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Improving rural livelihood based on natural resources potentials in Najafabad region, Kurdistan Province, Iran

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ABSTRACT

Aim: The present study aimed to analyze the strategies based on natural resource potentials to improve the livelihood of rural households in the Najafabad region of Kurdistan Province using SWOT analysis.

Methods: The statistical population of this study included experts and rural residents. The sample size was 337 rural residents based on the Cochran formula and matching with Krejcie and Morgan table and 51 experts by targeted sampling. The items of questionnaires were designed as a rating scale based on the five options Likert. The reliability of questionnaires was determined by Cronbach's alpha that obtained 0.85 for rural residents and 0.82 for experts. SWOT model and SPACE matrix was used to determine strategies for improving the livelihood of rural households based on natural resource potentials.

Findings: According to the results, "natural potentials such as suitable rangelands for animal husbandry" and "the presence of local, committed and skilled manpower in the village" were determined as the most critical strengths from the viewpoint of experts and rural residents, respectively. "Traditional use and exploitation of rangeland and agricultural lands" and "high unemployment rate and low income" were determined as the most critical weaknesses from the viewpoint of experts and rural residents, with a relative weight of 86.27 and 86.62, respectively. "The existence of a favorable vision and serious effort for rural development in the country" and "providing credit facilities and low-interest loans" were the most critical opportunities from the viewpoint of experts and rural residents, respectively. Results showed that "environmental and related threats to rural livelihoods such as drought and floods" are the most critical threat to rural livelihood improvement.

Conclusion: A competitive strategy has been obtained for improving the livelihood of the Najafabad region. This strategy suggests teaching and planning new methods of exploiting water resources and planting drought-resistant species for improving rural livelihood.

Keywords: Experts, livelihood, Rural residents, Strategy, SWOT.

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Introduction

About two-thirds of the world's people with poor living conditions and incomes live in rural areas, which depend mainly on subsistence agriculture and other natural resources for their livelihood [1]. The sustainable livelihood approach was introduced in the 1980s as a new approach for rural development aimed to reduce and eradicate rural poverty [2]. Livelihoods have been introduced as a way to earn money and make a living condition [3]. The sustainable livelihood pattern considers people working in a vulnerable environment [4]. While inside this bed, they have the authority to use capital that can help them to reduce poverty. Sustainable rural livelihood means protecting and securing livelihoods for the people and society and the political concerns and needs related to sustainable development [5]. Sustainable livelihoods provide constant access to income and other resources so that households can meet their basic needs. Reliable livelihoods are estimated that household ownership is not endangered for access to resources (tangible and intangible) and income-generating activities. It is also environmentally safe, economically efficient, and socially just.

There is no diversity in job fields in the structure of rural economy based on agriculture, and it is also limited in the source of income at various rural parts such as agriculture, animal husbandry, handicrafts, and horticulture [6]. Although this type of economic structure has been able to survive in the past, due to the closed (small and limited) economy and the characteristics of villages and rural residents, with the development of the market and its undeniable impact on rural spaces and instabilities in various natural and socio-economic dimensions will not be able to guarantee a sustainable rural livelihood. Sustainable livelihood encountered inconsistency and shocks, and it can provide sustainable livelihood opportunities for the next generation by taking the proper approach [6, 7, 8].

Krantz [9] showed a significant relationship between access to social services, market access, and job stability to improve sustainable rural livelihoods. Scoones [10] considers the diversification of economic activities, per capita income, access to information resources and public knowledge, agricultural insurance, and the condition of physical infrastructure as influential variables to improve rural livelihoods. Tang et al. [5] showed improvement in the indicators of sustainable livelihoods in rural areas if the villagers are more involved in decision-making and planning regarding the development of rural areas. Dzanku [11], in a study of unsustainable rural livelihoods and poverty in Ghana, stated the factors of population, education, and price difference of production and consumption as the most critical factors determining sustainable livelihoods of rural families suggested improving the entrepreneurial skills of rural households. Diversification of economic activities in rural areas prevents more pressure on environmental resources and the destruction of natural resources and subsequently leads to sustainable rural livelihoods [12]. In a study in China, Li et al. [13] Introduced approaches to achieve sustainable rural livelihoods such as enhancing livelihood capital; narrowing the economic gap between farmers by participating in professional tourism activity; establishing the mechanism of industrial integration, and the development of rural eco-tourism; and coordinating a balanced development of livelihood and environmental quality. Hussain et al. [14] investigate rural livelihoods in the Naltar Valley of Pakistan and showed the dependence of rural households' livelihood on natural resources. Also stated, there is

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a need for alternative sources of income in order to protect the environment and natural resources. The relationship between rural livelihood and natural resources has also been described in Oldekop et al. [15]and Salehi et al. [16] researches.

In this research, the strategy of improving the livelihood of rural people through the potentials of natural resources is studied from the viewpoints of two groups of experts and rural residents. The strategy is finally designed based on the proper exploitation of natural resources, and solutions are presented to improve the livelihood of the rural residents.

In recent years, the villages of the Najafabad region in Kurdistan Province of Iran have encountered challenges such as rural unemployment, lack of economic prosperity, and migration, which were mainly due to the improper livelihood conditions of the rural residents. The promotion of rural livelihood is studied in different researches, but the improvement of their livelihood through the potentials of natural resources has not been considered. Therefore, this research aimed to develop a strategy and provide solutions to improve the livelihood conditions of rural residents in this area.

Materials and Methods

Description of the study area

Najafabad region in Kurdistan Province of Iran is located 35 km southwest of Bijar city (Figure 1). This region has 25 villages and 783 households with 2713 people, of which 1414 and 1299 of them are men and women, respectively. The population under 20 years in the study area is 683 people, the population of 20-29 years is 573 people, and the population of 30-39 years is 465 people. The populations for 40-50 years old and older are 367 and 625 people, respectively [17]. The occupation of the majority of the people is agricultural activity and animal husbandry. The average annual rainfall is 334 mm, and the region's climate is semi-arid according to the Amberge method (2007-2017 years). Most of the rainfall occurs in winter and spring when most of the rainfall in winter is snow. The outcrop of the region is mountainous, and the lands are primarily uneven and sloping.

Methodology

This research method is an applied method, which focuses on improving the livelihood conditions of rural communities, and in terms of data collection, it is an exploratory qualitative and quantitative analysis. The statistical population of this study included rural residents of the Najafabad region and experts familiar with rural affairs in the study area. Experts are the personnel of government organizations related to the rural livelihood in the study area, who work predominantly in organizations and departments of natural resources and agriculture. They have sufficient information about the natural potential of the region to improve the livelihood conditions of rural residents.

According to Cochran's formula and matching with Krejcie and Morgan's table, the sample size was calculated 337 rural residents with 95% confidence level and 5% error probability. These samples were selected by simple random sampling for responding to the questionnaire. Due to the uncertainty of the statistical population for experts, the sample size of experts was determined by available and non-random sampling methods, and 51 experts participated in this study. The questionnaire was designed on a Likert scale and five options from very low (score 1) to very high (score 5). First, the most critical internal and external influential factors of livelihood conditions in the study area were determined, and then the prepared questionnaire was

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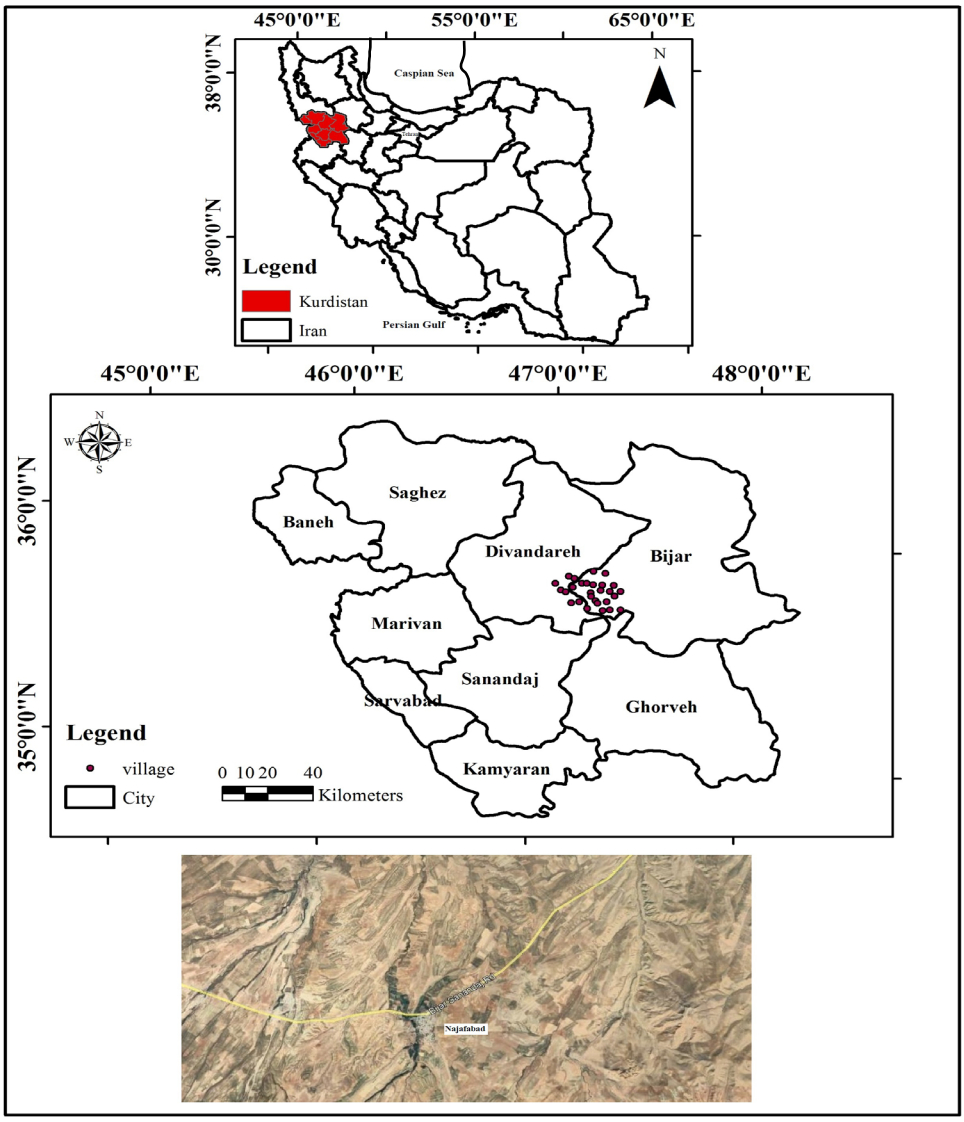

Figure 1) Location of the study area in Kurdistan Province, Iran

provided to the respondents. In the SWOT model, strengths and weaknesses are considered internal influencing factors, and threats and opportunities are considered external influencing factors. The questionnaire items were selected based on field visits and review of previous similar studies, and consultation with experts and spe-

Table 1) SWOT and SPACE Matrix for determination of strategy

SWOT analysis matrix	S- strengths	W- weaknesses
O- opportunities	SO Strategy (opportunities are used to take advantage of strengths)	WO Strategy (by taking advantage of opportunities, weaknesses are eliminated)
T- threats	ST Strategy (strengths are used to avoid threats)	WT Strategy (reduces weaknesses and avoids threats)

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cialists. To assess the validity, the preliminary questionnaire was reviewed by several relevant experts and specialists, and finally, the validity of the questionnaire was approved by deleting and modifying several items. Then, Cronbach's alpha coefficient was used to determine the level of reliability, which is obtained 0.85 for rural residents and 0.82 for experts, and showed the good reliability of the questionnaire. Data analysis was performed after distributing the questionnaires and collecting data.

In this research, the SWOT model was used to collect data and required information. The SWOT model is one of the essential and powerful tools of strategic management used in the analysis and determination of appropriate strategies following external and internal conditions. SWOT analysis aims to build strengths, minimize the negative impact of weaknesses, take advantage of opportunities, and combat potential identified threats [18].

For SWOT analysis, it is necessary to identify the most critical factors in each of the four categories (strengths, weaknesses, threats, opportunities) and consider a list of critical related factors. In the next step, appropriate strategies are identified so that strengths and opportunities are used and exploited, and weaknesses and threats are reduced and avoided. Finally, by reviewing the proposed strategies, the best option is selected [19].

From the viewpoint of this model, an appropriate and efficient strategy strengthens opportunities and strengths and minimizes weaknesses and threats. For this purpose, these factors are in four general cases: SO, WO, ST, and WT. Strategy options are selected from among them [20]. The matrix of threats, opportunities, strengths, and weaknesses is shown in Table 1. At each stage, it is necessary to compare the two factors and identify strategies [21].

Results

General characteristics of the experts

According to the personal data of experts, the average age of the experts was 40.1 years, the minimum and maximum ages were 29 and 54 years, respectively. The majority of them (64.3%) were men. 51% of the experts had associate and bachelor's degrees, 47.1% had master's degrees, and 1.9% had doctoral degrees. The average work experience of experts was 11.4 years, with a minimum of 4 years and a maximum of 28 years of work experience.

General characteristics of the rural residents

According to the analysis, 71.8% and 28.2% of the responding rural residents were men and women, respectively, and the average age of them was 42.2 years that their minimum and maximum ages were 21 and 71 years, respectively. Only 9.2% had a university education, and 59.9% had agriculture and animal husbandry as their main job. In 42.2% of the studied samples, the household dimension was 4 people. 48.2% and 40.6% of them had incomes between 150-200 and 100-150 million Rials per year, respectively; 90.6% of the respondents had no other source of income.

According to the viewpoint of the rural residents, "the presence of local, committed and skilled manpower in the village", "the existence of social cohesion and social solidarity of local people in social and economic activities" and "natural potentials such as suitable rangelands for animal husbandry and variety of rangeland by-products and medicinal plants "with weights of 83.69, 82.23 and 81.25, respectively are the first to third priorities of the strengths for improving rural livelihoods in the Najafabad region. However, from experts opinion, "natural potentials such as suitable rangelands for animal husbandry and variety of rangeland by-products and medicinal plants, "existence of rural service center and

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Table 2) Strengths of improving rural livelihoods from the viewpoint of experts and rural residents

Strengths	Experts			Rural residents		
	Mean	Relative weight	Priority	Mean	Relative weight	Priority
Natural potentials such as suitable rangelands for animal husbandry and a variety of rangeland by-products and medicinal plants	4.04	80.89	1	4.06	81.25	3
Existence of rural service centers and promotion of agricultural education	4	80	2	3.21	64.16	8
Possibility of using women's labor in village economic and social affairs	3.98	79.56	3	3.66	73.19	6
The presence of a local, committed, and skilled workforce in the village	3.96	79.11	4	4.18	83.69	1
Potential for establishing educational, recreational, and sports camps due to the favorable climate	3.89	77.78	5	3.58	71.58	7
Existence of pristine areas, fascinate and beautiful natural landscape of natural resources	3.58	71.56	6	3.77	75.48	5
Increasing the value of the lands of the region in recent years	3.40	68	7	2.98	59.64	10
The existence of social cohesion and social solidarity of local people in social and economic activities	3.09	61.78	8	4.11	82.23	2
Potential of the region for establishing handicraft production site	2.82	56.44	9	3.10	61.92	9
Farmers' awareness regarding the risks of urban life	2.76	55.11	10	4.03	80.52	4

promotion of agricultural education" and "possibility of using women's labor in village economic and social affairs" with weights of 80.89, 80 and 79.56, were determined as the first to third priorities, respectively (Table 2). In this study, "traditional and low-yield use of agricultural and rangeland lands", "the existence of low-interest jobs" and "traditional village structure and non-acceptance for the risk of changing livelihood methods" with weights of 86.27, 85.10, and 80.39, are the first to third priorities of the weaknesses respectively from the experts' viewpoint. According to the viewpoint of the rural residents, "high unemployment rate and low income" with an average weight of 86.62 is the most critical weakness of improving rural livelihood, followed by "low area of agricultural land for rural families." and "inadequate infrastructure and facilities in the village" (Table 3).

The analysis of opportunities for improving rural livelihood from the viewpoint of experts and rural residents is presented in Table 4. "The existence of a favorable vision and serious effort for rural development in the country" and "Providing credit facilities and low-interest loans for agricultural prosperity, animal husbandry and housing improvement" with a weight of 85.10 and 82.67 were the most critical opportunities, respectively, according to the viewpoint of two studied groups (Table 4).

According to the findings, the most critical threat to rural livelihood improvement is determined as "environmental and related

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threats to rural livelihoods such as drought and floods." with a weight of 71.84 and 87.18, by the experts and rural residents, respectively. Then, the "lack of motivation and willingness of young people to work in rural region" is recognized from the viewpoint of both groups in the second priority (Table 5).

According to the results and based on SWOT analysis in the two studied groups, competitive strategy (ST) is obtained (Figure 2), emphasizing the role of strengths and threats. In adopting this strategy, strengths are applied to avoid threats.

In this research, competitive strategy has priority, and its approaches based on SWOT analysis are considered as follows:

1- Training and planning of new methods for the exploitation of water resources in the studied region and planting of drought-resistant species in rangelands and agricultural lands

2- Using committed and educated indigenous persons in education and promotion of environmental culture and protection of soil and water resources

3- Creating motivation in rural youth to stay in the countryside, engage in agricultural activities and earn income by creating related specialized job opportunities

4- Improving the environmental and physical infrastructure to make the willingness of the rural residents to live in the village and reduce migration.

5- Educating and empowering rural women and using their potential in rural economic activities

Table 3) Weaknesses of improving rural livelihoods from the viewpoint of experts and rural residents

Weaknesses	Experts			Rural residents		
	Mean	Relative weight	Priority	Mean	Relative weight	Priority
Traditional and low-yield use of agricultural and rangeland lands	4.31	86.27	1	3.59	71.90	6
Existence of low-interest jobs	4.25	85.10	2	3.94	78.86	4
Traditional village structure and non-acceptance for the risk of changing livelihood methods	4.02	80.39	3	2.77	55.32	10
Inadequate infrastructure and facilities in the village	3.82	76.47	4	4.01	80.16	3
Lack of achievement-motivation in rural residents	3.78	75.69	5	2.91	58.23	9
Weak government planning and investment and lack of financial support for private sector investment	3.53	70.59	6	3.33	66.60	8
Weakness in the education of technology and new strategies for earning rural income	3.25	65.10	7	3.56	71.22	7
The low area of agricultural land for rural families	3.14	62.75	8	4.03	80.52	2
High unemployment rate and low income	2.96	59.22	9	4.23	84.62	1
Low quality of rural housing, especially in the face of natural disasters and occurrences	2.88	57.65	10	3.84	76.73	5

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Table 4) Opportunities of improving rural livelihoods from the viewpoint of experts and rural residents

Opportunities	Experts			Rural residents		
	Mean	Relative weight	Priority	Mean	Relative weight	Priority
The existence of a favorable vision and severe effort for rural development in the country	4.25	85.10	1	3.21	64.27	7
Increasing the attention of government officials to rural employment and development	4.12	82.35	2	3.76	75.25	4
Employing managers and officials familiar with the village and the region in various related management categories	3.98	76.91	3	3.93	78.58	3
Training and use of talented, educated workforce in rural development	3.96	79.22	4	3.43	68.66	6
Providing credit facilities and low-interest loans for agricultural prosperity, animal husbandry, and housing improvement	3.92	78.43	5	4.13	82.67	1
The expansion of social services, such as free insurance for rural residents	3.86	77.25	6	3.98	79.53	2
Government support for investment in small industries and handicrafts through the provision of facilities and incentives	3.43	68.63	7	3.02	60.36	8
Development of communication technology and expansion of mass media to promote the improvement of villagers' livelihood	3.25	65.10	8	3.54	70.74	5
Existence of interest in the private sector to invest in the village	3.08	61.57	9	2.81	56.20	9

Discussion

The importance of the role of villages as a base for achieving sustainable development is considered; therefore, improving the livelihood of rural residents will lead to a dynamic society. According to the findings of this study, "the presence of local, committed and skilled manpower in the village" and "natural potentials such as suitable rangelands for animal husbandry and variety of rangeland by-products and medicinal plants" were recognized as the most important strengths for improving livelihood by the experts and rural residents, respectively.

"Traditional and low-yield use of agricultural and rangeland lands" from the viewpoint of the experts and "high unemployment rate and low income" from the viewpoint of rural residents were the most critical weakness of livelihood. The difference between the viewpoints of the two groups in determining the most critical weakness showed that experts believe in the inappropriate utilization of lands by rural residents, and this kind of exploitation is not in line with improving the livelihood conditions of the villagers. However, in the viewpoint of rural residents, higher unemployment and lower incomes are essential. Of course, this unemployment and low income can be related to the low-efficiency land use and water in rural areas. Also, the high cost of living, low income of rural families, and unemployment in rural areas have been mentioned as land-use change

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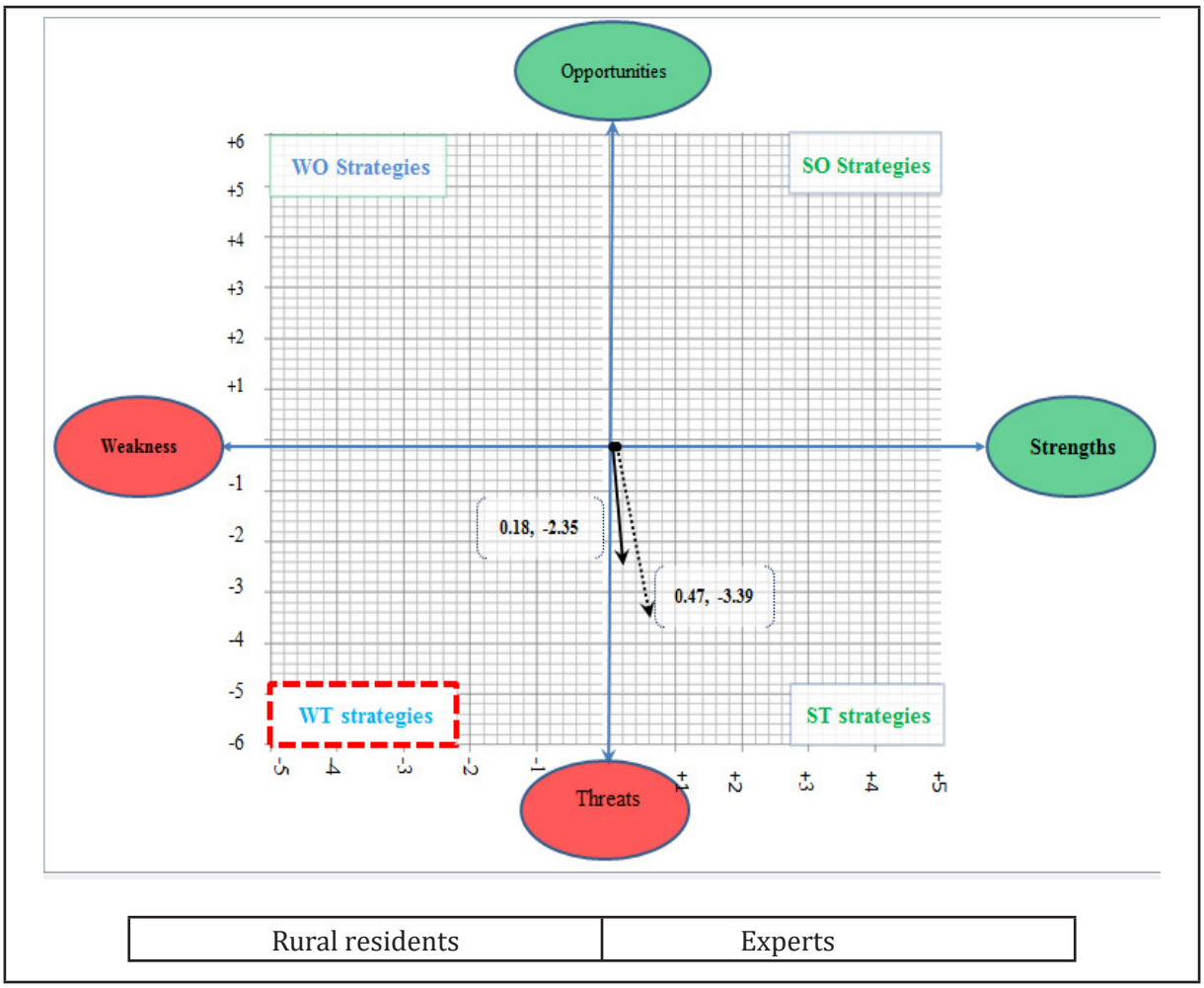

Figure 2) Strategy chart based on SWOT analysis in the two studied groups

factors [22, 23, 24].

Rural areas are characterized by poor infrastructure and communications, a fragile and degraded environment, less access to the market and employment, and greater reliance on traditional farming [25] that consistent with the results of this research. Although, rural development based on agriculture is now obsolete [26].

According to both groups, environmental threats related to rural livelihoods such as drought and floods were recognized as the most critical threats. This shows the importance of these natural and unexpected events and their impact on the livelihood conditions of the villagers. Agriculture is the main axis of livelihood, and unfortunately, most development programs are the only economic pillar of the villages. This issue shows the vulnerability of rural economy influenced by environmental events, that both groups emphasize its importance. According to experts and rural residents' opinion, "the existence of a favorable vision and serious effort for rural development in the country" and "Providing credit facilities and low-interest loans for agricultural prosperity, animal husbandry, and housing improvement" were the most critical opportunities for improving livelihood.

In the study of Asghari Saraskanrud et al. [27], based on SWOT analysis, the offensive strategy was selected as the best strategy for sustainable livelihood in the villages of the central part of Hashtrood does not consistent with the results of the present study. Also, Pakrah et al. [28], in the study and determination of the best strategy for

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Table 5) Threats of improving rural livelihoods from the viewpoint of experts and rural residents

Threats	Experts			Rural residents		
	Mean	Relative weight	Priority	Mean	Relative weight	Priority
Environmental and related threats such as drought and floods to rural livelihoods	4.24	84.71	1	4.36	87.18	1
Lack of motivation and willingness of young people to work in the rural region	4.12	82.35	2	4.05	80.95	2
Increasing the migration trend of rural people in working age	4.06	81.18	3	3.91	78.10	4
Destruction of natural resources through its improper exploitation and consequently environmental problems	3.80	76.07	4	2.69	53.71	10
Lack of programs for the empowerment of youth and women in rural communities	3.78	75.69	5	3.13	62.66	9
Lack of a comprehensive development plan and weakness in government services	3.65	72.94	6	3.80	75.96	5
Low investment security and its late return in the village	3.29	65.88	7	3.44	68.84	6
Lack of inter-organizational coordination and different attitudes of managers	3.22	64.31	8	3.97	79.35	3
No markets for the sale of traditional products, handicrafts, and rural products	2.96	59.22	9	3.21	64.27	7
Lack of education and promotion of new methods of cultivation and earning income from natural resource lands	2.69	53.73	10	3.20	63.92	8

sustainable development of nomadic areas of Iran, aggressive strategy was determined as the best strategy.

In order to improve the livelihood of the study area, the status and role of traditional handicrafts can be considered, and by reviving the old handmade industries, investment conditions will be provided for rural residents. The existence of diversity in rural economic activities and earning income from various activities other than agriculture will lead to the sustainability of rural communities, which has also been explained in the other research [29].

The Natural crises of recent years, especially droughts in the study area, show the need to pay attention to crisis management. In this study, strategies have been adopted to deal with these conditions and provide livelihood stability, including planting crops and rangeland species resistant to these conditions and water resources management. The realization of this issue by the rural residents requires training by experts and related organizations and institutions. This study showed the importance of education and promotion in the sustainable development of the village. This study confirms the results of recent researches [30, 31, 32, 33, 34] that emphasizes the implementation of a set of educational activities, capacity building, and empowerment to improve the quality of network relations of various stakeholders, along with creating social cohesion in dealing intelligently toward ecological, social crises at different decision levels (Local and organizational). Training and learning of new technologies of agriculture and

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animal husbandry will also improve their economic situation, and by applying these techniques, the sustainability of rural communities will be achieved depending on the improvement of their economy. In the study of Mozafarpour [36], educational and extension services were the most important in the sustainable livelihood of the nomads of Esfandagheh from the viewpoint of the experts and beneficiaries. The external manifestation of social education, capacity building, and empowerment activities in the behavior of a local community should be to increase the participatory relationship between the people of that community and better protection and conservation of its natural resources that can be evaluated. In this area, we can refer to studies such as "Evaluating the effect of social education on the development of participatory communication in the local community with the aim of protecting environmental water resources (case study: Stakeholders of Khezrabad Qanat in Yazd)" [35].

Improving the village's infrastructure and coordination of organizations and institutions will lead to the sustainable development of villages in the study area and improve the livelihood of rural residents. For this purpose, related organizations need to have coordination and a high understanding of the conditions. Rural development requires a strong local government and a government with internal stability and a growing civic conscience [37].

Diversification of income sources is considered the driving force of economic growth in rural areas [38]. Therefore, diversification does not mean forgetting and abandoning agricultural activities and consider the use of non-agricultural potentials as a complement to this sector [39]. To improve rural livelihoods, the entrance and use of technology to diversify rural livelihoods seem necessary. Accepting these changes is challenging due to the traditional structure of the village. In the research of Jafari Shalamzari et al. [40], lack of experience and observation are the underlying reason for low adoption in perception and acceptability of rainwater harvesting technology.

Conclusion

Due to the migration of villagers, especially the educated peoples in recent years, it is necessary to pay attention to the potential of this group and plan to use their ability to create employment and improve their living conditions. According to the finding, training, and planning of new methods for the exploitation of water resources, using committed and educated indigenous persons, creating motivation in rural youth, improving the environmental and physical infrastructure in the village and educating and empowering rural women, and using their potential were considered as a solution for achieving to competitive strategy and sustainable rural development in the Najafabad region of Kurdistan Province.

With the improvement of infrastructure conditions and facilities, the rural residents have more hope and motivation to work and stay in the village, and there is the possibility of reverse migration. Also, in order to rural development, there is a need for proper planning and management. The adoption and implementation of this planning will not be possible without coordinating the relevant executive bodies. Therefore, according to the results of this study, in order to improve the livelihood of the rural residents in the study area, it is necessary to manage water resources, use drought-resistant species in rangelands, teach methods for the protection of water and soil resources, and the proper exploitation of these resources with the potential of trained indigenous persons.

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