper can be

useful in assessing the dynamics of the groundwater system for proper management and timely action to protect water and aquifer services. It also helps to develop the concept of SES. The research work that can contribute to the ACSES framework is empirical research in this framework, evaluating water management based on the dynamics of the groundwater system, as well as evaluating and determining the capacities of the elements of each system.

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

Conflict of interest
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Reference

1. Adobor, H. (2020). Supply chain resilience: an adaptive cycle approach. *The International Journal of Logistics Management*. DOI:10.1108/IJLM-01-2020-0019.
2. Ajjur, S. B., & Baalousha, H. M. (2020). Formulation of Indicators for Sustainable Groundwater Development in Qatar. 12th International Exergy, Energy and Environment Symposium (IEEES-12). https://www.researchgate.net/publication/349310278_Formulation_of_Indicators_for_Sustainable_Groundwater_Development_in_Qatar
3. Allen, D. M., Mackie, D. C., & Wei, M. J. H. J. (2004). Groundwater and climate change: a sensitivity analysis for the Grand Forks aquifer, southern British Columbia, Canada. *Hydrogeology Journal*, 12(3), 270-290. doi:10.1007/s10040-003-0261-9
4. Behyari, M., Jabari, A., & Alizadeh, A. (2020). Monitoring of buried faults and their role on the groundwater flow in the Urmia plain. Hydrogeology, 5(1), 98-109. DOI:10.22034/HYDRO.2020.10456.
5. Biggs, R., Gordon, L., Raudsepp-Hearne, C., Schlüter, M., & Walker, B. (2015). Principle 3–Manage slow variables and feedbacks. Principles for building resilience: Sustaining ecosystem services in social-ecological systems, 105-141. https://www.stockholmresilience.org/publications/ -manage-slow-variables-and-feedbacks.html.
6. Bishop, J. M., Glenn, C. R., Amato, D. W., & Dulai, H. (2017). Effect of land use and groundwater flow path on submarine groundwater discharge nutrient flux. *Journal of Hydrology: Regional Studies*, 11, 194-218, doi:10.1016/j.ejrh.2015.10.008.
7. Blomquist, W. (2020). Beneath the surface: complexities and groundwater policy-making. *Oxford Review of Economic Policy*, 36(1), 154-170. doi:10.1093/oxrep/grz033.
8. Bouchet, L., Thoms, M. C., & Parsons, M. (2019). Groundwater as a social-ecological system: A framework for managing groundwater in Pacific Small Island Developing States. Groundwater for Sustainable Development, 8, 579-589. doi 10.1016/j.gsd.2019.02.008.
9. Boulton, A. J., & Hancock, P. J. (2006). Rivers as groundwater-dependent ecosystems: a review of degrees of dependency, riverine processes and management implications. *australian Journal of Botany*, 54(2), 133-144. https://www.publish.csiro.au/bt/BT05074.
10. Bresci, E., & Castelli, G. (2021). *Water Harvesting in Farmlands*. Handbook of Water Harvesting and Conservation: Basic Concepts and Fundamentals, 87-100. https://doi.10.1002/978 1119478911.ch6.
11. Daedlow, K., Beckmann, V., & Arlinghaus, R. (2011). Assessing an adaptive cycle in a social system under external pressure to change: the importance of intergroup relations in recreational fisheries governance. *Ecology and Society*, 16(2). https://www.jstor.org/stable/26268880.
12. Dietz, T., E. Ostrom, and P.C. Stern. 2003. The struggle to govern the commons. Science 302, no. 5652: 1907–1912. DOI: 10.1126/science.1091015.
13. Earman, S., & Dettinger, M. (2011). Potential impacts of climate change on groundwater resources–a global review. *Journal of water and climate change*, 2(4), 213-229. https://doi.org/10.2166/wcc.2011.034.
14. Ekeland, I. (2002). Rene Thom (1923-2002) - obituary. Nature, 420 (6917), 758. https://doi.org/10.1038/420758a.
15. Escamilla Nacher, M., Ferreira, C. S. S., Jones, M., & Kalantari, Z. (2021). Application of the Adaptive Cycle and Panarchy in La Marjaleria Social-Ecological System: Reflections for Operability. Land, 10(9), 980. https://doi.org/10.3390/land10090980.
16. Fath, B.D., Dean, C.A., Katzmair, H., (2015). Navigating the adaptive cycle: an approach to managing the resilience of social systems. Ecol. Soc. 20, 24. https://www.jstor.org/stable/26270208.
17. Foster, S., & van der Gun, J. (2016). Groundwater governance: key challenges in applying the global framework for action. Hydrogeology Journal, 24(4), 749-752. https://doi.org/10.1007/s 10040-016-1376-0.

18. Foster, S., Garduno, H., Tuinhof, A., & Tovey, C. (2010). Groundwater governance: conceptual framework for assessment of provisions and needs (No. 57555, pp. 1-16). The World Bank. https://policycommons.net/artifacts/1523029/groundwater-governance/2207405/#.
19. Foster, S., Pulido-Bosch, A., Vallejos, Á., Molina, L., Llop, A., & MacDonald, A. M. (2018). Impact of irrigated agriculture on groundwater-recharge salinity: a major sustainability concern in semi-arid regions. *Hydrogeology Journal*, 26(8), 2781-2791. https://doi.org/10.1007/s10040-018-1830-2.
20. Gejl, R. N., Bjerg, P. L., Henriksen, H. J., Bitsch, K., Troldborg, L., Schullehner, J., ... & Rygaard, M. (2020). Relating wellfield drawdown and water quality to aquifer sustainability–A method for assessing safe groundwater abstraction. *Ecological Indicators*, 110, 105782. https://doi.org/10.1016/j.ecolind.2019.105782.
21. Grundmann, P., Ehlers, M. H., & Uckert, G. (2012). Responses of agricultural bioenergy sectors in Brandenburg (Germany) to climate, economic and legal changes: An application of Holling's adaptive cycle. *Energy Policy*, 48, 118-129. https://doi.org/10.1016/j.enpol.2012.04.051
22. Habiba, U., Abedin, M. A., Shaw, R., & Hassan, A. W. R. (2014). *Salinity-induced livelihood stress in coastal region of Bangladesh. In Water insecurity: A social dilemma*. Emerald Group Publishing Limited, https://www.emerald.com/insight/content/doi/10.1108/S2040-7 262%282 013% 290000013013/ full/html.
23. Henriksen, H. J., Troldborg, L., Højberg, A. L., & Refsgaard, J. C. (2008). Assessment of exploitable groundwater resources of Denmark by use of ensemble resource indicators and a numerical groundwater–surface water model. *Journal of Hydrology*, 348(1-2), 224-240. https://doi.org/10.1016/j.jhydrol.2007.09.056.
24. Holling, C. S. (1986). *The resilience of terrestrial ecosystems; local surprise and global change*. Pages 292-317 in W. C. Clark and R. E. Munn, editors. Sustainable development of the biosphere. Cambridge University Press, Cambridge, UK. https://pure.iiasa.ac.at/13667.
25. Holling, C. S., & Gunderson. L.H. (2002). *Resilience and adaptive cycles. Pages 25-62 in L. H. Gunderson and C. S.* Holling, editors. Panarchy: understanding transformations in human and natural systems. Island Press, Washington, D.C., USA. http://hdl.handle.net/10919/67621
26. Holling, C.S. (2001). Understanding the complexity of economic, ecological, and social systems. Ecosystems, 4(5), 390-405. https://doi.org/10.1007/s10021-001-0101-5.
27. Hund, S. V., Allen, D. M., Morillas, L., & Johnson, M. S. (2018). Groundwater recharge indicator as tool for decision makers to increase socio-hydrological resilience to seasonal drought. *Journal of Hydrology*, 563, 1119-1134, https://doi.org/10.1016/j.jhydrol.2018.05.069.
28. Jasechko, S., Birks, S. J., Gleeson, T., Wada, Y., Fawcett, P. J., Sharp, Z. D., ... & Welker, J. M. (2014). The pronounced seasonality of global groundwater recharge. *Water Resources Research*, 50(11), 8845-8867. https://doi.org/10.1002/2014WR015809
29. Kernberg, O. F. (1988). Object relations theory in clinical practice. *The Psychoanalytic Quarterly*, 57(4), 481-504. https://doi.org/10.1080/21674086.1988.11927218.
30. Kløve, B., Ala-Aho, P., Bertrand, G., Boukalova, Z., Ertürk, A., Goldscheider, N., ... & Widerlund, A. (2011). Groundwater-dependent ecosystems. Part I: Hydroecological status and trends. Environmental Science & Policy, 14(7), 770-781. https://doi.org/10.1016/j.envsci. 2011.04.002.
31. Konikow, L.F. (2013). Groundwater depletion in the United States (1900-2008). USGS Scientific Investigations Report 2013- 5079. Reston, Virginia: USGS. https://doi.org/10.3133/sir20135079
32. Kopeć, D., Michalska-Hejduk, D., & Krogulec, E. (2013). The relationship between vegetation and groundwater levels as an indicator of spontaneous wetland restoration. *Ecological Engineering*, 57, 242-251. https://doi.org/10.1016/j.ecoleng.2013.04.028
33. Lerner, D. N., & Harris, B. (2009). The relationship between land use and groundwater resources and quality. *Land use policy*, 26, S265-S273. https://doi.org/10.1016/j.landusepol.2009.09.005.
34. Li, Y., Kappas, M., & Li, Y. F. (2017). Exploring the coastal urban resilience and transformation of coupled human-environment systems. Journal of Cleaner Production, 195, 1505–1511. https://doi.org/10.1016/j.jclepro.2017.10.227
35. Linnenluecke, M.K., & Griffiths, A. (2010). Corporate sustainability and organizational culture. *Journal of World Business*, 45(4), 357-366. https://doi.org/10.1016/j.jwb.2009.08.006
36. Liu, D., Cao, C., Chen, W., Ni, X., Tian, R., & Xing, X. (2017). Monitoring and predicting the degradation of a semi-arid wetland due to climate change and water abstraction in the Ordos Larus relictus National Nature Reserve, China. *Geomatics, Natural Hazards and Risk*, 8(2), 367-383. https://doi.org/10.1080/19475705.2016.1220024
37. López-Gunn, E. (2012). Groundwater governance and social capital. *Geoforum*, 43(6), 1140-1151. https://doi.org/10.1016/j.geoforum.2012.06.013.

38. Majidipour, F., Najafi, S. M. B., Taheri, K., Fathollahi, J., & Missimer, T. M. (2021). Index-based Groundwater Sustainability Assessment in the Socio-Economic Context: a Case Study in the Western Iran. Environmental Management, 67(4), 648-666. https://doi.org/10.1007/s00267-021-01424-7
39. Mathias, J. D., Anderies, J. M., Baggio, J., Hodbod, J., Huet, S., Janssen, M. A., & Schoon, M. (2020). Exploring non-linear transition pathways in social-ecological systems. Scientific. https://doi.org/10.1038/s41598-020-59713-w
40. Molle, F., & Closas, A. (2020). Why is state-centered groundwater governance largely ineffective? A review. *Wiley Interdisciplinary Reviews: Water*, 7(1), e1395. https://doi.org/10.1002/wat2.1395
41. Petit, O., Kuper, M., López-Gunn, E., Rinaudo, J. D., Daoudi, A., & Lejars, C. (2017). Can agricultural groundwater economies collapse? An inquiry into the pathways of four groundwater economies under threat. *Hydrogeology Journal*, 25(6), 1549-1564. https://DOI:10.1007/s10040-017-1567-3
42. Popa, C. L., Bretcan, P., Radulescu, C., Carstea, E. M., Tanislav, D., Dontu, S. I., & Dulama, I. D. (2019). Spatial distribution of groundwater quality in connection with the surrounding land use and anthropogenic activity in rural areas. *Acta Montanistica Slovaca*, 24(2). https://actamont.tuke.sk/pdf/2019/n2/1popa.pdf
43. Pulido-Bosch, A., Rigol-Sanchez, J. P., Vallejos, A., Andreu, J. M., Ceron, J. C., Molina-Sanchez, L., & Sola, F. (2018). Impacts of agricultural irrigation on groundwater salinity. *Environmental earth sciences*, 77(5), 197, https://doi.org/10.1007/s12665-018-7386-6
44. Randle, J.M., Stroink, M.L., Nelson, C.H. (2014). *Addiction and the adaptive cycle: a new focus*. Addict. Res. Theory 6359, 1–8. https://doi.org/10.3109/16066359.2014.942295
45. Sandwii, W. J. P. (2007). Groundwater potential to supply population demand within the Kompienga dam basin in Burkina Faso. https://nbn-resolving.org/urn:nbn:de:hbz:5N-12319
46. Silberstein, J., & Maser, C. (2013). *Land-use planning for sustainable development*. CRC Press.
47. Sundstrom, S. M., & Allen, C. R. (2019). The adaptive cycle: More than a metaphor. *Ecological Complexity*, 39, 100767. https://www.routledge.com/Land-Use-PlanningSilberstein-Maser/p/book/9780367868048.
48. Thapa, R., Thoms, M., & Parsons, M. (2016). An adaptive cycle hypothesis of semi-arid floodplain vegetation productivity in dry and wet resource states. *Ecohydrology*, 9(1), 39-51. https://doi.org/10.1002/eco.1609
49. Vrba, J., Girman, J., van der Gun, J., Haie, N., Hirata, R., Lopez-Gunn, E., ... & Wallin, B. (2007). Groundwater resources sustainability indicators (Vol. 14, p. 114). A. Lipponen (Ed.). Paris: Unesco.
50. Walker, B., Holling, C.S., Carpenter, S.R., & Kinzig, A. (2004). Resilience, adaptability, and transformability in social-ecological systems. *Ecology and Society*, 9(2), 5. https://www.jstor.org/stable/26267673
51. Williams, A., Whiteman, G., & Kennedy, S. (2019). Cross-scale systemic resilience: implications for organization studies. *Business & Society*, 1-30. https://doi:10.1177/0007650319825870
52. Wycisk, C., McKelvey, B., & H€ulsmann, M. (2008). "Smart parts" supply networks as complex adaptive systems: analysis and implications", International Journal of Physical Distribution and Logistics Management, 30(2), 108-125. https://doi.org/10.1108/09600030810861198.
53. Xu, Y. S., Shen, S. L., Du, Y. J., Chai, J. C., & Horpibulsuk, S. (2013). Modelling the cutoff behavior of underground structure in multi-aquifer-aquitard groundwater system. Natural hazards, 66(2), 731-748, https://doi.org/10.1007/s11069-012-0512-y
54. Zazueta, A. E., & Garcia, J. R. (2021). Multiple actors and confounding factors: Evaluating impact in complex social-ecological systems. In Evaluating Environment in International Development (pp. 93-110). Routledge, https://library.oapen.org/bitstream/handle/20.500.12657/46924/9781000363968.pdf?sequence=1#page=114
55. Zhang, L., Huang, Q., He, C., Yue, H., & Zhao, Q. (2021). Assessing the dynamics of sustainability for social-ecological systems based on the adaptive cycle framework: A case study in the Beijing-Tianjin-Hebei urban agglomeration. Sustainable Cities and Society. https://doi.org/10.1016/j.scs.2021.102899

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ارائه چارچوب مفهومی ارزیابی پویایی سیستم آب زیرزمینی با ترکیب تئوری چرخه تطبیقی و SES انعطاف پذیر

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چکیده مبسوط

۱. مقدمه

چرخه تطبیقی حرکت سیستم را در سه بعد پتانسیل، اتصال و انعطاف پذیری در چهار مرحله: بهره‌برداری، حفاظت، انتشار، و سازمان‌دهی مجدد ارزیابی می کند. در مرحله بهره برداری سیستم در حالت رشد سریع قرار دارد. در مرحله حفاظت (انباشتگی منابع و روابط)، انعطاف پذیری سیستم کاهش می یابد. در فاز رهاسازی ارتباط بین اجزای مختلف سیستم ضعیف می‌شود و توانایی تنظیم و کنترل سیستم کاهش می‌یابد که باعث عدم اطمینان سیستم می‌شود، در مرحله سازماندهی مجدد، عدم قطعیت ناشی از فاز رهاسازی به تنظیم مجدد مواد کمک می کند. حرکت سیستم از فاز بهره برداری به فاز حفاظت منجر به افزایش منابع و اتصالات می شود اما انعطاف پذیری کاهش می یابد زیرا ارتباط زیاد باعث آبشاری شدن اختلالات می گردد. در مرحله رهاسازی ازادسازی منابع و پتانسیل انباشته شده اتفاق می افتد و منجر به گذار از نقطه اوج در سیستم می شود.

۲. مبانی نظری تحقیق

چرخه تطبیقی توسط هللینگ (۱۹۸۶) مطرح شد. این چرخه در یک فضای سه بعدی پتانسیل، اتصال و انعطاف پذیری عمل می کند که در مطالعات مختلف این سه بعدی مورد توجه قرار گرفته است. در چرخه تطبیقی بعده پتانسیل به ظرفیت سیستم در انتخاب گزینه ها برای پایداری در برابر تغییر اشاره دارد هرچه پتانسیل سیستم بالاتر باشد ظرفیت تغییر آن به حداقل می رسد ولی در نهایت تغییر یافته و به مرحله بعدی چرخه منتقل می شود.

بعد اتصال در چرخه تطبیقی به شبکه روابط عناصر در درون سیستم و بیرون سیستم اشاره دارد هر چه میزان اتصال و پیوستگی عناصر سیستم با عناصر خارج از سیستم بیشتر باشد ظرفیت تغییر پذیری سیستم را بالا می‌برد زیرا سیستم و عناصر آن در برابر آبشاری است اختلالات قرار می گیرد انعطاف پذیری سیستم را تضعیف می‌کند. بعد انعطاف پذیری سیستم نیز ظرفیت پایداری سیستم را در برابر تغییر نشان می دهد. انعطاف پذیری شامل مولفه های سازگاری، خود تنظیمی و مقاومت است. هر چه میزان سازگاری، مقاومت و خودتنظیمی عناصر سیستم بالاتر باشد ظرفیت تغییر پذیری سیستم کاهش پیدا می‌کند.

۳. روش تحقیق

در این تحقیق ابتدا مدلهای SES و چرخه تطبیقی بازخوانی گردید و سپس براساس کانکشنها و شاخصهای آب زیر زمینی مدل جدید ارائه گردید. شاخصهای چرخه تطبیقی عبارت‌اند از: منابع و ظرفیت سیستم راهنمای بسیار خوبی برای ارزیابی پویایی سیستم در برابر متغیرهای کند شوری، آلودگی، حجم آب و تقاضای آب است که در مجموع عوامل موثر در تغییر خدمات آب(آب سالم و کافی) تعریف می شود. اما در انتخاب شاخصها بر مبنای منابع برای ارزیابی پویای سیستم اب زیرزمینی در چرخه تطبیقی چند مسئله مهم می تواند وجود داشته باشد:۱ – نوع شاخص که بتوان میزان تاثیر آن را در پویایی تعیین کرد ۲- جمع آوری داده و اطلاعات برای شاخصها، ۳- زمان تغییر مقادیر شاخص و ۴- مکان تغییر مقادیر شاخص.

۴. یافته‌های تحقیق

ویژگی چارچوب ارزیابی پویایی چرخه تطبیقی سیستم اکولوژیکی-اجتماعی (ACSES) آب زیرزمینی به شکل زیر است. اول: در این مدل SES به سه زیر سیستم آبخوان AS، زیرسیستم محیط طبیعی ES و زیر سیستم جامعه(SoS) تقسیم شده است، دوم: چرخه تطبیقی این سه زیر سیستم در چهار فرایند بهره برداری(R)، حفاظت(K)، رهایی (Ω) و سازماندهی مجدد(α) بر اساس تغییرات پتانسیل، اتصالات و انعطاف پذیری با شاخصهای SES آب زیرزمینی ارزیابی می شود، سوم: مقادیر شاخص

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در بازه صفر تا ۱۰۰ درصد قرار دارند. براساس تقسیم یک چرخه(احتمالا چرخه کامل) به چهار ربع، هر ربع ۲۵ درصد کل چرخه را شامل می شود و تغییرات در کل سیستم در هر ربع به اندازه ۲۵ درصد خواهد بود. بنابراین اگر فاصله صفر تا ۱۰۰ را به چهار قسمت در چرخه تقسیم کنیم آن وقت میزان تغییر متغیرهای تا ۲۵ درصد ظرفیت تغییر را نشان خواهد داد چهارم: نکته مهمی که در اینجا وجود دارد برای برخی از شاخصها ظرفیت صفر تا ۱۰۰ را نمی توان تعیین نمود. به همین جهت ما ظرفیت پایین را کمتر ۲۵ درصد و ظرفیت بالا را بین ۲۵ تا ۱۰۰ در نظر گرفتیم. پنجم: در سیستم دو نوع پویایی می تواند وجود داشته باشد: ۱- تغییر در تعداد عناصر سیستم، احتمالا عناصر سیستم در فرایند فعل انفعالات بر اثر اتصالات کاملا تغییر پیدا کند و به مرحله بعدی چرخه تطبیقی انتقال یابد و ۲- ممکن است ظرفیت یا پتانسیل عنصر کم یا زیاد شود. ششم: در تغییر و اندازه گیری تغییر عناصر سیستم اب زیر زمینی یک نکته مهمی وجود دارد: همه ظرفیت کیفی و کمی سیستم در تمام عناصر یکسان و در یک زمان و یا مکان تغییر پیدا نمی کند. هفتم: تعیین نقطه اوج هر عنصر نیز در چرخه تطبیقی برای ارزیابی پویایی دارای اهمیت است. نقطه اوج را احتمالا نمی توان در مراحل چرخه تطبیقی بکار برد زیرا نقطه اوج جایی است که عنصر تغییر کامل پیدا می کند و ابن احتمالا نابودی و یا تغییر کامل عنصر خواهد بود.

۵. بحث و نتیجه گیری

با توجه به مسائل مختلف در خصوص آب در مناطق مختلف جغرافیایی، این نوشتار می تواند در ارزیابی پویایی سیستم آب زیر زمینی برای مدیریت صحیح و انجام اقدامات به موقع در راستای حفاظت از خدمات اب و آبخوان در مناطق مختلف مفید باشد. همچنین در توسعه مفهوم SES کمک نماید. کارهای تحقیقی که می تواند برای چارچوب ACSES کمک کند، تحقیقات تجربی در این چارچوب، ارزیابی مدیریت آب براساس پویایی سیستم اب زیر زمینی و همچنین ارزیابی و تعیین ظرفیتهای عناصر هر سیستم است.

کلیدواژه‌ها: چرخه تطبیقی، آب‌های زیرزمینی، دینامیک سیستم، سیستم اجتماعی-اکولوژیکی، ارزیابی.

تشکر و قدرانی

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Original Article

Effects of Motivating, Job Performance and Job Satisfaction Factors on the Development of the Handicraft Khamak Dozi (Baluchi) Afghan Rural Women

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Abstract

Purpose- Undoubtedly, the correct performance of any activity and the successful performance of any role in the field of handicrafts depends on the interest and motivation of the workers to get familiar with its skills and methods and to use the special methods of that technique in the production of products. Baghlan province which is located in the northeast of Afghanistan, about 50% of the population of this province is women, and recently, most of the rural women of this province have turned to the handicraft industry of Balochi to improve their income. Therefore, this study was conducted to investigate the production status of the handicraft industry of Balochi women and the role of motivating factors of job performance and job satisfaction on the development of the handicraft industry of Balochi.

Design/methodology/approach- The main research tool was a questionnaire the validity of which was confirmed by the lecturers of the agricultural extension and economics and the department of sociology of Baghlan university, and Cronbach's alpha confirmed its reliability. The statistical population was all the rural women working in the handicraft industry of Baghlan province, which was selected by purposive sampling (192) samples.

Finding- Results showed that all three independent variables, motivational factors, job performance and job satisfaction have a positive and significant effect on the development of the handicraft industry of Balochi women, and explained 59% of the changes in the dependent variable. So, with confidence, it can be said that increasing motivation, job performance and job satisfaction lead to the development of the needlework industry among rural women.

Originality/value– The results of this study, especially concerning due to the lack of sufficient and appropriate empirical literature in Afghanistan, can play a major role in providing correct insight to the rural development officials, job creation and poverty reduction in Afghanistan.

Keywords: Handicraft industry, Rural Women Empowerment, Entrepreneurship, Afghanistan

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1. Introduction

Khamak Dozi, among handicrafts, is considered one of the most important professions due to its long history. Needlework is one of the broad handicraft arts (Teglund, 2011), which uses thread and needle to arrange and produce beautiful and patterned fabrics with special delicacy and precision. This industry, like other handicrafts, is considered one of the valuable national capitals, and most of the artists and workers of the handicraft industry of khamak embroidery (Baluchi) are native people and people without higher and university education, especially women, who regardless of the competitive environment of the domestic and foreign markets, they produce it traditionally. Today, handicrafts form a part of the rural economy and can play a more important role in developing the rural economy. One of the inevitable ways to progress and prevent the increase in rural poverty is to pay attention to the living conditions of rural households, the issue of reducing poverty and creating a higher level of income and employment is considered one of the most important and key issues in rural development (Vaisi et al., 2023).

Afghanistan has a rich history of handicrafts, with carpet weaving and embroidery being particularly popular in its villages, contributing significantly to family income. However, the introduction of mechanization weakened the handicraft industry, despite people showing more interest in handmade products over machine-made ones. Therefore, promoting and supporting embroidery can help improve the economic status of families involved in this industry by increasing their income. The reality is that due to job limitations and economic challenges facing families in the villages of Baghlan province and other rural areas of Afghanistan, women have less presence in the workforce. Many women, lacking a breadwinner, have to provide for their families themselves, yet there are still no defined alternative job opportunities for them. Given Afghanistan's status as a poor and underdeveloped country, supporting handicraft industries, particularly strengthening and developing the skills of Baluchi embroidery, can not only turn embroidery into a profession but also provide a good economic alternative for households.

Rural women are an enormous part of the human force working in the rural economy (Talebpour, et al., 2022), and always vulnerable segment of society has been invisibly caught in a trap of deprivation, and poverty (Chambers (2014). Women household heads in rural areas of Afghanistan are in dire need, especially in recent years (Sidiqi, 2023). Afghanistan has passed several decades of wars and various other problems. For this reason, it has not been able to achieve sustainable development and its villages faces various economic, social, infrastructural and physical challenges (Shaiq et al., 2021). This country has enjoyed international aid for many years (Assadi, et., 2024), but it also suffers from the phenomenon of poverty (Floreani et al., 2021; Shaiq, et al., 2022). Therefore, the development of the Balochi hand embroidery industry of rural women is considered a valuable and efficient advantage in fighting social problems and achieving economic development in Afghanistan, especially among rural women.

2. Research Theoretical Literature

Handicrafts refer to all decorative and practical arts that are made with the help of hands and natural materials and it's created without the benefit of machines. In its essence, this work should have cultural and artistic dynamism and immortality, as well as the charm of influencing the soul of the audience in such a way that it challenges a person to move and think internally and establish a sincere relationship with his psyche (Rostami, 2005). Handicrafts The embodiment of the three elements of beauty is skill and thought, and the creative artists of handicrafts and the works and achievements of their art, with the help of their inherent talent and flexibility, have always been a real and clear example of these three elements (Azizi Kazemi & Hadipour, 2018). Handicrafts it is the objective crystallization of culture and artistic manifestations of the type of applied and popular arts. Since every handmade product reflects the historical-social characteristics and culture of the place of production, it can be considered an important factor in introducing the culture (Yazdan Panah, 2009). The proper performance of a job and high job performance has always been one of the important concerns of organizations (Ghlichlee & Gharabaghi, 2021).

Performance is the process of explaining the quality, effectiveness and efficiency of past actions (Neely et al., 2005). Motivation is one of the important factors in professional success and job performance. It is known that motivation in all job functions is considered as an important factor in the progress of the organization. In general, motivation is a set of forces that compels people both from the inside and from the outside to perform better activities in the work environment (Tuliao & Chen, 2022). The term means dynamism and movement, and from an organizational point of view, motivation is a factor that causes a change in behavior and movement in the direction of advancement and organizational goals (Asian, 2021). Also, job satisfaction is defined as a pleasurable emotional state that comes from the assessment, emotional reaction and attitude of a person towards the job and includes the consequences of job satisfaction, which include better performance and reduction of leaving service and activity (Montuori, et al., 2022). Suttikun et al., (2018) write that job satisfaction is related to work motivation, organizations with higher job satisfaction usually see higher motivation in their employees. Salau et al (2018) argue that job satisfaction is related to transformational leadership and employee engagement. The higher the participation rate in the organization's decisions, the higher the job satisfaction. Lin and Bellibas (2018) believe that job satisfaction is related to organizational commitment and job satisfaction is related to work intention, with work intention in the organization, the level of job satisfaction improves.

Our investigations show research in the field of the effect of motivational, job performance and job satisfaction factors on the development of the handicrafts industry (Baluchi) of rural women has not been done yet. However, few foreign researchers have focused on handicrafts, especially on the embroidery industry. As, Avishi, Husseinabadi & Esfandi (2023) write in their research findings although most of the women have not received special training to enter the field of needlework, but most of the women needlewomen in the sample community see the ability to teach needlework to those interested in this art field. However, they face the lack of access to a suitable market to sell their products, and the lack of subsidies and cooperatives, are among the major challenges of the needlework industry. Bahrami (2020) found that the lack of access to the sales market, transportation, the low level of awareness of advertising in virtual and social networks, and the lack of access to the sale of products are among the major challenges in the development of rural handicrafts. Azizi Kazemi & Hadipour (2018) write in their research findings, that the personal and psychological factors effective in entrepreneurship are self-efficacy, that a person can perform a specific task successfully and has the necessary skills and abilities to perform a specific task. Sadeghi & Kavoosi (2016) found that targeted subsidies have been effective in strengthening the production of handicrafts, increasing the level of incomes, increasing the purchasing power and improving the quality of people's lives. Zeeshan & Waqar (2013) found that the main problems of handicraft artists are improper marketing, lack of preparation of raw materials and lack of consumer awareness (Bhat & Yadav, 2016).

Lin and Lee (2010) acknowledge that in the 21st century, knowledge-based cultural industries are part of the new economic opportunities for countries. Unfortunately, in Afghanistan, the ruling regimes in the past have not taken any significant measures in terms of job creation, strengthening cultural industries and supporting handicrafts, and due to the political developments and transformations caused by the war, the economic foundations have been damaged more than before. Therefore, the level of unemployment has increased in the country and due to the lack of job opportunities for people to continue their lives, people choose to migrate. In the past, like other villages in underdeveloped countries, improving the sustainable livelihood of the rural people of Baghlan province has not been given much attention. While human-centeredness in the development process in rural areas is considered one of the most important development tools due to social barriers such as illiteracy, low level of literacy, non-economic thinking, the role of women, the lack of diversity in job opportunities and cultural and traditional limitations, the contribution of women in employment and the labour market is very low compared to men. On the other hand, due to economic and cultural poverty, women have not been able to enter the labour market sufficiently.

Handicraft of khamek dozi (Baluchi) is an art where the majority of its workers belong to women. Most of the workers in this industry in the villages of Baghlan province are from poor and needy families who turned to this handicraft industry to provide for their family's sustenance and needs. Supporting and strengthening this handicraft industry can effectively improve the economic situation in the villages of Baghlan Province and Afghanistan. The findings of this research are of special importance for economic sector operators of the Afghan system is directed towards the development and support of the handicraft industry of khamak dozi; Because engaging in this industry is not very expensive and the development of khamak dozi industry in villages can provide livelihoods for dependent families and develop the economy of villages. In other words, almost half of the population of Baghlan province is made up of women. This is while in Afghanistan and the studied region, women are suffering from severe unemployment, however, this research can play a major role in giving a correct insight to the authorities and governmental and non-governmental institutions for better planning in this field. In this research, we are looking for answers to the following objectives:

1) Investigating the status of the production of the khamak embroidery (Balochi) of rural women.
2) Investigating the relationship between the independent variables (motivational, job performance, and job satisfaction factors) with the dependent variable (development of the handicraft industry of rural women).
3) Investigating to what extent the independent variables play a role in explaining the variance of the dependent variable of this research.

3.Research Methodology

3.1 Geographical Scope of the Research

The area studied in this research was Baghlan Province. Baghlan Province is one of the important industrial and agricultural provinces of Afghanistan. Baghlan is located 230 km from Kabul along the Kabul-Mazar-e-Sharif highway. This province is a part of the northeastern provinces and connects eight Northern provinces of the country with the capital of Afghanistan (Kabul). The main agricultural products of this province are wheat, rice, melons, turnips, cotton, potatoes and onions. The area of this province is 21112 km2. The population of Baghlan Province is about 1,053,200 people (Profile of Baghlan Province, 2019).

Figure1. Map of Afghanistan and the study area

3.2. Methodology

This research is a type of survey research that used primary data to conduct it. The main tool was the questionnaire. To develop the questionnaire, a primary questionnaire was prepared while examining the background and existing theories in the field of the research problem. Then, this questionnaire was re-examined with the help of a group of rural development and sociology lecturers at Baghlan University. In this research, we extracted the variables of motivational, job

performance and job satisfaction factors by using research backgrounds and sources like (Hansen & Stræte 2020; Yang & Guan 2019; Maican et al. 2021; Muri et al. 2021; Ayalew, & Zeleke, 2018; Senger et al., 2017; Robinson et al. 1991; Avishi et al., 2023). In other words, the variables of all three independent variables are mentioned in the table below.

Table1. Variables used in this research

Independent and dependent variables	Variables	Scale	Cronbach's alpha
Motivational factors	It is important to me that I do my job better than others.	Likert spectrum (1-5)	0.86
	A good social environment like friends is important for me to be motivated to work.		
	I have a high motivation to earn more.		
	Every day I think about how to perform my duties.		
	Having the motivation more than the capital of suitable financial resources causes the development of the hand embroidery industry.		
Job Performance	The income generation of my total business assets is slightly higher than that of my business peers.	Likert spectrum (1-5)	0.73
	Overall sales growth in my business is slightly higher than my industry peers.		
	The cost of my production is lower than that of my colleagues.		
Job Satisfaction	My job (Balochi hand embroidery) is valuable.	Likert spectrum (1-5)	0.89
	My job is interesting.		
	My job makes me feel successful.		
	Compared to other women in the neighbourhoods, I earn good income from Balochi needlework.		
	I have a good chance to be promoted in my job.		
	I do valuable work in the Balochi hand embroidery industry.		
	My job is satisfactory.		
Handmade cream embroidery industry	I can produce newer products from my hand embroidery industry	Likert spectrum (1-5)	0.79
	I feel that my job has a lot of potential for diversity and development.		
	I earn enough income from my job and I am satisfied.		
	I am able to create employment in the future by expanding my job.		
	I recommend the production of hand embroidery industry to others because I am satisfied with my job.		
	I am willing to collaborate with others to develop my activities.		
	To develop my activity, I am willing to share my experiences with other people.		

Also, before preparing the questionnaire, interviews were conducted with the heads of those families who were involved in the business of the hand embroidery industry. At this stage, while identifying women who are engaged in this field, local variables were also identified. The final questionnaire was prepared as a closed questionnaire containing (33) items. The method used to collect data was a face-to-face interview. The statistical population studied in this research was all rural women working in the field of hand embroidery in Khamak Dozi in Baghlan province. It should be noted that this study was conducted using purposive sampling method. For data analysis, in addition to descriptive statistics, Pearson's correlation and multiple regressions were used.

4. Research Findings

Results showed that the average age of the respondents was 29.8 years and the highest frequency was in the age range belonged to 26 to 38 years old, also about 54% of rural women were illiterate and 35% of the respondents were literate enough to read and write. Information about the monthly income of women from Balochi Khamak Dozi Handicrafts showed that the income of 49% (94) people belonged to the range of 2801 to 4150 AF. In other words, the average monthly income of

rural women from the mentioned occupation was 2823.7 Afghanis (1 $ 72 AF).

Table2. Characteristics of the respondents

Variables		Frequency	Percent
Age	Less than 26	75	39.1
	26-38	81	42.2
	39-51	32	16.7
	More than 51	4	2.1
	Total	192	100
Mean: 29.89		Std. Deviation: 9.804	
Education	Illiterate	103	53.6
	As far as reading and writing	67	34.9
	Baccalaureate	21	10.9
	Bachelor's degree	1	0.5
	Total	192	100
Monthly Income	Less than 1450	11	5.7
	1450 - 2800	73	38
	2801 - 4150	94	49
	More than 4150	14	7.3
	Total	192	100

First objective: Investigating the status of the production of the khamak embroidery (Balochi) of rural women.

According to Table 3, out of the total number of subjects (192 people), about 67 percent (129 people) had very little access to the production factors of the Balochi khamak dozi handicraft industry. Also, about 70 people (36.5% of rural women) stated that there are no local cooperatives among rural women. In addition, about 38.5% of respondents believed they had very little access to local markets. Meanwhile, more than 50% of respondents believed that there are the best markets for their products outside of Afghanistan (Table, 3).

Table 3. Review of the status of the Balochi Khamak embroidery industry of rural women in the study area

Variables	Scale	Frequency	Percent
Access to factors of production	Very little	129	67.2
	Little	61	31.8
	Much	2	1
	Total	192	100
Access to electricity	Very little	31	16.1
	Little	47	24.5
	Medium	8	4.2
	Much	48	25
	Very much	58	30.2
	Total	192	100
Are there local cooperatives to develop and strengthen handicrafts among rural women?	Very little	70	36.5
	Little	29	15.1
	Medium	67	34.9
	Much	23	12
	Very much	3	1.6
	Total	192	100
	Very little	74	38.5

Variables	Scale	Frequency	Percent
Is there a domestic market for your product?	Little	25	13
	Medium	70	36.5
	Much	21	10.9
	Very much	2	1
	Total	192	100
Is there a market for your product abroad?	Very little	9	4.7
	Little	26	13.5
	Medium	46	24
	Much	97	50.5
	Very much	14	7.3
	Total	192	100
Does the head of the family and family members support your handicraft industry?	Very little	9	4.7
	Little	7	3.6
	Medium	20	10.4
	Much	122	63.5
	Very much	34	17.7
	Total	192	100
Do you have enough knowledge in the field of Balochi khamak embroidery?	Very little	19	9.9
	Little	93	48.4
	Medium	59	30.7
	Much	17	8.9
	Very much	4	2.1
	Total	192	100
Do you have enough financial resources to buy handicraft production costs?	Very little	44	22.9
	Little	12	6.3
	Medium	89	46.4
	Much	42	21.9
	Very much	5	2.6
	Total	192	100

Second Objective: Investigating the relationship between the independent variables (motivational, job performance, and job satisfaction factors) with the dependent variable (development of the handicraft industry of rural women).

To investigate the relationship between the independent variable of the motivational factors of job performance and job satisfaction with the dependent variable, Pearson's correlation coefficient was used. We found that there is a positive and significant relationship between the independent and dependent variables of this research (Table 4).

Table 4. The correlation coefficient between dependent variable and independent indicators

Variable	Test	Development of the hand embroidery industry	Job Performance	Motivational factors	Job Satisfaction
Development of the hand embroidery industry	Pearson Correlation	1	.616**	.553**	.624**

	Sig.		0.00	0.00	0.00
Job Performance	Pearson Correlation	.616**	1	.262**	.539**
	Sig.	0.00		0.00	0.00
Motivational factors	Pearson Correlation	.553**	.262**	1	.404**
	Sig.	0.00	0.00		0.00
Job Satisfaction	Pearson Correlation	.624**	.539**	.404**	1
	Sig.	0.00	0.00	0.00	

The third Objective: Investigating to what extent the independent variables play a role in explaining the variance of the dependent variable of this research.

To investigate the third objective of this research, we used multiple regression. Regression analysis provides the possibility to predict the changes of the dependent variable through the independent variables and determine the contribution of each of the independent variables in the explanation of the dependent variable, Therefore, stepwise multiple regression was used. So, in the step-by-step method, the strongest variables are entered into the equation one by one, and this work continues until the significant test error reaches five percent, however, all the variables used in the step-by-step method were included in the regression equation. Results showed that 1= 92.338 and the regression equation was significant at the level of 0.000. In other words, the linear relationship between the dependent variable of the research and the three independent variables was significant at the 1% level. The results of the mentioned test show that the variables of "job performance", "motivational factors and job satisfaction" had the greatest role in explaining the variance and changes in the development of the Balochi hand embroidery industry among rural women respectively. On the other hand, as the results of Table (5) show, the value of the tolerance index for all three independent variables was greater than 0.1 and the VIF index of their variance inflation factor was less than 10. Therefore, there are no multiple collinearities and it can be stated that the standardized coefficients of each of the independent variables of the regression model showed their real role.

Table 5. Multiple regression analysis using the step-by-step method of dependent variable development of Khamak handicraft industry

			Standardized Coefficients	T	Sig.	Collinearity Statistics	
			Beta			Tolerance	VIF
(Constant)	4.762	1.396		3.412	0.001		
Job Performance	0.563	0.083	0.373	6.762	0.000	0.707	1.414
Motivational factors	0.465	0.07	0.34	6.691	0.000	0.834	1.199
Job Satisfaction	0.265	0.054	0.286	4.913	0.000	0.636	1.573

Table (6) shows that in total the independent variables could account for about 59% (0.59% R^2) of the dependent variable changes in the development of the Balochi hand embroidery industry among rural women.

Table 6. Summary of the regression analysis test for the dependent variable of the development of the Balochi hand embroidery industry among rural women

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	.772a	0.596	0.589	1.78641

Finally, by using relation (1) with high reliability and validity, it is possible to estimate the development of the handicraft industry of Balochi among rural women.

Y= 4.762 +0.563 X1 +0.465X2+0.265X3

X1: Job performance:

X2: Motivational factors:

X3: Job satisfaction:

5. Discussion and Conclusion

The findings of this research indicate that the workers in the handicraft industry of Baluchi rural women of Baghlan province, according to their motivation and enthusiasm, have better job performance in producing high-quality products and considerable quantity for distribution according to market demand. If it is taken care of, they will find more satisfaction from their art, and in addition to increasing job satisfaction, the fields of expansion and development of this industry in all regions of rural Afghanistan are provided. Considering the rural poverty that the majority of the households in the rural areas are facing economic problems and are not even able to provide the minimum cost of living for their, industry development Balochi embroidery is considered to be one of the most important alternative ways of economic development of villages, which on the one hand provides the living expenses of poor families, and on the other hand, by strengthening and developing this industry at the level of Afghan villages. According to the findings of this research, the majority of women expressed their satisfaction with the job of the handicraft industry (Baluchi) that they are involved in, and they have a positive attitude towards its development. The Balochi handicraft industry has been expanding and developing in the villages of the northern provinces of Afghanistan, especially Baghlan province in the last two decades. This means that in the situation of economic misery caused by the wars of attrition in Afghanistan women's occupation in the Khamak embroidery (Baluchi) industry in the rural areas of Baghlan has been one of the main sources of livelihood for rural households. Therefore, the artistic activities of women working in the Balochi industry in the villages of Baghlan province have been effective and efficient because, since the beginning of the creation and promotion of the Balochi embroidery industry among the women of Baghlan villages, this industry has spread and is developing in most of the north-eastern provinces of Afghanistan.

The results related to the descriptive statistics of this research showed that the average age of respondents was 29.9 years. Considering that more than 42% of them are in the age group of 26 to 38 years old, it can be seen that they are on the verge of middle age in terms of age, so it can be expected that the possibility of developing and promoting the handicraft industry and in accordance with the standards of global markets, in order to improve the income generation of rural women as much as possible. As the findings of this research showed that their average monthly income from the handicraft industry sector was 2823 AF, equivalent to (38) US $. In addition, more than 53.6% of the studied women were illiterate in terms of education level. This is while the literacy of nearly 34% of them was at the level of reading and writing, so promotional training to familiarize with the production skills of Balochi handicrafts is a requirement, and according to this level of education, appropriate methods should be used to improve learning and help to improve their knowledge, motivation and skills be taken. Results showed that about 38.5 percent of the respondents believed that they had very little access to domestic markets. Meanwhile, more than 50% of the respondents believed that their products has sustainable markets outside of Afghanistan. In addition, in this research, it was determined that rural women did not have enough knowledge to produce needlework handicrafts. In fact, having knowledge and skills has played a valuable role in decorating fabrics and has more fans. On the other hand, research findings show that rural women had little access to financial resources. Considering the importance of job creation in developing economies, it is important to know the areas that can create sustainable job creation with small resources. The most obvious characteristics of

employment in the field of culture and especially handicrafts. However, the development of small loans and the necessary facilities for rural women is a requirement if the importance of small loans for the development of businesses Village in researches (Al-Shami, et al. 2018; Varmzyari et al., 2022; Felix & Belo., 2018) and is of particular importance. In other words, microfinance has improved the ability of poor people to improve their living conditions and the poor have benefited from the advantage of increasing income and as a result improving the level of health consumption and increasing assets (Murad & Idewele. 2017; Appah et al., 2012). The findings related to multiple regression showed that all three independent variables (motivational factors, job performance and job satisfaction) have a positive and significant effect on the development of the handicraft industry of Balochi women, and explained 59% of the changes in the dependent variable. So, with confidence, it can be said that increasing motivation, job performance and job satisfaction lead to the development of the needlework industry among rural women and motivation is an internal state that makes a person move and act and human behavior to achieve its goals gives direction.

Finally, to support and develop the khamak embroidery (Baluchi) industry, the following are suggested to the country's economic affairs officials and researchers:

- It is suggested that the officials of the economic sector of the country should make serious efforts in creating and developing the handicrafts of rural women, which are the necessities of livelihood of the people of the villages of Afghanistan, considering the specific mechanisms.
- In order to fight the economic poverty of rural households and support the khamak (Baluchi) embroidery industry, there should be established cooperative services and small loans in rural areas to help the rural people in the development of the Baluchi industry.
- Balochi embroidery industry products, inside Afghanistan do not have a suitable market. Therefore, the products of the Balochi industry are sold at a low price by commission agents. But in the markets of the countries around Afghanistan, these products are sold at a high price. The attention of the government in the field is considered a requirement.
- For Further study in the field of handicrafts, it is suggested other factors affecting the development of the embroidery industry must be researched, so that in supporting handicrafts and strengthening them, more job opportunities are provided for rural women, and along with other occupations and art, Balochi hand embroidery industry should also be developed and can play a better role in the improvement and prosperity of the rural economy.

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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.

References:

1. Al-Shami, S. S. A.; Razali, R. M., & Rashid, N. (2018). The effect of microcredit on women empowerment in welfare and decisions making in Malaysia. *Social Indicators Research*, 137, 1073-1090. https://doi.org/10.1007/s11205-008-9242-7
2. Appah, E., John, M. S., & Wisdom, S. (2012). An analysis of microfinance and poverty reduction in Bayelsa State of Nigeria. *Kuwait Chapter of the Arabian Journal of Business and Management Review*, 1(7), 38-52. https://arabianjbmr.com/pdfs/KD_VOL_1_7/3.pdf
3. Assadi, S., Shaiq, M. A., & Andaish, Q. (2024). Investigating the Effects of Foreign Aid on the Unemployment Level in Afghanistan: Application of the Auto Regressive Distributed Lag Model. International Journal of Scientific Multidisciplinary Research, 2(6), 573-584. https://doi.org/10.55927/ijsmr.v2i6.9182

4. Asian, A. (2021). Investigating job motivational factors of municipal employees in the work environment. *9th International Conference: Omran Mechanics*, Construction, Industries and Civil Engineering, Tehran Iran. [In Persian]
5. Avishi, N., Hosseinabadi, Z., & Esfandiyar, M. (2023). *The role of handicrafts on the level of employment of Baloch women and the advancement of the region's economy (case study: needlework in Shahrastan City Iran)*. Iranian Studies Quarterly, Faculty of Literature and Humanities, University of Tehran. 12(3), 61-79. [In Persian]
6. Ayalew, M. M., & Zeleke, S. A. (2018). Modeling the impact of entrepreneurial attitude on self-employment intention among engineering students in Ethiopia. *Journal of Innovation and Entrepreneurship*, 7, 1-27. https://doi.org/10.1186/s13731-018-0088-1
7. Azizi, F., Kazemi, N., & Hadipur, M. (2018). Evaluation of entrepreneurial spirit among handicraft artists of Mahabad city (with emphasis on handwoven carpets). *Journal of Geography and Human Relations*, 1(2). [In Persian]
8. Bahrami, R. (2020). Economic-social effects of rural handicrafts (handicrafts and home businesses) on rural development (case study: villages of Sanandaj). *Scientific Journal of Geography and Planning*. 72, 81-103. [In Persian]
9. Bhat, J. A., & Yadav, P. (2016). The Sector of Handicrafts and its Share in Indian Economy. Arabian Journal of Business and Management Review. https://doi.org/10.4172/2223-5833.S3-009
10. Chambers, R. (2014). Rural development: Putting the last first. Routledge.
11. Ghlichlee, B., Asadi Gharabaghi, M. (2021). Effect of knowledge sharing intention and Competencies on managersâ job performance in project-based organizations (A case study: PIDMCo.). Management Research in Iran, 19(4), 161-184. https://dorl.net/dor/20.1001.1.2322200.1394.19.4.8.2
12. Félix, E. G. S., & Belo, T. F. (2019). The impact of microcredit on poverty reduction in eleven developing countries in south-east Asia. *Journal of Multinational Financial Management*, 52, 100590. https://doi.org/10.1016/j.mulfin.2019.07.003
13. Floreani, V. A., López-Acevedo, G., & Rama, M. (2021). Conflict and Poverty in Afghanistan's Transition. The Journal of Development Studies, 57(10), 1776-1790. https://doi.org/10.1080/00220388.2021.1945040
14. Hansen, B. G., & Stræte, E. P. (2020). Dairy farmers' job satisfaction and the influence of automatic milking systems. NJAS: Wageningen Journal of Life Sciences, 92(1), 1-13. https://doi.org/10.1016/j.njas.2020.100328
15. Lin, Y., & Bellibas, M. S. (2018). School factors that are related to school principals' job satisfaction and organizational commitment. *International Journal of Educational Research, 90*, 1-19. https://doi.org/10.1016/j.ijer.2018.04.002
16. Lin, Y. & Li, Ch. (2010). The study of entrepreneurial key factors in Taiwan craft creative industry. *ICSB world conference* (PP. 24 – 27).
17. Maican, S. Ș., Muntean, A. C., Paștiu, C. A., Stępień, S., Polcyn, J., Dobra, I. B., ... & Moisă, C. O. (2021). Motivational Factors, Job Satisfaction, and Economic Performance in Romanian Small Farms. Sustainability, 13(11), 5832. https://doi.org/10.3390/su13115832
18. Montuori, P., Sorrentino, M., Sarnacchiaro, P., Di Duca, F., Nardo, A., Ferrante, … Nardone, A. (2022). Job Satisfaction: Knowledge, Attitudes, and Practices Analysis in a Well-Educated Population. International journal of environmental research and public health, 19(21), 14214. https://doi.org/10.3390/ijerph192114214
19. Murad, A. B., & Idewele, I. E. O. (2017). The impact of microfinance institution in economic growth of a country: Nigeria in focus. *International Journal of Development and Management Review*, 12(1), 1-17. https://www.ajol.info/index.php/ijdmr/article/view/157831
20. Muri, K., Tufte, P. A., Coleman, G., & Moe, R. O. (2020). Exploring work-related characteristics as predictors of Norwegian sheep farmers' affective job satisfaction. Sociologia Ruralis, 60(3), 574-595. https://doi.org/10.1111/soru.12299
21. Neely, A., Gregory, M., & Platts, K. (2005). Performance measurement system design: A literature review and research agenda. International journal of operations & production management, 25(12), 1228-1263. https://doi.org/10.1108/01443570510633639

22. Provincial profile of Baghlan province economic perspective (2019). [In Persian].
23. Robinson, P. B., Stimpson, D. V., Huefner, J. C., & Hunt, H. K. (1991). An attitude approach to the prediction of entrepreneurship. *Entrepreneurship theory and practice*, 15(4), 13-32. https://doi.org/10.1177/104225879101500405
24. Rostami, M. (2005). Investigating the employment status of women in Mazandaran province in the handicrafts sector (indicative region: Shahristan Sazi). *Journal of Humanities and Social Sciences, University of Mazandaran*, 4(13). [In Persian]
25. Sadeghi, H., & Kavoosi, A. (2016). Investigating the effects of targeted subsidies in improving the social welfare of the villagers of Dehdz district of Izeh city. *Journal of Urban and Regional Studies and Research*, (127-148). [In Persian]
26. Salau, O. Oluddayo Falola, H., Olokundun, M., Ibindunni, S., & Atolagbe, T. (2018). Integrated datasets on transformational leadership attribute and employee engagement: The moderating role of Job Satisfaction in the fast moving Consumer Goods (FMCG) Industry. *Data fn brief*, 19, 2329 – 2335. https://doi.org/10.1016/j.dib.2018.06.032
27. Senger, I., Borges, J. A. R., & Machado, J. A. D. (2017). Using structural equation modeling to identify the psychological factors influencing dairy farmers' intention to diversify agricultural production. *Livestock Science*, 203, 97-105. https://doi.org/10.1016/j.livsci.2017.07.009
28. Shaiq, M. A., Barati, A. A., Kalantari, K., & Asadi, A. (2022). Dimensions of Poverty in Kunduz Province of Afghanistan. World, 3(4), 979-992. https://doi.org/10.3390/world3040055
29. Shaiq, M. A., Kalantari, K., Asadi, A., & Barati, A. A. (2021). Investigating Afghanistan's Rural Development Challenges and their Solutions. *Journal of Rural Research*, 12(3), 520-535. doi: 10.22059/jrur.2021.314964.1585. https://doi.org/10.22059/jrur.2021.314964.1585
30. Sidiqi, S. A. (2023). Livelihood Opportunities and Its Impact on Women in The Rural Areas of Afghanistan. *Integrated Journal for Research in Arts and Humanities*, 3(6), 203-208. https://doi.org/10.55544/ijrah.3.6.24
31. Suttikun, C. Chang, H. J. and Bicksler, H. (2018). A qualitative exploration of study Spa Therapists work motivations and Job Satisfaction. *Journal of Hospitality and Tourism Management*, 34, 1 – 15. https://doi.org/10.1016/j.jhtm.2017.10.013
32. Talebpour, F., Shabanali Fami, H., Barati, A., & Shaiq, M. A. (2022). Investigating the green status of rural women's businesses in Rey County. Journal of Studies in Entrepreneurship and Sustainable Agricultural Development, 9(1), 1-16. [In Persian]https://doi.org/10.22069/jead.2022.19982.1578
33. Teglund, C. M. (2011). Needlework education and the consumer society.
34. Tuliao & Chen (2022). Work motivation: The roles of individual needs and social conditions. Behavioral Sciences, 12(2), 49. https://doi.org/10.3390%2Fbs12020049
35. Varmazyari, H., Amiri Mijan, M. A., Kalantari, K., & Shaiq, M. A. (2024). Analysis of Barriers to Effectiveness of Microfinance Fund in Rural Businesses Development. *Iranian Journal of Agricultural Economics and Development Research*, *55*(3), 415-428. https://ijaedr.ut.ac.ir/article_89838_en.html?lang=fa
36. Varmazyari, H., Shaiq, M. A., Amiri Mijan, M. A., & Kalantari, K. (2022). Spending Business Microloans on Rural Employment Development; Application of a Logistic Regression Model. *Journal of Rural Research*, 13(3), 372-389. [In Persian] https://doi.org/10.22059/jrur.2022.328164.1660
37. Vaisi, F., Mohammad, S., & Azimi, M. (2023). Analysis of the effects of handicraft production on sustainable livelihood capital of rural households (case study: Oraman district of Kurdistan province). *Scientific Quarterly of Human Settlements Planning Studies*, 18(63), 235-248. [In Persian] https://journals.iau.ir/article_689480.html
38. Yang, J., Pu, B., & Guan, Z. (2019). Entrepreneurial leadership and turnover intention in startups: Mediating roles of employees' job embeddedness, job satisfaction and affective commitment. Sustainability, 11(4), 1101. https://doi.org/10.3390/su11041101
39. Yazdan Panah, L., & Samadiyan, F. (2009). The Elements Contributing to the Achievement of Cooperative Companies A Case Study of Handicrafts in Kerman Province. *Co - Operation and Agriculture*, 20, 19. [In Persian] https://www.magiran.com/p672208

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Original Article

تأثیر عوامل انگیزشی، عملکرد شغلی و رضایت شغلی بر توسعه صنایع دستی خامک دوزی (بلوچی) زنان روستایی افغانستان

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چکیده مبسوط

۱. مقدمه

خامک‌دوزی از جمله صنایع دستی به دلیل سابقه‌ی طولانی – تاریخی که دارد از حرفه‌های مهم به شمار می‌رود. سوزن‌دوزی یکی از هنرهای گسترده صنایع دستی است که با ظرافت و دقت خاص با استفاده از نخ و سوزن به آرایش و تولید پارچه‌های زیبا و منقش می‌پردازد. این صنعت مانند سایر صنایع دستی از سرمایه‌های ارزشمند ملی به حساب می‌آید و اکثر هنرمندان و شاغلان صنعت دستی خامک‌دوزی (بلوچی)، مردم بومی و افراد بدون تحصیلات عالی و دانشگاهی بخصوص خانم‌ها هستند که فارغ از فضای رقابتی بازار داخل و خارج به صورت سنتی آن را تولید می‌کنند. امروزه صنایع دستی بخشی از اقتصاد روستایی را تشکیل می‌دهد و در صورت برنامه‌ریزی صحیح می‌تواند نقش مهم‌تری در عرصه توسعه اقتصاد روستاها ایفا کند. از آنجا که یکی از راه‌های ناگزیر پیشرفت و جلوگیری از افزایش فقر روستائیان، توجه به وضعیت معیشتی خانوار روستایی است، مسأله کاهش فقر و ایجاد سطح بالاتری از درآمد و اشتغال، از مهم‌ترین و کلیدترین مسایل در مبحث توسعه روستایی محسوب می‌شود. صنایع دستی به تمام هنرهای تزیینی و کاربردی اطلاق می‌شود که با کمک دست و مواد و مصالح موجود طبیعت و بدون بهره‌مندی از ماشین خلق می‌شوند. این کار در ذات خود باید دارای پویایی و جاودانگی فرهنگی و هنری و نیز افسون اثرگذاری در روح مخاطب باشد، به گونه‌ای که انسان را به چالش، تحرک و تفکر درونی وا دارد و با روان او رابطه‌ای صمیمانه برقرار کند. استان بغلان که در شمالشرقی کشور افغانستان واقع است، زنان روستایی این استان به منظور بهبود منابع درآمدی و کاهش فقر در خانواده های خویش، به شغل صنعت دستی خامک دوزی (بلوچی) روی آورده اند. با این حال، در این پژوهش ما به دنبال پاسخ به سوالات زیر هستیم:

۱) وضعیت تولید صنعت دستی خامک دوزی بلوچی زنان روستایی چگونه است؟

۲) رابطه بین متغیرهای مستقل تحقیق (عوامل انگیزشی، عملکرد شغلی و رضایت شغلی) با متغیر مستقل (توسعه صنعت دستی خامک دوزی زنان روستایی)، از چه نوع رابطه است؟

۳) متغیرهای مستقل (عوامل انگیزشی، عملکرد شغلی و رضایت مندی شغلی)، به چه اندازه در تبیین واریانس متغیر وابسته این پژوهش نقش دارند؟

۲. روش تحقیق

این پژوهش از نوع تحقیقات پیمایشی است که برای انجام آن از داده های اولیه استفاده شده است. ابزار اصلی تحقیق پرسشنامه بود. جامعه آماری این پژوهش، کلیه زنان روستایی شاغل در حوزه صنعت دستی خامک دوزی در استان بغلان بوند که این مطالعه به روش نمونه گیری هدمند انجام شد. برای تجزیه و تحلیل اطلاعات علاوه بر آمارهای توصیفی، از همبستگی پیرسون و رگرسیون چندگانه استفاده شد.

۳. یافته های تحقیق

به‌منظور بررسی رابطهٔ بین متغیر مستقل (عوامل انگیزشی، عملکرد شغلی و رضایت شغلی) با متغیر وابسته «توسعه صنعت دستی خامک دوزی بلوچی» از ضریب همبستگی پیرسون استفاده شد. نتایج نشان داد، رابطه مثبت و معنی داری بین متیغرهای مستقل و وابسته این پژوهش وجود دارد. در مجموع، متغیرهای مستقل توانستند حدود ۵۹ درصد (R2= ۰.۵۹) از تغییرات متغیر وابسته «توسعه صنعت دستی خامک دوزی بلوچی در بین زنان روستایی» را تبیین نمایند.

۴. بحث و نتیجه گیری

واقعیت ایسنت که بیشتر زنان روستایی در افغانستان در فقر و تنگدستی به سر می برند و زنان روستایی به منظور رفع احتیاجات

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روزمره زندگی خویش و فرزندان شان به چنین شغل های سوزن دوزی روی آورده اند. زنان سرپرست خانوار در مناطق روستایی افغانستان به ویژه در سال های پسین، به شدت نیازمند هستند (Sidiqi, 2023). این درحالیست که به منظور بهبود منابع درآمدی و خودکفایی سازی آنها، سازوکارهای مشخصی روی دست گرفته نشده است. افغانستان چندین دهه است که جنگ‌های داخلی، درگیری ها و مشکلات مختلف دیگر را تجربه کرده است. به همین دلیل نتواسته است به توسعه پایدار دست یابد و روستاهای آن با چالش های مختلف اقتصادی، اجتماعی، زیرساختی و فزیکی مواجه است. چنانچه، بررسی ها نشان می دهد پدیده بیکاری و فقر در روستاهای این کشور افزایش یافته است. با این حال، توسعه صنعت دستی خامک دوزی بلوچی زنان روستایی مزیتی ارزشمند و کارآمد در مبارزه با معضلات اجتماعی و دست یابی به توسعه اقتصادی در افغانستان به وِیژه در بین زنان روستایی محسوب می گردد. آنجایی که از گذشته‌ها بدین‌سو بر توسعه اقتصادی روستاهای جامعه افغانستان توجه آنچنانی صورت نگرفته است، در شرایط موجود توسعه صنعت خامک‌دوزی بلوچی از مهم‌ترین راه بدیل توسعه اقتصادی روستاها دانسته می‌شود؛ که از یک سو هزینه زندگی فامیل‌های فقیر تأمین می‌شود و از جانب دیگر، با تقویت و توسعه این صنعت در سطح روستاهای افغانستان، می‌تواند اقتصاد روستاها را رشد دهد.

کلیدواژه‌ها: صنعت دستی، توانمندسازی زنان روستایی، کارآفرینی، افغانستان.

تشکر و قدرانی

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Original Article

Livelihood Characteristics of the Fish Farmers in Ilorin, Kwara State Nigeria

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Abstract

Purpose- Fish farming is an important source of Livelihood and nutrition for several people involved in fishing activities in Nigeria. This study aims to assess the Livelihood characteristics of the fish farmers in Ilorin, Kwara State, Nigeria.

Design/methodology/approach- The study was carried-out in Ilorin Kwara State, Nigeria. Ilorin is the Capital of Kwara State. The Research involved a 3-stage sampling procedure. The first stage involved a purposive selection of two (Ilorin East and Ilorin West) Local Government Areas in Ilorin due to the prevalence of fishing activities in the area. The second stage involved a purposive selection of five fishing settlements along the river bank in each of the two local Government Areas and the third stage involved the random selection of ten fish farmers within the fishing settlements. A total of 150 Fish farmers were randomly selected for this research work. Descriptive statistics such as frequency count, percentage, and mean were employed to analyze the data. The questionnaire was the instrument used for data collection.

Findings Findings: The findings showed that involvement in other income-generating activities (mean=3.81) was the highest-ranked financial asset. Owned/leased fish ponds (mean=3.51) was the highest-ranked physical asset. The ability to network with the extension agents/experts for fish production (mean=3.61) was the highest-ranked social asset. Physically fit to carry out the Fish production activities (mean=3.73) was the highest-ranked human asset. Access to water for Fish production (mean=3.70) was the highest-ranked natural asset. The overall Livelihood status of the fish farmers was High (mean=3.38).

Originality/value: This study is important as it would provide up-to-date information on the livelihoods of fish farmers which would drive the governments' policy and interventions towards the fish farmers in Nigeria. Also, the Agricultural extension programme aimed to improve fish farmers' livelihood outcomes in fish production in Kwara State, Nigeria should improve their skills and information on areas of need which include pond water treatment, construction, and maintenance were the leading information needed by fish farmers, and to help the fish farmers overcome the factors limiting their production.

Keyword: Livelihood, Status, Characteristics, Fish Farmers, Nigeria.

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1. Introduction

Fish Production significantly contributes to the incomes of several people in Nigeria and all over the world (Adisa, Ifabiyi and Opeyemi 2021; Ifabiyi, Banjoko and Komolafe, 2017). It's a vital source of nourishment for the populace. Fish production also helps in ensuring that many Nigerians are food and nutrition-secured. Globally, fish provides micro-nutrients to about 3.3 Billion people and about 600 Million people depend on fisheries and Aquaculture for their Livelihoods (WorldFish, 2024; Ifabiyi *et al.,* 2023). For those with low incomes worldwide, fish represents a significant and reasonably priced source of food (Bene et al., 2015). Because, according to FAO (2018), humans ate around 88.42 percent of the 171 million tons of fish produced, fisheries play a critical role in ensuring the security of food and nutrition worldwide. Fish makes up over 17% of the animal protein that people eat worldwide (FAO, 2018). With the largest market for fish and fisheries products in Africa and a per capita intake of 14.9 kg annually, Nigerians are heavy fish consumers (Olaoye and Oloruntoba, 2011). With its contribution of over one-tenth of the country's GDP to the agricultural sector, the fisheries sub-sector in Nigeria's economy holds a special place (FDF, 2008). Because fish is very inexpensive compared to meat and has a high protein content, Nigerians eat fish and fish products (FAO, 2012). Among animal proteins, it is unique due to its fatty acid profile, low cholesterol level, high vitamin and mineral content (calcium, iron, zinc), and amino acid profile (FAO, 2012). Fish currently makes up 41% of the average Nigerian's animal protein consumption and is gradually replacing meat owing to health and nutritional concerns, even though it is very vulnerable to deterioration in the absence of any preservatives (Okonta and Ekelemu, 2005).

Livelihood refers to the process of making a living. Accordingly, a livelihood is considered manageable when 'it can deal with and recover from strains, sustain or improve its capacity, while not depleting the natural resource base'. Turner (2017) idealized sustainable livelihoods to be the outcomes in manageable opportunities for the next generation, paying net paybacks to other livelihoods. Although the sustainable livelihood framework (SLF) has been extensively utilized. it is a suitable model for investigating smallholder livelihoods (Panday *et al.,* 2017).

Sustainable livelihood is an active idea that offers procedures to exterminate poverty and how underprivileged persons organize their lives. Livelihood results are the accomplishments and reimbursements that households anticipate obtaining through the employment of specific activities and approaches. These results can also be designated as the expectations of the household (Nguthi & Niehof, 2008).

There is a huge opportunity for the Fishing sub-sector to boost the nutritional security of Nigerians, (FAO, 2019). This is so as several Nigerians are involved in fish farming activities in the country. Due to the high demand for fish and fish products in Nigeria, several unemployed people have been encouraged to take opportunities in fish farming to enhance their income. However, the Nigerian fishing and aquaculture sub-sector of Agriculture is attributed to be at a small scale, with low levels of technology, marketing problems, and high labour intensity (Ifabiyi, Komolafe and Adisa, 2022 & FAO, 2022). The high cost of fish feeds and medications has been reported to constitute substantive input costs for the farmers (FAO, 2019). These would limit the income and output of the Fish farmers in Nigeria.

Hence, it is essential to carry out a study on the livelihoods of fish farmers that would favourably influence government policy towards the farmers and the other actors in the fish industry. Also, there is a paucity of information on the livelihood attributes of fish farmers in Kwara state, Nigeria. This established the gap that this research would fill. Therefore, this necessitates the need to carry out the study on the livelihood attributes of the fish farmers in Ilorin, Kwara State, Nigeria.

The specific objectives of the study are to:

1. Identify the Enterprise characteristics of the respondents in the study area.
2. Examine the perceived information needs of the fish farmer.
3. Determine the Livelihood Characteristics of fish farmers in the study area
4. Identify the factors affecting fish production in the study area.

2. Research Methodology

The study was carried out in Ilorin Kwara State, Nigeria. *Ilorin* is the capital city of Kwara State located in the North-central region of Nigeria. Ilorin in Kwara State, Nigeria is predominantly agrarian. The sampling procedure involved a three-stage process. The first stage involved a purposive selection of two (Ilorin East and Ilorin West) Local Government Areas in Ilorin due to the prevalence of fishing activities in the area. The second stage involved a purposive selection of five fishing settlements along the river bank in each of the two local Government Areas and the third stage involved the random selection of ten fish farmers within the fishing settlements. A total number of one hundred and fifty (150) respondents were selected for the study.

The perceived information needs of the fish farmers were measured with the use of a 4-scale Likert type scale where not needed =1, slightly needed=2, moderately needed =3 and highly needed =4. The Livelihood outcomes of Fish farmers was measured on a 5-point Likert type scale where strongly disagree=1, disagree=2, undecided=3, agree=4, and strongly agree=5. To categorize the Livelihood Status, the score of 1-5 was added and then divided by 5 to get 3 (1+2+3+4+5/5=3) High Status, ≥3.0, Low Status, ≤ 3.0, The grand mean is the average of the mean scores of all the livelihood outcomes. The data collected was analysed with the use of frequency counts, percentages and means.

3. Research Finding

3.1. Enterprise Characteristics of the Respondents

The result in Table 1 showed that about 45.3% of the respondents used concrete ponds and the average number of ponds utilized for fishing activities was three ponds. The average number of fish stocked was 17,804.93. About 51.3% got water from the river. About 55.3% of the respondents got their stocked fish through the fish breeding farms. The result in Table 1 further showed that about 85.3% farmed catfish. About 57.3% got credit through personal savings. About 72% of the respondents have access to extension services. This finding supports the findings of Ifabiyi, *et al.,* (2023) and Akangbe *et al.* (2015), who found that the majority of fish farmers in Kwara State Nigeria, reared catfish.

Table 1- Fish Farming Enterprise Characteristics of Respondents

Variables	Frequency	Percentage	Mean	Std. Deviation
Types of fish pond				
Earthen pond	66	44.0		
Concrete pond	68	45.3		
Plastic pond	6	4.0		
Tarpaulin	10	6.7		
Number(s) of Fish Pond used for fish farming				
1 – 2	60	40.0		
3 – 4	67	44.7	3.04	1.15
5 and above	23	15.3		
Total Number(s) of Stocked Fish in Pond(s)				
≤ 10,000	89	59.3		
10,001 – 20,000	48	32.0	17804.93	32888.82
20,001 and above	13	8.7		
Main sources of water for Fish Farming				
Borehole	33	22.0		
Rivers	77	51.3		
Wells	24	16.0		
Rainfall	9	6.0		
Pipe Borne Water	7	4.7		
Size of Fish at the Stocking Stage:				
Juveniles	97	64.7		
Fingerlings	51	34.0		
Fray	2	1.3		

Variables	Frequency	Percentage	Mean	Std. Deviation
Main Source of the Stocked-Fish you Rearing				
Fish Breeding Farm	83	55.3		
Fingerlings/Frays Vendor	34	22.7		
Open Fish Market	31	20.7		
Ministry of Agriculture	2	1.3		
Specie(s) of Fish Stocked:				
Cat Fish only	128	85.3		
Tilapia only	13	8.7		
Both Cat Fish & Tilapia	9	6.0		
Pond Ownership Type				
Owned the Pond	76	50.7		
Lease/Rent the Pond	74	49.3		
Pond Operating Period:				
Raining Season-only	52	34.7		
All Year Round	98	65.3		
Sources of Credits				
Personal Savings	86	57.3		
Family/Neighbours	15	10.0		
Friends	27	18.0		
Cooperative Societies	14	9.3		
Banks	8	5.3		
Access to Extension Services				
Yes	108	72.0		
No	42	28.0		

Source: Field survey, 2024

The result displayed in Table 2 showed that pond water treatment (mean=2.29) ranked first, pond construction (mean=2.21) ranked second and pond maintenance information (mean=1.93) ranked third position. This finding implies that information on pond water treatment, construction, and maintenance was the leading information fish farmers needed in the study area. This result denotes that fish farming is a vital source of livelihood to the farmers as several resources/assets were utilized to enhance their productivity. The provision of information on will enhance the capacity of the fish farmers as Adisa et al., (2018) reported that farmers must acquire new ideas and techniques in order to be more productive and to make more profits.

Table 2- The Perceived Information Needs of the Respondents

Information Needs	Not Needed	Slightly Needed	Moderately Needed	Highly Needed	Mean(SD)	Rank
Feed formulation	32(21.3)	32(21.3)	26(17.3)	60(40.0)	1.76±1.19	4th
Pond construction	5(3.3)	28(18.7)	48(32.0)	69(46.0)	2.21±0.86	2nd
Liming of ponds	32(21.3)	49(32.7)	46(30.7)	23(15.3)	1.40±0.99	10th
Pond water treatment	2(1.3)	24(16.0)	52(34.7)	72(48.0)	2.29±0.78	1st
Pond maintenance information	24(16.0)	19(12.7)	51(34.0)	56(37.3)	1.93±1.07	3rd
Fish processing	40(26.7)	19(12.7)	53(35.3)	38(25.3)	1.59±1.14	9th
Fish preservation	41(27.3)	23(15.3)	38(25.3)	48(32.0)	1.62±1.20	8th
Fish medication	19(12.7)	56(37.3)	31(20.7)	44(29.3)	1.67±1.03	7th
Fertilization of ponds	34(22.7)	23(15.3)	44(29.3)	49(32.7)	1.72±1.15	5th
Weather/Climatic information	38(25.3)	16(10.7)	49(32.7)	47(31.3)	1.70±1.16	6th
Branding/Packaging of Fish products	45(30.0)	46(30.7)	20(13.3)	39(26.0)	1.35±1.17	11th

Source: Field survey, 2024, Not Needed=0, Slightly Needed=1, Moderately Needed=2, Highly Needed=3

The result in Table 3 revealed that involvement in other income-generating activities (mean=3.81) was the highest-ranked financial asset. Owned/leased fish ponds (mean=3.51) were the highest-ranked physical asset. The ability to network with the extension agents/experts for fish production (mean=3.61) was the highest-ranked social asset. Physically fit to carry out the Fish production activities (mean=3.73) was the highest-ranked human asset. Access to water for Fish production (mean=3.70) was the highest-ranked natural asset. The finding further divulged that the overall Livelihood Status of the fish farmers (3.38) was categorized as high. The provision of timely, relevant and needed information to the fish farmers will enhance their productivity as Adesope, Asabiaka and Agumagu (2007) stated that those who possess appropriate and timely information will make a more rational decision than those without.

Table 3- Livelihood Characteristics of the Fish Farmers

Livelihood Outcomes	Strongly Disagree	Disagree	Undecided	Agree	Strongly agree	Mean(SD)	Rank
Financial Assets							
Income able to meet basic needs	67(44.7)	24(16.0)	8(5.3)	27(18.0)	24(16.0)	2.45±1.57	4th
Able to save money from fish farming	2(1.3)	14(9.3)	35(23.3)	72(48.0)	27(18.0)	3.72±0.91	2nd
Access to credit through cooperative society and banks	8(5.3)	10(6.7)	23(15.3)	94(62.7)	15(10.0)	3.65±0.94	3rd
Involve in other income generating activities	4(2.7)	19(12.7)	6(4.0)	94(62.7)	27(18.0)	3.81±0.97	1st
Physical Assets							
Possess fish farming inputs /Equipment	18(12.0)	24(16.0)	26(17.3)	33(22.0)	49(32.7)	3.47±1.40	2nd
Own/lease a pond	6(5.3)	24(16.0)	22(14.7)	75(50.0)	21(14.0)	3.51±1.09	1st
Live in cement and zinc roof house	25(16.7)	25(16.7)	21(14.0)	50(33.3)	29(19.3)	3.19±1.43	8th
Possess power generator	26(17.3)	22(14.7)	29(19.3)	36(24.0)	37(24.7)	3.24±1.42	7th
Possess radio/TV	45(30.0)	25(16.7)	18(12.0)	38(25.3)	24(16.0)	2.81±1.50	11th
Possess smart phone	30(20.0)	16(10.7)	12(8.0)	66(44.0)	26(17.3)	3.28±1.41	6th
Possess freezer/cold room for preservation	31(20.7)	30(20.0)	25(16.7)	42(28.0)	22(14.7)	2.96±1.38	10th
Possess car/motorcycle/tri-cycle for transportation	32(21.3)	14(9.3)	38(25.3)	49(32.7)	17(11.3)	3.03±1.32	9th
Possess fish processing equipment	15(10.0)	24(16.0)	20(13.3)	68(45.3)	23(15.3)	3.40±1.22	4th
Use of solar energy to power house	21(14.0)	12(8.0)	42(28.0)	42(28.0)	33(22.0)	3.36±1.30	5th
Possess water pumping machine	9(6.0)	27(18.0)	30(20.0)	58(38.7)	26(17.3)	3.43±1.15	3rd
Social Assets							
Ability to network with other farmers /agencies for resources	12(8.0)	28(18.7)	27(18.0)	70(46.7)	13(8.7)	3.29±1.12	4th
Membership of fish farmers related associations	14(9.3)	19(12.7)	39(26.0)	61(40.7)	17(11.3)	3.32±1.13	3rd
Ability to attract customer/markets	8(5.3)	19(12.7)	37(24.7)	68(45.3)	18(12.0)	3.46±1.03	2nd
Ability to connect with extension agents/experts for fish production	10(6.7)	15(10.0)	25(16.7)	73(48.7)	27(18.0)	3.61±1.10	1st
Participation in social gatherings	20(13.3)	35(23.3)	12(8.0)	67(44.7)	16(10.7)	3.14±1.32	5th

Livelihood Outcomes	Strongly Disagree	Disagree	Undecided	Agree	Strongly agree	Mean(SD)	Rank
Holds executive position in social /community organizations	17(11.3)	41(27.3)	33(22.0)	46(30.7)	13(8.7)	2.98±1.18	6th
Human Asset							
Possess fish farming knowledge and skill competency	13(8.7)	20(13.3)	31(20.7)	74(49.3)	12(8.0)	3.35±1.09	5th
Possess good health condition	6(4.0)	25(16.7)	12(8.0)	82(54.7)	25(16.7)	3.63±1.07	3rd
Physically fit to carry out fish farming activities	6(4.0)	16(10.7)	21(14.0)	77(51.3)	30(20.0)	3.73±1.03	1st
Knowledge of how to obtain credit facilities and grants	23(15.3)	14(9.3)	21(14.0)	69(46.0)	23(15.3)	3.37±1.29	4th
Knowledge of how to secure the farm from theft	12(8.0)	6(4.0)	30(20.0)	68(45.3)	34(22.7)	3.71±1.11	2nd
Natural Assets							
Access to water for production	16(10.7)	8(5.3)	7(4.7)	93(62.0)	26(17.3)	3.70±1.15	1st
Access to secure and safe pond sites	25(16.7)	6(4.0)	40(26.7)	58(38.7)	21(14.0)	3.29±1.26	5th
Access to pond site in a conducive environment for fish farming	12(8.0)	0	41(27.3)	69(46.0)	28(18.7)	3.67±1.04	2nd
Access to land/drainage to release waste water into	11(7.3)	14(9.3)	12(8.0)	92(61.3)	21(14.0)	3.65±1.07	3rd
Access to an area that has basic facilities like motorable road, electricity etc.	12(8.0)	6(4.0)	38(25.3)	68(45.3)	26(17.3)	3.60±1.07	4th
Grand Mean Score/Overall Livelihood Status						*3.38±1.34	

Source: Field survey 2024, ***High Status,** ≥3.0, Low Status, ≤ 3.0,

3.2. Factors Affecting Fish Production

The finding presented in Table 4 showed that unavailability of machine/equipment (mean=1.58) was ranked the first factor affecting fish production, low patronage/consumption of locally farmed fish (mean=1.40) was ranked second factor and the incessant occurrence of drought during the dry season (mean=1.33) was ranked third factor. This result showed that the unavailability of machines/equipment, low patronage of locally farmed fish, and incessant occurrence of drought were the main constraints affecting fish farmers in the study area. This result is in contrast with the findings of Ogunlade (2007) who reported that major constraints facing the fish farmers were capital, security, feed and fingerlings procurement.

Table 4- Distribution of Respondents by Factors Affecting Fish Production

Factors	Not a factor	Less Severe	Highly Severe	Mean(SD)	Rank
Lack of start-up capital	41(27.3)	43(28.7)	66(44.0)	1.21±0.94	8th
Non-availability of high-quality breeds of fingerlings	22(14.7)	83(55.3)	45(30.0)	1.15±0.65	11th
Unavailability of machine/equipment	8(5.3)	47(31.3)	95(63.3)	1.58±0.59	1st
Insufficient water in the dry season	27(18.0)	52(34.7)	71(47.3)	1.29±0.76	5th
Inadequate Technical Know-how	38(25.3)	50(33.3)	62(41.3)	1.16±0.8	10th
Low patronage/consumption of locally farmed fish	16(10.7)	58(38.7)	76(50.7)	1.40±0.68	2nd
Annual Flooding of Ponds	34(22.7)	73(48.7)	43(28.7)	1.06±0.72	15th
Lack of adequate information/Extension services on fishery practices	30(20.0)	76(50.7)	44(29.3)	1.09±0.7	13th
Incessant occurrence of drought during dry season	11(7.3)	79(52.7)	60(40.0)	1.33±0.61	3rd
High Cost of pond construction	24(16.0)	71(47.3)	55(36.7)	1.21±0.7	9th
Theft	27(18.0)	82(54.7)	41(27.3)	1.09±0.67	14th
Predators problems	27(18.0)	63(42.0)	60(40.0)	1.22±0.73	7th
Marketing Problems	28(18.7)	46(30.7)	76(50.7)	1.32±0.77	4th
High cost of Feeds	35(23.3)	58(38.7)	57(38.0)	1.15±0.77	12th
Fish disease outbreak/High Mortality	17(11.3)	76(50.7)	57(38.0)	1.27±0.65	6th

Source: Field survey, 2024; Not a factor=0, Less Severe=1, Highly Severe=2

5. Discussion and Conclusion

The study on the livelihood characteristics of the fish farmers shows that a large population of fish was stocked by the farmers in the study area. This implies that the river is an important source of water for the fish farmers in the study area. The result indicates that catfish are the most reared fish in the study area. This finding supports the findings of Ifabiyi, *et al.,* (2023) and Akangbe *et al.* (2015), who found that the majority of fish farmers in Kwara State Nigeria, reared catfish. This implies that the extension service providers are reliable and provide up-to-date and relevant information to the fish farmers in the study area. The study shows that information on pond water treatment, construction, and maintenance were the leading information needed by fish farmers in the study area.

The finding indicates that the income obtained through other income-generating activities could be invested in fish farming. Also, the fish farmers' access to assets could increase their chances of participating in other business ventures that would enhance their output and income. Access to fish ponds is an important asset for the farmers as the ponds provide shelter for the fish. The result showed that access to water is also an important asset for fish production as water is needed for all year-round fish farming activities. This result denotes that fish farming is a vital source of livelihood to the farmers as several resources/assets were utilized to enhance their productivity. This further infers that fish production contributes to the livelihood of the fish farmers in the study area. This result concurred with the findings of Komolafe, *et al.,* (2022) who stated that agricultural enterprises are the key sources of income and livelihood for several people in developing nations of the world. This result indicates that Fish farmers have high livelihoods. The high livelihood status is expected to have positive effects on their standard of living. The adduced reason for the high livelihood status could be attributed to the fact that the farmers had formal education, access to information through diverse sources, involvement in other income-generating activities and the ability to connect with other farmers. This finding concurred with Ifeanyi-obi and Mathews-Njoku (2014) who disclosed that most of farmers in the South Eastern States of Nigeria have a high Livelihood Status. This indicates that the unavailability of machine/equipment, low patronage/consumption of locally farmed fish, and incessant occurrence of drought during dry

season were the severe factors affecting fish farmers in the study area. This confirms preceding study that similarly found that lack of equipment and tools as a problem facing farmers in Kwara State, Nigeria (Olorunfemi *et al*., 2019).

The study concluded that the fish farmers have high livelihood status and the unavailability of machine/equipment, low patronage/consumption of locally farmed fish, and incessant occurrence of drought during dry season were the severe factors affecting fish farmers in the study area.

I. The study therefore recommends that Agricultural extension programme aimed to improve fish farmers' livelihood outcomes in fish production should improve their skills and information on top areas of needs which include pond water treatment, construction, and maintenance were the leading information needed by fish farmers needed in the study area.

II. Agricultural extension agents, relevant government agencies and NGOs should design innovative programme to help the fish farmers overcome the problems unavailability of machine/equipment, low patronage/consumption of locally farmed fish, and incessant occurrence of drought during dry season in the study area.

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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

References

1. Adesope, O., Asiabaka, C. C., & Agumagu, A. C. (2007). Effect of personal characteristics of extension managers and supervisors on information technology needs in the Niger Delta area of Nigeria. *International Journal of Education and Development Using ICT*, *3*(2), 4-15. https://www.learntechlib.org/p/42362/
2. Adisa, R. S., Mustapha, A. M., Balogun, K. S., Ibrahim, H. K., & Oloyede, W. O. (2018). Analysis of Farm Management Extension Education System Services Performed by Extension Agents of Agricultural Development Projects in Southwest Nigeria. Inte*rnational Journal of Agricultural Science, Research and Technology in Extension and Education Systems,* 8(1), 7-15. http://ijasrt.iau-shoushtar.ac.ir.
3. Adisa, R. S., Oluwaseun, I. J., & Gbenga, O. (2021). Determinants of capacity building needs of artisanal fishers in Kogi State, Nigeria. *Journal of Asian Rural Studies*, *5*(1), 78-89. http://pasca.unhas.ac.id/ojs/index.php/jars/article/view/2706
4. Akangbe, J.A., Ajiboye, G.E. and S.E. Komolafe (2015). Effects of improved fish production technology on the output of fish farmers in Ilorin, Kwara State, Nigeria. *Ruhuna Journal of Science*, 6, 50-62. https://rjs.sljol.info/articles/10.4038/rjs.v6i2.11?_rsc=dagaj
5. Bene, C., Barange, M., Subasinghe, R., Pinstrup-Andersen, P., Merino, G., Hemre, G.I. & Williams, M. (2015). Feeding 9 billion by 2050–putting fish back on the menu. *Food Security*, *7* (2), 261–274. https://link.springer.com/article/10.1007/s12571-015-0427-z
6. FAO (2012) The Prevention of losses in cured fish. FAO Fish Tech. Paper., (219): 87 p. ILOI Government of Norway (1984) Zmprousd Village Technology for Women's Activities- Q Manual for West Africa.
7. FAO (2018). The State of World Fisheries and Aquaculture 2018 – Meeting the Sustainable Development Goals. Rome, Italy.
8. FAO (2019). The future of Livestock in Nigeria. Opportunities and Challenges in the face of Uncertainty. FAO, Rome, Italy.
9. FAO. (2022). The Nigerian Agriculture at a Glance. FAO, Rome, Italy. Available online at https://www.fao.org/nigeria/fao-in-nigeria/nigeria-at-a-glance/en/
10. FDF, (2008). *Federal Department of Fisheries Statistics of Nigeria* (4th ed.). Federal Department of Fisheries, Abuja pp41.
11. Ifabiyi J.O., Bello O.G., Komolafe S.E., Banjoko IK., & Ahmed S.A. (2023). Status of Climate Smart Aquaculture Practices in Ilorin West Local Government of Kwara State, Nigeria. *Iraqi Journal of Aquaculture, 20* (1), 95-114. https://doi.org/10.58629/ijaq.v20i1.458
12. Ifabiyi J.O., Komolafe S.E., & Adisa R.S (2022). Food and Agricultural Organisation (FAO) Model Analysis of Training Needs of Artisanal Fishers in Kwara State, Nigeria. *Diyala Agricultural Science Journal, 14* (1), 54-65. https://www.iasj.net/iasj/download/19e9d34f617a41b4

13. Ifabiyi J.O, Banjoko I.K., & Komolafe S.E. (2017). Assessment of the Training Needs of Artisanal Fishers' in Asa Local Government Area of Kwara State, Nigeria. *Nigerian Journal of Rural Extension and Development,* 11. https://www.researchgate.net/publication/359617559
14. Ifeanyi-obi, C. C., & Mathews-Njoku, E.C (2014). Socio-economic factors affecting choice of livelihood activities among rural dwellers in southeast Nigeria. *IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)*, *7*(4), 52-56. http://dx.doi.org/10.9790/2380-07415256
15. Nguthi, F. N., & Niehof, A. (2008). Effects of HIV/AIDS on the livelihood of banana-farming households in Central Kenya. *NJAS: Wageningen Journal of Life Sciences*, *56*(3), 179-190. https://doi.org/10.1016/S1573-5214(08)80006-1
16. Komolafe, S.E, Adesiji G.B and Akanbi, S.O (2022). The Contribution of Yam Farming Activities to Livelihoods of the Farmers in Ekiti State, Nigeria. *Jambura Agribusiness Journal, 4*(1), 1-12. https://ejurnal.ung.ac.id/index.php/jaj/article/view/13706/0
17. Ogunlade, I. (2007). Backyard Fish Farmers Information needs in Osun State, Nigeria. *AAAE 2007 Conference proceedings pg*. 165-169.
18. Okonta, A.A., & Ekelemu J K. (2005). A preliminary study of Micro- Organisms associated with fish spoilage in Asaba, Southern Nigeria. Proceedings of the 20th Annual conference of Fisheries Society of Nigeria (FISON), Port-Harcourt 14th-18th November.
19. Olaoye, O. J., & Oloruntoba, A. (2011). Determinants of aquaculture technologies adoption among fish farmers in Obafemi-Owode Local Government Area of Ogun State, Nigeria. *Journal of Humanities, Social Sciences and Creative Arts 5* (1), 37-48. https://doi.org/10.51406/jhssca.v5i1.986
20. Olorunfemi, T. O., Olorunfemi, O. D., Adebayo, S. A., Letsoalo, S. S., & Modirwa, S. (2019). Competency Needs of Extension Agents On Value Added Fish Production: Evidence From Kwara State, Nigeria. *South African Journal of Agricultural Extension (SAJAE)*, *47*(4). https://doi.org/10.17159/2413-3221/2019/v47n4a528
21. Pandey, R., Jha, S. K., Alatalo, J. M., Archie, K. M., & Gupta, A. K. (2017). Sustainable livelihood framework-based indicators for assessing climate change vulnerability and adaptation for Himalayan communities. Ecological indicators, 79, 338-346. https://www.researchgate.net/publication/316682017
22. Turner, S. (2017). International encyclopedia of geography, 15 volume set: Livelihoods (Vol. 1). John Wiley & Sons.
23. WorldFish (2024). *WorldFish 2023 Annual Report*. Penang Malaysia: WorldFish. Annual Report:2024-2

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Original Article

Evaluation of the Effectiveness and Efficiency of the Agricultural Insurance Fund in the Development of Rural areas of Shiraz County

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Abstract

Purpose- The agricultural insurance fund plays a crucial role in rural areas and agricultural sector. Evaluating the performance of this fund can better identify its effectiveness and challenges. This study aims to evaluate the effectiveness and efficiency of the agricultural insurance fund in the development of rural areas in Shiraz County.

Design/methodology/approach- This descriptive-analytical research is based on data collection through a survey. The data collection tool was a researcher-made questionnaire. The validity of the questionnaire was confirmed by experts, and its reliability was verified with a Cronbach's alpha coefficient greater than 0.70. The statistical population consisted of rural residents totaling 55323 individuals. Based on Cochran's formula, the sample size was determined to be 382 individuals.

Findings- The test results, at a significance level less than 0.05, indicated that the Agricultural Insurance Fund had poor efficiency in rural development from the perspective of rural residents. The average test result of 2.404 also confirms this finding. Despite its poor performance, the fund's highest effectiveness and efficiency were related to promoting social justice with an average score of 2.609. Furthermore, analysis of variance showed no significant difference between rural areas regarding the performance status of the Agricultural Insurance fund at a level greater than 0.05 but equal to 0.774. It is also predicted that the Agricultural Insurance Fund may have an impact on the situation of rural areas. According to the regression results, support for the expansion of greenhouse cultivation with a beta value of 0.349 has been the most important factor in the effectiveness of the fund.

Research limitations/implications- challenges related to data collection access and significant costs complicated this research endeavor. To mitigate these negative impacts, villages with larger populations were prioritized for inclusion.

Practical implications- Sustainable rural development in agriculture hinges on various forms of managerial support from entities like the Agricultural Insurance Fund. Dynamism in this area can expedite development.

Originality/value- Despite being relatively overlooked, evaluating the performance of Agricultural Insurance Funds can highlight positive aspects for managers and specialists due to their importance. The villages within the research scope also provide value and authenticity to this study.

Keywords- Evaluation, Agricultural Insurance Fund, Sustainable Rural Development, Shiraz County.

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1. Introduction

Rural development as a multifaceted strategy to improve the social and economic conditions of poor rural residents is being discussed. This effort is particularly achievable through increasing production and enhancing efficiency in rural areas (Shamsodini & Amiri Fahliani, 2014). In recent years, these areas have been recognized as a potential to create synergies for sustainable development (Clausen & Rudolph, 2020). In this regard, villages are of significant importance and play a crucial role in sustainable development (Fadaie et al., 2021). Sustainable development in Agriculture and rural areas requires constant attention because agricultural activities not directly related to food production were not noticed until the twentieth century, leading to consequences (Long et al., 2022). However, successful agricultural productivity growth has been the source of initial development and subsequent structural and industrial transformation in most high-income countries today (De Janvery & Sadoulet, 2020). Given the correlation between agriculture and rural development, this relationship cannot be overlooked; since agriculture as a major driver can contribute to sustainable rural development (Irwin et al., 2010). Due to this relationship, rural development policies and strategies are usually intertwined with agricultural sector, and the position of the agricultural sector cannot be ignored in rural development policies (Gao et al., 2023). Therefore, it is essential to identify existing developmental capacities including the agricultural sector (Mikaniki & Sadeghi, 2021). One of the important capacities for rural development is the agricultural sector. Agriculture has been facing fundamental changes. Population growth, income improvement, and changes in dietary patterns increase the demand for food and other agricultural products (Nchuchuwe & Adejuwon, 2012). On the other hand, risks due to unplanned urbanization, persistent poverty, and ecosystem destruction are growing. This has led to a focus on risk financing insurance playing a significant role in various economic sectors. Insurance as a financial risk management mechanism is part of the comprehensive disaster risk management, playing a crucial role in disaster risk reduction (Alam et al., 2020). It is an economic tool to address the impacts of climate change (Lee et al., 2022). Insurance can cover a wide range of non-climatic and climatic risks through evolving insurance products (Tran & Huynh, 2023). This approach (insurance) is doubly important for the agricultural sector; Because agriculture is an activity that always encounters risk due to its dependence on climatic and environmental conditions. Among the well-known risks in agriculture are the production or performance risk and the hazard risk that cause the instability of the income and profit of the producers of this sector (Chaiyawat et al., 2023). Providing insurance services to agriculture by governments through various insurance companies and funds is encouraged due to the continuity of risks in agriculture, especially in rural areas (Salami & Ravasizadeh, 2015). The necessity of attention to agricultural insurance is undeniable and this sector requires extra planning and attention.

Due to special ecological, social and economic conditions, Iran's rural community is facing various risks. Therefore, expanding social insurance coverage is crucial for comprehensive and sustainable development of rural areas (Gol Mohammadi et al., 2022). Establishing agricultural insurance funds for farmers, villagers, and nomads aims at promoting social justice, reducing poverty, alleviating deprivation in rural areas, developing and prospering villages, and sustaining populations by enhancing social and economic security levels (Qadermarzi et al., 2020). Insurance of agricultural products can be considered a pillar for agricultural sector development; Since it enhances security for agricultural producers, creating more secure conditions for attracting private investment in this sector. Agricultural product insurance facilitates broad participation of farmers in achieving sustainable agriculture by providing secure conditions for capital attraction in agriculture sector. It also helps mobilize rural savings, increase risk management efficiency in the agricultural sector, optimize capital allocation more effectively within this sector, deal with poverty and vulnerability among smallholders and rural farmers. Hence, the role and importance of agricultural insurance cannot be overlooked.

Given that the main target of agricultural insurance development is to increase production levels, reduce risks caused by natural factors, and ensure farmers' income, adopting desirable mechanisms to increase participants (villagers or farmers) and improve their satisfaction is an important goal of rural agricultural insurance fund (Hosseinnejad, 2015). Considering

the importance of this issue in the sustainability and continuous operation of this fund, its effectiveness and efficiency should be evaluated. In fact, evaluating this fund can be a step forward in understanding its capabilities and performance. In this research, villages of Shiraz County have been studied. This region holds an acceptable position in the country's annual agricultural production. Having a significant share in the county's agriculture as well as various climate challenges, water resource problems, and diverse risks make rural areas of this county suitable for conducting this research. Thus, efforts have been made in this study to evaluate the effectiveness and efficiency of the agricultural insurance fund in developing rural areas in Shiraz County. This objective can enhance addressing the problems of this fund and improving its performance.

2. Research Theoretical Literature

Agricultural production is a risky activity exposed to several potential hazards that make agricultural income unstable and unpredictable year by year. Bakst et al., (2016) report that economic research by the U.S. Department of Agriculture (USDA) has identified five types of agricultural risks:
1. Human and personal risk (such as human health), 2. Institutional risk (related to government actions), 3. Financial risk (such as access to capital), 4. Price or market risk, and 5. Production risk (such as weather and pests) (Baskt et al., 2016).
Each of these risks may affect the agricultural trend of a region. This impact leads to reduced production and income for the local community (He, 2023). As a result of this process, local and national economies become unstable. Governments are therefore seeking various mechanisms to support the agricultural sector. Given that the agricultural sector has close ties with rural communities, its effects are always injected into rural communities (Zhou et al., 2023). In other words, supporting the agricultural sector means helping achieve sustainable rural development. Various agricultural insurances are considered as support for rural development (Chhikara & Kodan, 2012). The main goal of creating social and agricultural insurances includes providing economic security for rural residents, preventing rural poverty, establishing economic stability in production relationships, preserving important rural community values, increasing labor productivity in agricultural production, and achieving development based on social justice (Qadermarzi et al., 2020). Agricultural insurance aims to minimize risks and uncertainties in the agricultural sector. This program is required by farmers who are exposed to multiple risks of crop failure. So far, there have been various obstacles in the implementation of agricultural insurance (Fadhil et al., 2021).

In Iran, like many other countries, various measures have been taken to support rural communities and agriculture. The establishment of the Farmers', Villagers', Nomads' Insurance Fund since 2005 can be seen as a milestone in achieving these goals (Qadermarzi et al., 2020). The fund aims to support rural residents and farmers by compensating for agricultural losses (e.g. pests, drought), damages to facilities and agricultural machinery, livestock losses (e.g. diseases), implementing fund programs in villages, seeking advice from villagers on fund performance, implementing risk reduction plans covered by insurance, etc. Ebrahimi et al., (2015) studied the role of rural and Nomadic insurance in stabilizing the rural population and found that rural residents play a vital role in economic security as economic actors who need government support and empowerment. Social insurance for rural residents and nomads can be an suitable solution for this purpose and play a significant role in it. Rezvani and Kuchaki (2016) demonstrated that having social insurance for rural residents and nomads is essential to support them, build trust among them towards the fund, ultimately leading to influencing rural development and enhancing social and economic security. Varmazyari and Moradi (2017) found that structural barriers are the key obstacles to the development of social insurance for farmers, villagers, and nomads in Kermanshah County. These barriers stem from weak regulations, inadequate organization of rural and nomadic labor force, and insufficient service coverage. Azizpour et al (2016) in a study to analyze nomads' perspective about the quality of rural insurance fund services, concluded that there is a gap between the current state and quality of services provided by the rural insurance fund and what expected by policyholders in all dimensions except tangible factors. The results showed that policyholders' expectations of the quality of services were more than what they received, and their satisfaction with the services was evaluated at an average level. Qadermarzi et al., in a study entitled "Explanation of factors affecting the effectiveness of social insurance fund of farmers

and villagers", identified social and cultural factors as more influential on the effectiveness of the social insurance fund for farmers and villagers compared to economic and geographical factors.

Yuliong (2001) studied the relationship between productivity growth, income inequality, and social insurance in China and concluded that economic growth, total productivity and income inequality increase with a decrease in the level of social insurance. Ramesh (2007) found that rural residents in India are not opposed to insurance; But require affordable costs and adequate coverage against risks. Maiyaki & Ayuba (2015) investigated factors influencing policyholders' attitudes towards insurance in Kano, Nigeria. For this purpose, they evaluated the level of policyholders' awareness, and their perception, confidence and trust in insurance services. The results indicated that, the awareness and correct understanding of insurance services and trust in brokers and insurers play a vital role in generating positive attitudes of policyholders towards insurance. A study conducted by Pratiwi & Budiasa (2022) showed that the effectiveness of the agricultural insurance program was acceptable according to effective criteria. In this regard, assurance and expanding insurance services can play the most significant role in farmers' satisfaction. Zeng et al., (2022) in a study on "agricultural insurance and economic growth", concluded that agricultural insurance supports farmers and sustainable production, contributing to long-term economic growth. Investigating the agricultural insurance performance, Timu & Kramer (2023) emphasized that while insurance is a suitable support mechanism for agriculture, its implementation and policies are crucial for its efficacy. Analysis of past research and comparison with the present study shows that unlike many past studies, this research emphasizes on the agricultural insurance fund. Furthermore, an attempt has been made to establish a research framework in line with the duties of this fund. Additionally, this study examines the effectiveness and efficiency of the agricultural insurance fund, which has not been significantly addressed in past research. Therefore, the present study is innovative in these aspects.

Figure 1. Conceptual model of the research

3. Research methodology

3.1. Geographical scope of the research

Shiraz County is located in Fars Province, with Shiraz city being its center. This County consists of three districts: central, Arzhan, and Siakh-e-Darnegoun. The population of this county has been 1869001 individuals and 567,567 households in the year 2016. Based on the latest census data available (2016), there are 68 inhabited villages in this County. Shiraz County has a significant potential in agriculture and tourism sector. In terms of agriculture, this County has various capacities. Due to climate diversity, agriculture has always been an important part of this region's economy. Grapes, pomegranates, nectarines and wheat are among the most important products of this County. In this study, 12 villages have been selected as study subjects.

3.2. Research Method

This study is of an applied and quantitative nature, methodologically falling under descriptive-analytical research. It is based on field data collection through questionnaires administered at the individual level. The target population of this research consists of rural residents in the central part of Shiraz County. Due to constraints, villages with

more than 700 households were selected for the study in the first phase, totaling over 12 villages. In the second phase, sample size determination was carried out based on these villages. The 12 studied villages have a population of 55323 individuals and 15119 households. According to Cochran's formula, a sample size of 382 individuals were determined. Table (1) shows the distribution of the sample based on the studied villages.

Table 1- Distribution of questionnaires in the studied villages

Village	Household	Population	Sample size
Sultan Abad	2324	8734	60
Tafhian	1713	6170	43
Karoni	1615	5689	39
Kyan Abad	12389	5039	35
Zafar Abad	1265	4856	34
Qalat	1140	3953	27
Koushk Bidak	875	3871	28
Kafari	954	6424	44
Gerd Khoun	782	2880	20
Dehak Qara Bagh	762	2636	18
Kaftark	743	2526	17
Gachi	15119	2545	17
Total		55323	382

The validity of the questionnaire was confirmed by experts in the field. Considering the importance of reliability in the analysis of the questionnaire, the reliability coefficient was calculated using Cronbach's alpha, which was found to be higher than the acceptable criterion and standard value of 0.07 (Table 2). Statistical tests were used for data analysis in the SPSS software in this study. It is necessary to mention that factors were collected and utilized through various studies.

Table 2- calculating dimensions and indicators of the study based on Cronbach's alpha coefficient

Dimension	Indicator	Number	Cronbach's alpha
Agricultural situation	Employment in the agricultural sector, variety of agricultural products, the amount of cultivated area, paying attention to agriculture, investment in agricultural sector, greenhouse cultivation, land use changes to agriculture, water resources of the agricultural sector, number of beneficiaries, livestock situation.	10	0.771
Current situation of the agricultural insurance fund	Performance of the fund in case of agricultural damages (hail, drought, etc.), fund's performance in case of damage of facilities, agricultural machinery etc., fund's performance in case of livestock damages (diseases etc.), implementation of plans and programs of the fund, obtaining advice from the villagers regarding the operation of the fund, number of plans to reduce the losses caused by risks covered by insurance, time limit for insurance claim payment	7	0.765
Effectiveness and efficiency of the agricultural insurance fund	Support during unexpected natural disasters (flood, drought, etc.), support during humanitarian disasters including fire, support and insurance of agricultural machinery and tools, educating and informing farmers about insurance fund, participation of fund in agricultural plans, providing plans to reduce agricultural losses, the process of carrying out the affairs of agricultural insurance, granting subsidy and financial assistance to farmers, improving villagers' income, preservation of the rural population, increasing social justice, poverty	15	0.784

Dimension	Indicator	Number	Cronbach's alpha
	alleviation, expansion of cultivated areas, support for the expansion of greenhouse cultivation, better management of water consumption		

4. Research findings

4.1. Demographic characteristics of the sample

Frequency distribution regarding gender indicates that, 75.1% of the sample were men and 24.9% were women. Additionally, 3.4% were between 25-30 years old, 7.1% between 31-40, 36.6% between 41-50, 29.1% 51-60, and 23.8% were between 61-63 years old. The minimum age in the sample was 25 and the maximum age was 63 years old. In terms of education, 7.9% were illiterate, 23.6% had a degree less than a diploma, 33% had a diploma, 16.8% had a bachelor's degree, and 17% had a master degree.

The distribution based on gender, age, and education variables suggests a desirable distribution in the sample which can be effective in generalizing results to the population as a whole. Moreover, it shows that 90.6% of the sample (346 individuals) used agricultural insurance facilities while only 9.4% (36 individuals) did not use these facilities.Therefore, most individuals in the sample are aware of agricultural insurance funds. Furthermore, an assessment of the satisfaction level of the sample with the performance of agricultural insurance funds generally indicates that: 22.8% chose very low satisfaction, 83% chose low satisfaction, 21.4% chose moderate satisfaction, 13.1% chose high satisfaction, and 4.7% chose very high satisfaction. Overall, more than 60.7% of the respondents expressed low satisfaction with the performance of agricultural insurance funds.

4.2.The situation of rural areas in terms of agriculture

The results of the inferential part of the research show the status of rural areas in terms of agricultural indicators. The one-sample t-test suggests that all agricultural indicators are significantly below 0.05. The examination of significance using the mean indicates that except for the indicator of land use change from agriculture use to other uses with a mean of 4.314, other indicators have means lower than the average test limit (3). Therefore, agricultural indicators in rural areas have not been adequately evaluated. The total agricultural indicators also confirm this, as the level of significance of the total indicators is equal to 0.000 and less than 0.05, with a mean of 2.676 confirming that it is lower than the average limit (3). The negativity of the lower test limit (0.393) and upper test limit (0.253) also confirms this issue. As mentioned, the indicator of land use change from agriculture to other uses had the highest mean at 4.314. Hence, land use changes from agriculture to other uses in rural areas have increased. In other words, agricultural lands in rural areas have been reduced and other uses have taken their place. Other indicators with higher means include the status of agricultural product diversity, number of operators, and employment status in the agricultural sector (Table 3).

Table 3- situation of rural areas in terms of agriculture (one=sample t-test)

Indicator	Test Basis = 3				
	T	Significance level	Mean	Confidence interval at the 95% level	
				Lower limit	Upper limit
Employment in agricultural sector	-5.200	0.000	2.680	-0.440	-0.198
Diversity of agricultural products	-2.738	0.006	2.861	0.238	-0.039
The amount of cultivated areas	-03.082	0.002	2.811	-0.308	-0.068
Paying attention to agriculture	-9.586	0.000	2.345	-0.788	-0.520
Investment in agricultural sector	-5.176	0.000	2.615	-0.531	-0.238
Greenhouse cultivation	-14.26	0.000	2.075	-1.05	-0.796
Land use change from agriculture to other uses	32.61	0.000	4.314	1.23	1.39
Water resources of agricultural sector	-15.81	0.000	2.120	-0.989	-0.770
Number of operators	-6.073	0.000	2.636	-0.481	-0.246
Livestock	-8.916	0.000	2.306	-0.846	-0.540
Total (indicators)	-9.038	0.000	2.676	-0.393	-0.253

4.3. The status of agricultural insurance fund in rural areas

The status of agricultural insurance fund in rural areas has been evaluated based on their duties framework. The test results indicate that the status of the agricultural insurance fund is significantly below 0.05 and equal to 0.00. The average of 2.138, as well as the negativity of the lower limit (-0.777) confirm that the performance of the agricultural insurance fund in rural areas is not satisfactory. The highest average belongs to the indicator of agricultural losses (hail, drought, etc.) at 2.675 and the lowest average belongs to the indicator of time limit for insurance claim payment at 1.740, confirming that the comparison between minimum and maximum averages of indicators clearly shows that the performance of the agricultural insurance fund in rural areas has been assessed as weak (Table 4).

Table 4- Evaluation of agricultural insurance fund status in rural areas (one-sample t-test)

Indicator	Test basis = 3				
	T	Significance level	Mean	Confidence interval at 95% level	
				Lower limit	Upper limit
Performance of fund in case of agricultural losses (hail, drought, etc.)	-5.023	0.000	2.675	-0.451	-0.197
Performance of fund in case of damages to agricultural facilities, machinery, and tools	-7.066	0.000	2.486	-0.655	-0.370
Performance of fund in case of livestock losses (diseases)	-9.165	0.000	2.342	-0.798	-0.516
Implementation of fund plans and programs in villages	-12.55	0.000	2.102	-1.038	-0.757
Obtaining advice from villagers in line with the operation of the fund	-18.03	0.000	1.808	-1.321	-1.061
Number of plans reducing the losses caused by risks covered by insurance	-17.97	0.000	1.814	-1.315	-1.056
Time limit for insurance claim payment	-21.76	0.000	1.740	-1.372	-1.145
Total (indicators)	-20.32	0.000	2.138	-0.944	-0.777

4.4. Evaluation of the significance of the difference among rural areas in terms of the status of the agricultural insurance fund

In this research, the significant difference in the status of agricultural insurance fund was evaluated. The study focused on the performance of the insurance fund in 12 villages in Shiraz County and found that overall, the fund's performance was not satisfactory. However, there may be some differences among rural areas. An analysis of variance (ANOVA) test was used to determine and investigate this issue. The ANOVA results showed that at a significance level greater than 0.05 and equal to 0.774, there is no significant difference between rural areas in terms of the status of the agricultural insurance fund.

Table 5. Evaluating the significance of the difference among rural areas in terms of the status of agricultural insurance fund using one-way analysis of variance

Indicator	Variance	Total square	Degrees of freedom	Mean square	F	Sig
The status of agricultural insurance fund	Intergroup	5.045	11	0.459	0.662	0.774
	Within-group	256.234	370	0.693		
	Total	261.279	381	***		

The results of table (5) showed that there is no significant difference between rural areas in terms of the performance status of the agricultural insurance fund. Therefore, there is no need for follow-up tests. However, to better demonstrate this lack of difference, the results of Duncan's post hoc test are reported (Table 6). According to the results, the highest average rank is related to Kaftarak village with a value of 2.319 and the lowest average is related to Kafari village with a value of 1.954.

Thus, firstly, the average performance status of the agricultural insurance fund in all villages has been lower than the average (3). Secondly, no significant difference between villages was observed based on the maximum and minimum averages.

Table 6. Explaining the differences among villages in terms of the status of agricultural insurance fund (Duncan's post hoc test)

The significance of classes at the alpha level of 0.05		
Village	Number	Mean status of the village in terms of agricultural insurance fund
Soltan Abad	60	2/097
Tafhian	43	2.255
Karouni	39	2.164
Kian Abad	35	2.155
Zafar Abad	34	2.037
Qalat	27	2.079
Koushk Bidak	28	2.173
Kafari	44	1.954
Gerd khoun	20	2.400
Dehak qara bagh	18	2.238
Kaftarak	17	2.319
Gachi	17	2.016

4.5. Evaluation of the effectiveness and efficiency of agricultural insurance fund in rural development

The effectiveness and efficiency of the agricultural insurance fund in rural development have been evaluated through 15 indicators. The results of the one-sample t-test show that all indicators are significant at a level less than 0.05 and equal to 0.000. The examination of significance using the mean indicates that all indicators have a mean lower than the average test limit (3), suggesting that the agricultural insurance fund has poor effectiveness and efficiency in rural development from the perspective of rural residents. Additionally, the test result at the overall level of effectiveness and efficiency confirms this finding, as the significant value is less than 0.05 and equal to 0.000. The mean of 2.404 also confirms the fund's weak effectiveness and efficiency in rural development. The negativity of the upper limit (-0.508) and lower limit (-0.683) of the test is another reason to confirm this (Table 7). Despite its poor performance, the fund's highest effectiveness and efficiency belonged to promoting social justice with a mean of 2.609, followed by improving water management with a mean of 2.596. in conclusion, it can be inferred that the agricultural insurance fund has not been effective within its duties in rural development. If any impact has occurred, it has not been tangible and successful from the perspective of rural residents. In other words, the agricultural insurance fund has failed to effectively contribute to rural and agricultural sector development, as perceived by rural residents.

Table 7. Evaluation of the effectiveness and efficiency of the agricultural insurance fund in rural development (one-sample t-test)

The effectiveness and efficiency indicators	Test basis = 3				
	T	Significance level	mean	Confidence interval at 95% level	
				Lower limit	Upper limit
Support in case of unexpected natural disasters (flood, drought, etc.)	-7.500	0.000	2.523	-0.601	-0.351
Support in case of humanitarian disasters including fire	-12.85	0.000	2.141	-0.989	-0.727
Support and insurance of agricultural machinery and tools	-14.82	0.000	2.125	-0.990	-0.758

Training and informing farmers about insurance fund	-12.23	0.000	2.133	-1.005	-0.727
Participation of the fund in agricultural plans	-9.131	0.000	2.327	-0.817	-0.527
Process of carrying out agricultural insurance affair	-9.117	0.000	2.377	-0.757	-0.488
Providing plans to reduce agricultural losses	-12.34	0.000	2.157	-0.977	-0.708
Granting subsidy and financial assistance to farmers	-6.958	0.000	2.552	-0.574	-0.321
Improving villagers' income	-6.619	0.000	2.568	-0.560	-0.303
Preserving rural population	-8.246	0.000	2.486	-0.635	-0.390
Promoting social justice	-4.936	0.000	2.609	-0.545	-0.234
Poverty alleviation	-5.909	0.000	2.568	-0.575	-0.288
Expansion of cultivated areas	-10.62	0.000	2.324	-0.800	-0.550
Expansion of greenhouse cultivation	-6.953	0.000	2.567	-0.554	-0.309
Improving water management	-6.248	0.000	2.596	-0.530	-0.276
Total (effectiveness and efficiency of the fund)	-13.44	0.000	2.404	-0.683	-0.508

4.6. Explaining and predicting the effectiveness and efficiency of insurance fund in improving the agricultural situation in rural areas

Analysis of variance and regression model (Table 8) demonstrates that the significance level (Sig) of the regression model is less than the acceptable error rate (0.05) and equals 0.000, indicating a statistically significant relationship between the effectiveness of agricultural insurance fund and the improvement of rural areas with over 99% confidence level. Therefore, the effectiveness of agricultural insurance fund in improving rural areas is justifiable. The degrees of freedom are 381. Overall, the analysis suggests that the agricultural insurance fund can be effective in improving rural areas, especially in the agricultural sector and this is explainable through various approaches and methods.

Table 8. Significance test of the regression model for predicting the effectiveness of the agricultural insurance fund in improving the condition of rural areas

Significance	F value	Mean square	Degrees of freedom	Total square	Model
0.000	214.85	11.150	15	167.249	Regression
		0.052	366	18.993	Remaining values
		***	381	186.243	Total

Based on Table (9), the correlation coefficient or effectiveness of the agricultural insurance fund in improving the situation of agriculture in rural areas is 0.0948, indicating a direct correlation. However, despite this, the agricultural insurance fund collectively explains 94.8% of the variance in the situation of agriculture in rural areas and about 2.5% of the variance is explained by other factors. The predictability or effectiveness of the agricultural insurance fund in improving the situation of agriculture in areas is significant.

Table 9. Explaining the changes in dependent variable (rural areas' status) through the indicators of the effectiveness of the agricultural insurance fund

Standard error	Corrected R value	R-squared value	R value	model
0.22780	0.898	0.898	0.984	1

The level of power and the effectiveness of various indicators of agricultural insurance fund in improving the situation of rural areas are not uniform and consistent. Regression results show that some indicators have become significant. The significant indicators of the agricultural insurance fund include rural income improvement (0.000), social justice expansion (0.013), poverty alleviation (0.026), support for greenhouse cultivation expansion and water consumption management improvement (0.003). Analysis of the significance direction indicates that the agricultural insurance

fund can positively impact the improvement of rural areas through rural income enhancement with a beta value of 0.302). Additionally, the agricultural insurance fund can have positive effects on improving the situation of rural areas and the agricultural sector through poverty alleviation with a beta value of 0.096 and through support for greenhouse cultivation expansion with a beta value of 0.349. The status of other effectiveness indicators of the agricultural insurance fund in terms of significance or insignificance, as well as their influencing directions, can be observed in table (10).

Table 10. Statistics of independent variable regression model coefficients (effectiveness indicators of agricultural insurance funds

Status	Significance value	Standard coefficients	Nonstandard coefficients		Model
		Beta value	Standard error	B value	
Significant	0.000		0.135	1.326	Constant
Insignificant	0.764	-0.014	0.026	-0.008	Support in case of unexpected natural disasters (hail, etc.)
Insignificant	0.413	0.070	0.046	0.038	Support in humanitarian disasters including fire
Insignificant	0.862	0.011	0.037	-0.006	Support and insurance of agricultural machinery and tools
Insignificant	0.162	0.195	0.070	0.098	Training and informing farmers about insurance fund
Insignificant	0.507	-0.020	0.015	-0.010	Process of carrying out agricultural insurance
Insignificant	0.777	0.017	0.032	-0.009	Providing loss reduction plans
Insignificant	0.113	0.211	0.069	0.110	Granting subsidy and financial assistance to farmers
Insignificant	0.338	0.078	0.045	0.043	Improvement of rural income
Significant	0.000	-0.302	0.041	0.166	Participation of the fund in agricultural plans
Insignificant	0.065	-0.141	0.044	0.081	Preservation of rural population
Significant	0.013	0.216	0.039	0.098	Social justice expansion
Significant	0.026	0.096	0.021	-0.047	Poverty alleviation
Insignificant	0.668	0.031	0.041	0.018	Expansion of cultivated land
Significant	0.010	o.349	0.077	0.201	Support for greenhouse cultivation
Significant	0.003	-.180	0.033	-0.100	Water consumption management improvement

5. Discussion and Conclusion

Agriculture is considered as an important part of rural development which faces various challenges. Some of these challenges are rooted in natural hazards. In fact, environmental and climate changes pose serious threats to agricultural products. Supporting agricultural sector of rural areas is crucial in such conditions. One approach is through agricultural and rural insurance. In Iran, support for farmers and rural development includes establishing insurance funds. A study on the effectiveness of agricultural insurance from the perspective of rural residents showed unsatisfactory agricultural conditions in the region, with various indicators like crop diversity, farmer numbers, employment status, cultivation area, investment, water resources, and government support being poorly evaluated by villagers. This weakness may stem from inadequate government support and other external factors impacting agriculture. Evaluating the effectiveness and efficiency of the agricultural insurance fund in rural development indicates that this fund has performed poorly regarding rural development. As a matter of fact, villagers have evaluated the performance of agricultural insurance fund in Support during unexpected natural disasters (flood, drought, etc.), support during humanitarian disasters including fire, support and insurance of agricultural machinery and tools, educating and informing farmers about insurance fund,

participation of fund in agricultural plans, process of carrying out agricultural insurance affairs, providing plans to reduce agricultural losses, granting subsidy and financial assistance to farmers, improving villagers' income, preservation of the rural population, increasing social justice, poverty alleviation, expansion of cultivated areas, support for the expansion of greenhouse cultivation, better management of water consumption as being weak. Investigating these indicators demonstrates that, most of them are within the framework of agricultural insurance fund duties and the lack of satisfaction of the villagers in this matter requires further consideration. The results of the studies conducted by Rezvani and Kouchaki (2016), Maiyaki and Ayuba (2015), Zeng et al., (2022), Pratiwi and Budiasa (2022) are not consistent with the results of the present study; since in these studies the efficiency of agricultural insurance has been emphasized, while the results showed that the effectiveness and efficiency of the insurance fund was not satisfactory from the villagers' perspective. This may be due to the method and process of performing the fund's supportive duties for agriculture. According to the results, it is also predicted that, agricultural insurance.
fund can be effective in the status of rural areas. The fund's highest effectiveness has been determined in terms of support for the expansion of greenhouse cultivation. Improving villagers' income and poverty alleviation are also among other predictable effects of this fund. Needless to say that, planning and sustainable support for rural community are the requirements of this effectiveness. The results of the studies conducted by Ebrahimi et al. (2015), Rezvani and Kouchaki (2016), and Pratiwi and Budiasa (2022) emphasize on the importance and effectiveness of agricultural insurance which are consistent with the results of this part of the present study. On the whole, the results of the present study demonstrated that, the performance of the agricultural insurance fund has not been satisfactory and the actions taken by this fund did not have tangible effectiveness and efficiency. In general, the results indicate that, the agricultural insurance fund holds significant potential for rural and agricultural development; yet this potential remains largely untapped. To actualize these capacities, it is necessary to identify, clarify, and emphasize the development areas based on identified factors and impacts. Given these conditions, the following recommendations are proposed:

1- it is suggested that the agricultural insurance fund review its charter in terms of providing support to farmers.

2- initiatives aimed at reducing losses should be made available to rural residents and farmers by the agricultural insurance fund.

3- the process of agricultural insurance for rural residents should be facilitated.

4- seeking advice from rural residents regarding fund's performance is another recommendation to enhance its effectiveness.

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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.

Reference

1. Alam, A. F., Begum, H., Masud, M. M., Al-Amin, A. Q., & Leal Filho, W. (2020). Agriculture insurance for disaster risk reduction: A case study of Malaysia. *International Journal of Disaster Risk Reduction*, 47(2), 45-63. https://doi.org/10.1016/j.ijdrr.2020.101626
2. Azizpour, F., Mahmoudian, F. & Azizi, S. (2020). Analyzing the Views of the Nomadic on the Quality of Social Insurance Fund of Villagers and Tribes Services (Case Study: Chaghakhor Village of Chaharmahal and Bakhtiari Province). *Spatial Planning*, 10(3), 47-65. [In Persian] https://doi:10.22108/sppl.2020.117003.1384
3. Bakst, D., Sewell, J., & Wright, B. (2016). Addressing Risk in Agriculture. Heritage Foundation Special Report 189. Washington, DC: Heritage Foundation. https://www.heritage.org/agriculture/report/addressing-risk-agriculture

4. Chaiyawat, T., Mekkriengkrai, S., & Phanwichit, S. (2023). Enhancing the Effectiveness of Insurance Risk Management in the Agricultural Sector in Thailand. *AgBioForum*, 25(1), 130-139. https://agbioforum.org/menuscript/index.php/agb/article/view/220
5. Chhikara, K. S., & Kodan, A. S. (2012). National agricultural insurance scheme (NAIS) in India: an assessment. Management and Labour Studies, 37(2), 143-162. https://doi.org/10.1177/0258042X1203700205
6. Clausen, L. T., & Rudolph, D. (2020). Renewable energy for sustainable rural development: Synergies and mismatches. *Energy Policy*, 138(2), 21-42. doi.org/10.1016/j.enpol.2020.111289
7. de Janvry, A., & Sadoulet, E. (2020). Using agriculture for development: Supply-and demand-side approaches. World development, 133(2), 34-51. doi.org/10.1016/j.worlddev.2020.105003
8. Ebrahimi, N., Gholamrezai, S., Rahimian, M., & Zarifian, Sh. (2016). Performance Evaluation of Rural and Nomads Social Insurance Fund: Case Study of Khorramabad Township. *Third International Conference of Management*, Economy and Accounting, Tabriz, [In Persian] https://civilica.com/doc/449950
9. Fadaei, M., Rahmani, B., & Tavakolinia, J. (2021). Environmental Analysis of Villages on the Skirt of Farsan City based on the Urban and Rural Relationship. *Journal of Research and Rural Planning*, 10(4), 59-76. [In Persian] doi: 10.22067/JRRP.V10I4.2105.1012
10. Fadhil, R., Yusuf, M. Y., Bahri, T. S., & Maulana, H. (2021). Agricultural insurance policy development system in Indonesia: a meta-analysis. *Journal of Hunan University Natural Sciences*, 48(2),121-132. http://jonuns.com/index.php/journal/article/view/508
11. Gao, P., Xie, Y., Song, C., Cheng, C., & Ye, S. (2023). Exploring detailed urban-rural development under intersecting population growth and food production scenarios: Trajectories for China's most populous agricultural province to 2030. *Journal of Geographical Sciences*, 33(2), 222-244. https://link.springer.com/article/10.1007/s11442-023-2080-3
12. Ghadermarzi, H., Fayeghi, N., & Riahi, V. (2020). Explaining the Effective Factors on the Effectiveness of the Performance of the Social Insurance Fund for Farmers, Villagers, and Nomads (Case Study: Sarvabad City). *Journal of Geographical Engineering of Territory*, 4(2), 295-308. [In Persian] doi: JGET-2012-1224
13. Golmohammadi, F., Farajzadeh, A., & Abedi Sarvestani, A. (2020). Analysis of the Strength, Weaknesses, Threats and Opportunities (SWOT) Facing the Social Insurance Fund of Farmers, Villagers and Nomads in Darmian County, South Khorasan Province, 6th International Conference of Developing Agriculture, Natural Resources, Environment & Tourism of Iran. [In Persian] https://civilica.com/doc/1622896/
14. He, T. (2023). Power Mechanism and Practical Path of Agricultural Insurance to Help Rural Revitalization. *Applied Mathematics and Nonlinear Sciences*, 9(1), 1-17. DOI: 10.2478/amns.2023.2.01341
15. Hosseinnezhad, A. (2015). Factors Affecting the Acceptance of Wheat Crop Insurance, Case study: Weat farmers of Kermanshah Province. *Journal of Agricultural Insurance Fund*, 12 (46). 125-145. [In Persian] http://journal.sbkiran.ir/article-52-1-fa.html.
16. Irwin, E. G., Isserman, A. M., Kilkenny, M., & Partridge, M. D. (2010). A century of research on rural development and regional issues. *American Journal of Agricultural Economics*, 92(2), 522-553. https://www.jstor.org/stable/40648001
17. Lee, H., Zhen-Jiang, Y. O. N. G., & Qiao-Ming, L. I. M. (2022). Insurance development and economic growth. *Financial Statistical Journal*, 5(1),1-17. https://systems.enpress-publisher.com/index.php/FSJ/article/view/1057/828
18. Long, H., Ma, L., Zhang, Y., & Qu, L. (2022). Multifunctional rural development in China: Pattern, process and mechanism. *Habitat International*, 121(3), 32-51. doi.org/10.1016/j.habitatint.2022.102530
19. Maiyaki, A.A., & Ayuba, H. (2015). Consumer's attitude toward Islamic insurance services (Takaful) patronage in Kano metropolis, Nigeria. *International journal of marketing studies*, 2(7), 27-34. https://DOI:10.5539/ijms.v7n2p27

20. Mikaniki, J., & sadeghi, H. (2012). Determining the optimal spatial pattern of rural service centers by AHP method with an approach to land suitability (case study: Dehdiz District, Izeh County). *Journal of Research and Rural Planning*, 1(2), 47-69. [In Persian] https://doi:10.22067/jrrp.v1i2.16417
21. Nchuchuwe, F. F., & Adejuwon, K. D. (2012). The challenges of agriculture and rural development in Africa: the case of Nigeria. *International Journal of Academic Research in Progressive Education and Development*, 1(3), 45-61. https://www.academia_Development_in_Africa_The_Nigeria
22. Pratiwi, L. P. K., & Budiasa, M. (2022). Effectiveness of agricultural insurance program as a sustainable agricultural development effort. *SEAS (Sustainable Environment Agricultural Science)*, 6(2), 134-143. DOI:https://doi.org/10.22225/seas.6.2.5856.134-143
23. Ramesh, T.V. (2007). Rural Initiatives, Micro-Insurance, School of statistics, Central University of Finance and Economics, Xueyuan South Rd, Haidian District, Beijing, China. https://ir.knust.edu.gh/handle/123456789/9129
24. Rezvani, M.R., & Kochaki, M. (2017). An Analysis on Effects of Social Insurance of Farmers, Villagers, and Nomads on Social Security and Sense of Belonging in Rural Community (Case Study of Badreh County- Ilam Province. *Human Geography Research Quarterly*, 49 (2), 445-463. [In Persian] https://doi:10.22059/jhgr.2017.58817
25. Salami, H., & Ravasi Zadeh, S. (2016). Comparing Risk of Wheat Production in Kerman and Other Provinces of Iran: A Stochastic Dominance Criteria Analysis. *The Quarterly Journal of Insurance and Agriculture*, 12 (46), 7-20. [In Persian] http://journal.sbkiran.ir/article-fa.html
26. Shamsoddini, A., & Amiri Fahlyani M.R. (2014). An Analysis of the Factors Related to the Development of Tourism in Rural Areas Using SWAT Model (A Case Study: Mamasani). *Geographical Journal of Tourism Space*, 3(12), 107-126. [In Persian] https://www.sid.ir/paper/214242/fa
27. Timu, A. G., & Kramer, B. (2023). Gender-inclusive,-responsive, and-transformative agricultural insurance: A literature review. *Global Food Security*, 36(1),1-22. https://doi.org/10.1016/j.gfs.2023.100672
28. Tran, Q. T., & Huynh, N. (2023). Can insurance ensure economic growth in an emerging economy? Fresh evidence from a non-linear ARDL approach. *Journal of Financial Economic Policy*, 15(6), 596-612. doi.org/10.1108/JFEP-05-2023-0125
29. Varmazyari, H., & Moradi, M. (2017). Analysis of Obstacles Related to the Development of Social Security of Farmers, Villagers, and Nomads in Kermanshah County. *Social Welfare Quarterly*, 17(66), 291-320. [In Persian] http://refahj.uswr.ac.ir/article-3030-1-fa.html.
30. Yui Leung, C.K. (2001). Productivity growth, increasing income inequality and social insurance: the case of China?. *Journal of Economic Behavior & Organizati*on, 46(4), 395-408. https://ideas.repec.org/a/eee/jeborg/v46y2001i4p395-408.html
31. Zeng, S., Qi, B., & Wang, M. (2022). Agricultural Insurance and Agricultural Economic Growth: The Case of Zhejiang Province in China. *International Journal of Environmental Research and Public Health*, 19(20),1-21. https://doi.org/10.3390/ijerph192013062
32. Zhou, C., Liu, J., Wan, S., Zheng, H., & Chen, S. (2023). Agricultural insurance and rural revitalization—an empirical analysis based on China's provincial panel data. *Frontiers in Public Health*, 11(2),1-18. https://doi:10.3389/fpubh.2023.1291476

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ارزیابی اثربخشی و کارایی صندوق بیمه کشاورزی در توسعه مناطق روستایی شهرستان شیراز

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چکیده مبسوط

۱. مقدمه

کشاورزی با تغییرات اساسی مواجه بوده است. از سوی دیگر خطر بلایا در نتیجه شهرنشینی برنامه ریزی نشده، فقر مداوم و تخریب اکوسیستم همچنان در حال رشد است. این وضعیت سبب توجه و تاکید روی مکانیزم بیمه شده و جایگاه خاصی در بخش های مختلف اقتصادی یافته است. از آنجا که هدف اصلی توسعه بیمه کشاورزی، بالابردن سطح تولید، کاهش مخاطره های برخواسته از عوامل طبیعی و تضمین درآمد کشاورزان است، اتخاذ سازوکارهای مطلوب جهت افزایش مشارکت کنندگان(روستاییان یا کشاورزان) و جلب رضایت آنها از رویکردهای مهم بیمه صندوق کشاورزی روستایی است. با توجه به اهمیت این موضوع در راستای پایداری و فعالیت مستمر این صندوق، بایستی اثربخشی و کارایی آن مورد ارزیابی قرار گیرد. در واقع ارزیابی این صندوق خود می تواند یک گام رو به جلو در راستای شناخت توانمندی و کارایی آن باشد. در این مطالعه روستاهای شهرسان شیراز مورد مطالعه قرار گرفته اند. این منطقه از لحاظ کشاورزی جایگاه قابل قبولی را در تولیدات سالانه بخش کشاورزی کشور برعهده دارد. برخورداری از سهم قابل توجه کشاورزی کشور و همچنین چالش های مختلف اقلیمی، معضلات منابع آب و مخاطرات متنوع در نتیجه این شرایط، دلایلی بر انتخاب مناطق روستایی این شهرستان برای انجام این پژوهش است. بر این اساس، در پژوهش تلاش شده است که در مناطق روستایی شهرستان شیراز، اثربخشی و کارایی صندوق بیمه کشاورزی در توسعه مناطق روستایی ارزیابی شود. این هدف می تواند در راستای رفع معضلات این صندوق و عملکرد بهتر آن موثر باشد.

۲. مبانی نظری

تولید کشاورزی یک فعالیت مخاطره آمیز است که در معرض چندین مورد احتمالی است که درآمد کشاورزی را سال به سال ناپایدار و غیرقابل پیش بینی می کند. باکست و همکاران (۲۰۱۶) گزارش می دهند که تحقیقات اقتصادی وزارت کشاورزی ایالات متحده (USDA) پنج نوع خطر کشاورزی را شناسایی کرده است. ۱-خطر انسانی و شخصی (مانند سلامت انسان)، ۲-نهادی، ریسک (در رابطه با اقدامات دولتی)، ۳-ریسک مالی (مانند دسترسی به سرمایه)، ۴-ریسک قیمت یا بازار، و ۵- ریسک تولید (مانند آب و هوا و آفات) (. هر کدام از این ریسک ها، روند کشاورزی یک منطقه را ممکن است تحت تاثیر قرار دهد. این تاثیرگذاری سبب کاهش تولید و درآمد برای جامعه محلی است. در نتیجه این فرآیند، اقتصاد محلی و ملی دچار تزلزل می شود. در این زمینه دولت ها به دنبال سازوکارهای متنوعی جهت حمایت از بخش کشاورزی شدند. این حمایت با توجه به اینکه بخش کشاورزی با جامعه روستایی ارتباط تنگاتنگی داشته دارد، همواره تاثیرات آن به جامعه روستایی نیز تزریق شده است. حمایت از بخش کشاورزی، یعنی کمک به تحقق توسعه پایدار روستایی است. مهمترین هدف ایجاد بیمه های اجتماعی و کشاورزی را می توان ایجاد امنیت اقتصادی برا روستاییان، پیشگیری از فقر روستایی، ایجاد ثبات اقتصادی در روابط تولیدی، حفظ ارزش های مهم جامعه روستایی، افزایش بهره وری نیروی کار در تولیدات کشاورزی و دستیابی به توسعه مبتنی بر عدالت اجتماعی عنوان کرد.

۳. روش تحقیق

تحقیق حاضر از نوع تحقیقات کاربردی و از لحاظ روش‌شناسی جز تحقیقات توصیفی-تحلیلی و همچنین از نوع کمی است. این تحقیق مبتنی بر گردآوری داده‌های میدانی است. ابزار گردآوری داده‌های میدانی از طریق ابزار پرسش‌نامه بوده است. پرسشگری در سطح فرد انجام گرفت. جامعه آماری این تحقیق را ساکنان روستایی در بخش مرکزی شهرستان شیراز تشکیل داده است. بر اساس آخرین آمار سرشماری قابل دسترس(۱۳۹۵)، تعداد روستاهای دارای سکنه، ۶۸ روستا بوده است. با توجه به تعداد روستاها، در مرحله اول برای محدود نموده روستاهای مورد مطالعه با توجه به محدودیت های پژوهش، روستاهای با بیشتر از ۷۰۰ خانوار تعیین شد.

۱. نویسنده مسئول:
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۴. یافته‌های تحقیق

وضعیت کشاورزی منطقه چندان مطلوب نبوده است. بگونه ای که شاخص های مختلف در این زمینه شامل تنوع محصولات کشاورزی، وضعیت تعداد بهره برداران و وضعیت اشتغال زایی بخش کشاورزی، میزان سطح زیرکشت، سرمایه گذاری در بخش کشاورزی، استقبال از کشاورزی، منابع آب بخش کشاورزی از دیدگاه روستاییان ضعیف ارزیابی شده است. این ضعف می تواند از یکسو به ضعف در حمایت از بخش کشاورزی توسط دولت و سازمان های مرتبط از جمله حمایت به صورت بیمه ای مرتبط باشد و از سوی دیگر برخی عوامل بیرونی دیگر را دخیل دانست. ارزیابی اثربخشی و کارایی صندوق بیمه کشاورزی در توسعه روستایی نشانگر آن است که صندوق بیمه کشاورزی در توسعه روستایی، اثربخشی و کارایی ضعیفی داشته است. در واقع روستاییان عملکرد و اثربخشی صندوق در حمایت در حوادث غیرمترقبه طبیعی(سیل، خشکسالی و...)، حمایت در حوادث انسانی از جمله آتش سوزی، حمایت و بیمه ماشین آلات و ابزار کشاورزی، آموزش و آگاهی کشاورزان از صندوق بیمه، مشارکت صندوق در طرح های کشاورزی، روند انجام امور بیمه کشاورزی، ارائه طرح های کاهش دهنده خسارات کشاورزی، اعطای یارانه و کمک های مالی به کشاورزان، بهبود درآمدزایی روستاییان، افزایش ماندگاری جمعیت، گسترش عدالت اجتماعی، محرومیت زدایی، گسترش سطح زیرکشت، حمایت در گسترش کشت گلخانه ای، بهبود مدیریت مصرف آب را ضعیف دانسته اند.

۵. نتیجه‌گیری

عملکرد صندوق بیمه کشاورزی رضایت بخش نبوده و اقدامات انجام شده توسط این صندوق، اثربخشی و کارایی ملموسی نداشته است. همچنین صندوق بیمه کشاورزی دارای ظرفیت های قابل توجه ای جهت توسعه روستایی و کشاورزی است اما به صورت بالقوه باقی مانده است. برای آنکه این ظرفیت ها بالفعل گردد بایستی زمینه های توسعه آنها با توجه به عوامل و تاثیرات شناسایی شده، تبیین و مورد تاکید قرار گیرد.

کلیدواژه‌ها: ارزیابی، صندوق بیمه کشاورزی، توسعه پایدار، مناطق روستایی، شهرستان شیراز

تشکر و قدردانی

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فهرست مندرجات

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دکتر علیرضا جمشیدی (استادیار جغرافیا و برنامه‌ریزی روستایی دانشگاه ارومیه)

دکتر وحید ریاحی (دانشیارجغرافیا و برنامه‌ریزی روستایی دانشگاه خوارزمی)

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دکتر آنا فرمینو (استاد جغرافیا و برنامه‌ریزی منطقه‌ای دانشگاه لیسبون جدید پرتغال)

دکتر صدیقه کیانی سلمی (استادیار جغرافیا و برنامه‌ریزی روستایی دانشگاه کاشان)

دکتر علی گلی (دانشیار جغرافیا و برنامه‌ریزی روستایی دانشگاه شیراز)

دکتر سعدی محمدی (دانشیار جغرافیا و برنامه‌ریزی روستایی دانشگاه پیام نور)

دکتر محمودرضا میرلطفی (دانشیار جغرافیا و برنامه‌ریزی روستایی دانشگاه زابل)

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

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.

نمونه فارسی:

- رضوانی، م. ر. (۱۳۹۰). *برنامه‌ریزی توسعهٔ روستایی در ایران*. چاپ چهارم. تهران: نشر قومس.

- عنابستانی، ع. ا، شایان، ح، و بنیادداشت، ا. (۱۳۹۰). بررسی نقش اعتبارات بر تغییر الگوی مسکن در نواحی روستایی (مطالعهٔ موردی: شهرستان بهمئی). *مجلهٔ برنامه‌ریزی فضایی*، ۱ (۳)، ۸۰-۶۳.

نمونهٔ انگلیسی:

- Bourne, L. S. (1981). *The geography of housing*. London: Edward Arnold.

- Turgat, H. (2001). Culture, continuity and change: Structural analysis of the housing pattern in squatter settlement. *Global Environment Research (GBER)*, *1*(1), 17-25.

بسم الله الرحمن الرحيم

دانشکده ادبیات و علوم انسانی

مجلّهٔ پژوهش و برنامه‌ریزی روستایی

سال سیزدهم، شمارهٔ ۲، بهار ۱۴۰۳، شمارهٔ پیاپی ۴۵

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 : الهه تجویدی
شمارگان: ۵۰ نسخه

نشانی: مشهد، دانشگاه فردوسی مشهد، دانشکدهٔ ادبیّات و علوم انسانی دکتر علی شریعتی، کد پستی ۹۱۷۷۹۴۸۸۸۳ ، نمابر: ۳۸۷۹۶۸۴۰ (۰۵۱)
بها: داخل کشور: ۲۰۰۰۰۰ ریال (تک‌شماره) خارج کشور: ۲۵ دلار (آمریکا- سالانه)، ۲۰ دلار (سایر کشورها- سالانه)
درگاه الکترونیکی: http://jrrp.um.ac.ir/ E-mail:Rplanning@um.ac.ir

*** این مجله در جلسهٔ کمیسیون بررسی نشریات علمی کشور مورخ ۱۳۹۲/۲/۲۵ رتبهٔ علمی- پژوهشی دریافت و طی نامهٔ شمارهٔ ۳/۱۸/۳۵۷۲۸ در تاریخ ۱۳۹۲/۳/۱۳ ابلاغ گردیده است.**

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)**
- **فهرست دسترسی آزاد مجلات (Doaj)**
- **Index Copernicus- RICeST- ISI-Noormags- Googlescholar- Civilica- Oaji**

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مجله پژوهش و برنامه ریزی روستایی

سال سیزدهم، شماره ۲، بهار ۱۴۰۳، شماره پیاپی ۴۵

شاپا: ۲۷۹۱-۲۷۸۳