Spatial Analysis of Rural Settlements Development Using Sustainable Development Approach
(Case Study: Villages of Khorramabad County)

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Abstract

Purpose - Spatial equilibrium at different stages, especially at the district level, is the most significant purpose of spatial development planning that is the focus of attention in Iran's policy and planning system. In this regard, spatial recognition and analysis of the components and the criteria of eligibility are significant in the context of the existing development concept. By identifying the eligibility components of rural settlements, it is possible to identify low eligibility of spatial areas affected by adverse socio-economic and spatial processes. Accordingly, the research team attempted to examine this criterion in the district of Khorramabad.

Design/methodology/approach - The research method was descriptive-analytical. The statistical population was the villages of Khorramabad county (Given the frequency of a statistical population, 150 villages out of 647 were selected as the sample using stratified-random sampling. The required data (35 indices) were collected by the library method (using population and housing census and statistical yearbook of 2016). Data analysis was done using FANP model (for summarizing the indices and determining their weight), VIKOR technique (for ranking the villages), and finally, path analysis test for determining the influence degree of the factors on the level of development. According to the research findings, the following results were obtained;

Finding - The process of development in Khorramabad county, is in relatively in good condition. In this process, Integrated development has not been considered. Some components (access to services, economic participation and, economic welfare) are in good conditions while some other components (agricultural production, education and population growth) are not. These conditions resulted in a decline in some villages. The level of development in Khorramabad county has been confronted with spatial inequality not just in terms of topic-specific but an area-specific aspect. This inequality resulted in the formation of the center-periphery spatial pattern that causes the marginalization (and deterioration) of disadvantaged villages.

Key words - Spatial analysis, Rural settlement development, Sustainable development approach, Khorramabad County.

Paper type- Scientific & Research.

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1. Introduction

Balanced and equal development of the regions is a significant prerequisite to achieving economic stability and integrated development. Regional inequalities in many countries, as a major challenge facing development, have created a structural imbalance and has imposed consequences on factors such as immigration, unemployment, poverty, increase of the crime, regional and ethnic discontent, rural eviction and marginalization, security problems, divergence of marginal areas, etc. (Afrakhteh, Riyahi & Javan, 2015). In this way, the existence of quantitative and qualitative inequalities between urban and rural areas and their deteriorations in recent decades have seriously required to solve the problem and to adjust inequalities. The paradox between the qualitative aspects of living in cities and villages and the relocation and emigration of the rural groups to cities in the hope of enjoying more diverse and convenient facilities, not only in the rural areas but also in the urban areas have caused numerous problems (Saeedi, 2010).

The effectiveness of any planning for rural areas development and the reduction of inequalities depends on identifying these areas in terms of their status quo and the level of development, exploring local and regional differences in terms of development, explaining the effective factors in development, and finally trying to solve the problems and providing the requirements to address the existing inequalities in the form of a coherent and integrated housing system (Pourjafar, Mahmoodinejad, Ilka Shahin, & Aghebat Bekheir, 2012). Using environmental, socio-cultural, economic, and physical indices can provide a good basis for locating the districts as well as resolving their problems to reach economic well-being and social health and; therefore, to achieve development (Maleki, Mokhtari & Taheri Keshtkar, 2017).

The rural development and its conceptual and operational definition have been affected by paradigm shifts from the past to the present and have always been changing. From the 50s on, rural development was affected by the view of classical, neoclassical, structuralist, post-structuralist sociologists, etc. from a single area to an integrated one. In recent decades, the sustainable development approach focusing on the principle of environmental protection has developed a new direction for policymakers and planners. The key point of this view is the focus on human-centered rather than the technical-oriented aspect. From this perspective "Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission, 1987). In this regard, rural areas have different conditions. Some districts are in balance regarding the respect for life principles and some of or most of them have unstable conditions in terms of different capitals including natural capital. Studies have shown that some villages on the periphery are in a state of decline and destruction.

The rural district of Khorramabad county is one of the areas where the conditions are unsuitable in terms of the sustainable development approach. Divergence in development in the rural areas has caused an obvious gap between rural settlements and urban areas in this county. However, this divergence can be seen in rural areas as well. The villages near Khorramabad county have better conditions than the villages surrounding this county. However, this is a relative nature. Because some of the villages near the city are facing environmental and social problems. Initial exploratory studies have shown that rural areas of the county have suffered from damages such as the exit withdrawal of active labour forces, the economic stagnation, the disruption of the age and sex structure of the population, the destruction of vegetation, overexploitation of water and soil resources, and so on. As a result, there is no clear perspective for the villages of Khorramabad county.

Accordingly, due to the vital role of rural settlements in territorial development, the present study seeks to identify the key and effective indicators of sustainable development based on the sustainable development approach, related literature review and global experiences in a systematic framework. While measuring the level of development, a spatial analysis of the development level in Khorramabad county provides the basis for planning. In this regard, this study tries to respond to the following key questions:

- what is the level of sustainability in the villages of Khorramabad county based on sustainable development components?

- What are the differences and similarities between the villages based on the final Index of sustainable development?
- What are the factors affecting the final index of sustainable development?

2. Research Theoretical Literature

Different views and theories have been proposed concerning the development including the quality of life approach, social exchange, integrated development, and sustainable development. In this study, the focus is on the sustainable development framework. Nowadays, the sustainable development approach as a framework for analyzing the sustainability of the human settlements system in general and rural settlements in particular has a high value. The concept of sustainable development consists of subjects such as the empowerment of the very poor people, the idea of the self-reliant- development, the idea of cost-effective development, health control, appropriate technology, food independence, healthy water, and housing for all**.** Sustainable Development is a concept in which people's initiative is needed and human well-being is incorporated (Yarihesar, Badri, Pourtaheri & Faraji, 2013). Sustainable development ensures the improvement of the quality of life in all aspects by applying the four principles of "Integrity, equality, adaptation, and the acceptance of limitations" (Bond, 2001). According to development experts, "Sustainable developmen is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Indeed, sustainable development is a combination of two important terms of sustainability which stands for durability, and development, the idea of the development of abilities and talents (Duran, Gogan, Artene & Duran, 2015). The European Union believes that in addition to addressing the realization of economic, social, physical and spatial development, support, and improvement of environmental conditions is critical to meet the needs of present and future generations. Balance is a factor that can and should ensure the the development of society as a whole (Glasbergen, 2004).

Sustainable development takes place when alongside the economic growth, the productivity and employment (economic rationality), meeting the basic needs of society, self-reliance, participation and equality (social desirability),

ecological capacities, biodiversity and natural resources (ecological acceptability) are reserved. Summing up the various definitions and concepts of sustainable development shows that sustainable development is not a fixed and static concept but a continuous and evolving movement of adaptation in which the utilization of the resources for the investments and the orientation of technology development and orientations for the development of technology are designed to meet the potential and actual needs of human beings. This concept is human-centered approach and includes all aspects of human life (Dixon, 2003).

Sustainable rural development is a kind of development that tries to alleviate the pressures and establish a sustainable economic, social, physical-spatial, and environmental system in the rural areas by considering the dramatic developments in these regions. The most important developments are sustainable agricultural development, sustainable rural institutions, public participation, the creation of empowering environments, paying attention to the role of women in development, and more emphasis on environmental considerations (Ahmad Beigi, 2009). Rural development involves sustainable social, economic, and environmental changes designed to increase long-term well-fare throughout the society (Dobie, 2004). In many countries, rural development is a significant issue for achieving sustainable development in balance with urban society (Sakurai, 2006). The realization of such development calls for changes in the institutional, technical, personality, and value structures that causes fundamental changes in the social structure and personality traits of the villagers. The outcome should meet the basic needs of the villagers to enhance the quality of life, and to enhance the self-reliance and freedom of choice and action of the villagers (Azkia, & Dibaji Faroushani, 2016).

In view of the above, the definition of sustainable rural development is as follows: Sustainable Rural Development is a comprehensive, balanced and endogenous process whereby the ability of rural communities to supply material and spiritual basic needs and effectively control the forces shaping the local housing system (ecological, social, economic, physical, spatial, institutional, and territorial) Grows and excels (Rokneddin Eftekhari & Aghayari Hir, 2007).

Development is the emerging phenomenon of the twentieth century that began in 1917 in the Soviet

Union (Lehtonen, 2004). In the 1950s and 1960s, development meant economic growth, and industrialization was a key feature of development. In 1970, the traditional view of rural development, which was influenced by economic growth theory, changed the content and the political and social issues entered the development debate. (Roldán & Valdés, 2002). In the 1980s, the spatial aspect in the planning became important. The mission of spatial planning was achieving social justice according to equitable access and spatial distribution of the development achievements establishing and strengthening links and establishing spatial integration. Since the 1990s, development debates entered the sustainable development approach. Sustainable development is the management of decent utilization of resources along with meeting the needs of the current and future generations.

In this regard, the literature review of this study follows two approaches: spatial development and sustainable development.

The following studies have been conducted on the spatial planning approach:

Saeedirad, Rahmani, Manshizadeh & Jalali (2014) in analyzing the level of rural settlements around the city of Astrynan, concluded that: Inaccessibility of services and Unsuitable distribution of services and infrastructure at the villages of around the Astrynan cityare affected by internal and external forces. These factors have hampered the proper Rural Development process and as well as having a regular hierarchical network in the area. Zarei (2016) in the spatial analysis of development indices in the rural areas of Dashtestan county has concluded that the balanced development of rural areas of Dashtestan county needs the revision of resource allocation and the equal distribution of opportunities with spatial planning approach in deprived areas. Maleki et al. (2017) measured the level of rural development in Kermanshah rural districts. The results show that there is a significant gap between Kermanshah rural districts in terms of development level. As such, rural districts of Doroud Faraman, Razavar, and Miyandarband have the highest level of development in Kermanshah County in terms of selected indexes and Haft Ashiyan and Osmanvand have the lowest

level of development among the 13 rural district of Kermanshah county.

Some studies have been conducted using a sustainable development approach, the most important of which are mentioned below. Riyahi, Azizpour & Nouri (2016), who analyzed the environmental sustainability level of rural settlements in Khorramdareh county, concluded that environmental sustainability in the area under study was at a semi optimal level. Among the various dimensions affecting environmental sustainability are the physical dimensions with the highest effect and the economic, social, and environmental dimensions, respectively.

Ziaian, Firouzabadi Anvari& Velaei (2015) in a study on ranking the development of rural areas in Marhamat Abad district of Miandoab county concluded that due to the inequality in the level of development of rural areas of Marhamat Abad district, it is necessary to adopt relevant programs on balanced development.

Rokneddin, Eftekhari & Aghayari Hir (2007) studied the classification of sustainability of rural development in Hir district. The results showed an unfavorable situation of sustainability in the study area. The development in this area is such that most of the settlements are in the middle class. Concerning the factors affecting sustainable development, statistical analysis on the five factors of the natural situation, distance to the center of Bakhsh (district), population, employment, and literacy revealed that the factor of the natural situation and the population of villages have the highest correlation with the sustainability of rural development.

In this research, based on the theoretical framework of sustainable development, the rural development system of Khorramabad county has been evaluated. This has not been examined in the geographical area under study. Due to a comprehensive look at evaluating the level of development, evaluating the factors affecting development, and using the Structural Equation Modeling (SEM) this study is somewhat different from other research in this regard.

Table 1. Summary of literature review
(Source: Research findings, 2019)

Approaches	Attributes. Principles	Researchers
Spatial Development	–Integrity –Regional balance –Proper distribution of activities –Maximum use of capabilities	Saeedirad et al (2014); Zarei (2016); Maleki et al (2016); Ebrahimzadeh, Mousavi & Kazemizad (2012); Firoozi, Mohamadi Dehcheshmeh & Mokhtari Cholcheh (2015); Kalantari, Irvani & Vafaiejnejad (2003); Teymouri, Shakoor & Gandomkar (2016); Taghvaei & Saboori (2011); Hekmatnia & Mousavi (2013); Yu, Zhang, Sun & Huang. (2009); Madu (2006); Salvati, Venanzoni & Carlucci. (2016); Antonescu (2012).
Sustainable Development	– Variety –Compatibility –Effectiveness –Equality –responsibility –Ecological balance –Economic balance –Social balance –Physical-spatial balance	Ziaeian et al. (2015), Beig Mohammadi & Azadi (2014), Eftekhari and Aghayari Hear (2007), Khosrobeigi, Shayan, Sojasi Qeidari & Sadeghloo (2011), Kaboudvand, Miedamadi, Farajolah Hoseini & Paseban (2014), Yarihesar et al. (2011), Amanpour, Mokhtari Chelcheh, Hosseini Kohnouj & Veisi (2015), Rahmani Fazli, Darvishi, Bigham & Biranvandzadeh (2014), Rezvani & Sahneh (2012), Shayan, Ghanbari & Bazrafshan. (2016), Seminova et al. (2016), YIlmaz, Dasdemir, Atmis & Lise (2010), Roldan & Valdez (2002); Groninger, Ruffner & Walters (2013)

In the present study, according to the theoretical basis and the principles, criteria, goals, components, indices of rural sustainable development, and finally considering the characteristics of sustainable systems (economic, social, environmental, physical, spatial sustainability, and so on) a conceptual model can be presented to explain and analyze the spatial measurement of rural development. Designed with the rural development approach, this model has been used as a framework for developing research components and indices (Figure 1).
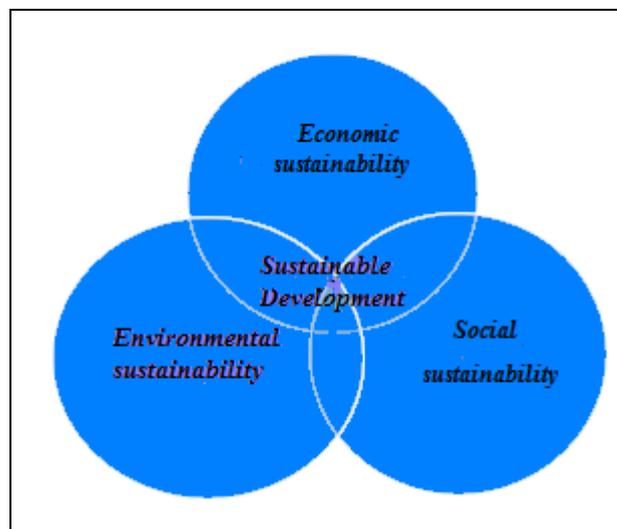
Figure 1. Conceptual model of research
(Source: Research findings, 2019)

3. Research Methodology
3.1. Geographical Scope of the Research
Khorramabad county with a mathematical position of longitude 48 degrees and 22 minutes and latitude of 33 degrees and 29 minutes at an elevation of 1171 meters is investigated. This city runs from north to Nurabad, south to Poldokhtar, west to Kuhdasht and east to Borujerd with 4 districts and 17 rural districts. According to the Census of 2016, the population of Khorram Abad county was 506471. Khorramabad county has a moderately

arid and temperate central climate. The most prominent feature is the temperate climate, the reduction of annual temperature differences, and

the occurrence of frost. The major economic activity of the villagers is agriculture and animal husbandry.
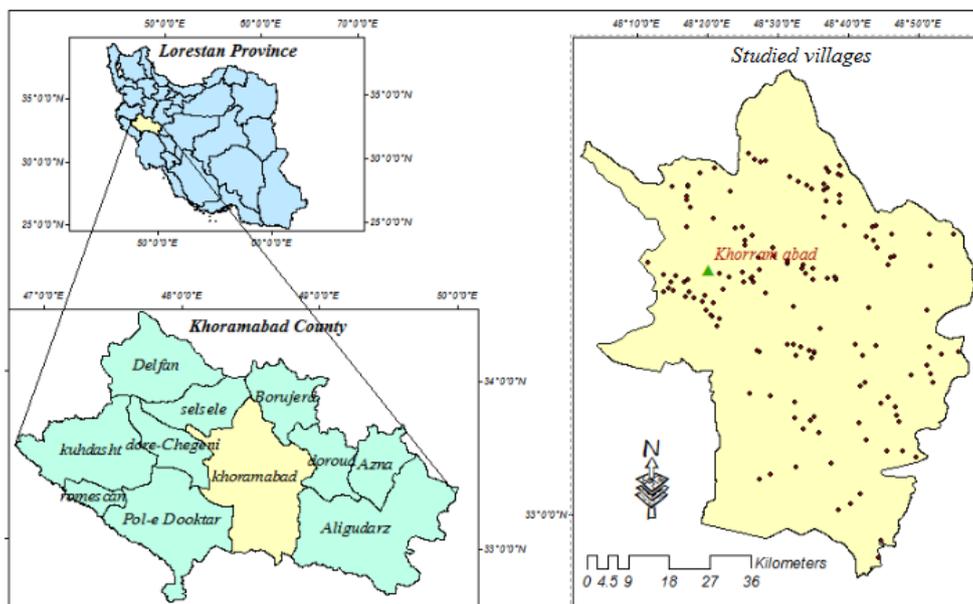

Figure 2. Location of the study area
(Source: Research findings, 2019)

3.2. Methodology

The methodology of the study is quantitative based on deductive reasoning. The type of research method is data processing and its purpose is practical. The statistical population consisted of the villagers of Khorramabad county. Considering the extent of the study area and the high frequency of villages (including 647 inhabited villages), 20% of the villages (equal to 150 villages) were determined according to the estimated method (based on a survey of the sample size of similar

surveys). Considering the spatial differences, a stratified random sampling method was used to select the samples. Firstly, according to the geomorphologic factors, the villages were classified into three categories: mountainous, downhill, and lowland. Secondly, in each geomorphologic area and based on the population, the villages were classified into three categories: large, medium, and small. Finally, according to the ratio of villages based on the considered criteria the number of villages was determined and selected by random sampling.

Table 2. Number of villages under study
(Source: Research findings, 2019)

Village's situation	Total	Number of sample villages	Number of villages with high population	Number of sample villages	Number of villages with medium population	Number of sample villages	The number of villages with a population less	Number of sample villages
lowland	153	36	52	12	73	17	28	7
downhill	168	39	61	14	75	17	32	8
mountainous	326	75	141	32	149	34	36	9
Total	647	150	254	58	297	68	96	24

Thirty-five objective indices were used from the statistical yearbook population and housing census of 2016 to study the development of rural settlements in Khorramabad county.

The process of selecting these indices was as follows:

A) by studying internal and external studies in the field of rural development, the indices in these studies were extracted and evaluated from the experts' perspective.

B) among the selected indices, some were excluded from the study due to their being inaccessible and inadequate data at the villages under study.

C) Finally, 35 indices were selected (Table 3).

Table 3. Indicators studied

(Sources: Hekmatnia and Mousavi (2013), Ziaian et al. (2015), Beig Mohammadi & Azadi (2014), Roknoddin Eftekhari and Aghayari Hir (2007), Amanpour et al (2015), Rahmani Fazli et al (2012), Teymouri and Et al. (2016), Rezvani & Sahneh (2012), Seminova et al. (2016); YIlmaz et al. (2010); Yu et al., (2009); Pichs, Swart, Leary Ormond (2000))

Dimensions	Index
environmental	ratio of cultivated land to total land- Per capita water lands- Per capita dryland - Per capita garden land- Per capita gardens and landscapes- Livestock per capita- Percentage of villages with landfill-Percentage of the population access to sewage network-Percentage of settlements with the sanitary waste collection method
social	Family size-Growth rate -total literacy rate-Literacy rate for women- Access to electricity network-Gas network -Sanitary water supply network -Access to training centers -Access to cultural centers - Access to sports centers -Access to office centers -Access to religious centers - Access to political centers -Access to service centers -Access to communication centers -Access to health centers -Access to business centers
Economical	Activity rate- Dependency Ratio- unemployment rate- Per capita land -Agricultural employment rate- Industry employment rate- Service employment rate- ratio of housing to total households- Ratio of durable housing to total housing

The data were obtained by a documentary method using the General Census of Population and Housing and Statistical Yearbook of Lorestan, 2016. The following techniques were used to analyze the data:

A) FANP model: This model was used to summarize the indices and to determine their weight. The following process was implemented within the framework of the model:

A-1) as the first step, the factor analysis model was used to summarize the indices and transform them into factors. To this end, Lisrel was used to run the model;

A-2) In the second step based on the goals the weight of each index was extracted using ANP model. Matlab software was used due to the necessity of forming a matrix.

B) VIKOR model: This model is used for ranking and classifying the villages according to the development indices.

C) Path Analysis Test: Lisrel software environment test was used to measure the effect of each factor on the final index of rural development.

4. Research Findings

4.1. Determining the development level of rural settlements

Using factor analysis, 35 indices were reduced to 6 final factors that explained 68.26% of the total variance. Figure 2 shows the factor loadings for each of the indices. Factor loading is a value between one and zero that shows the strength of the relationship between the factor (latent variable) and the observable one. If the factor loading is less than 0.3, the items are not valuable and should be deleted. If the factor loading is between 0.3 and 0.6, it is acceptable while being greater than 0.6. it is very valuable. Figure (2) and Table (4) show the factor loadings obtained for each of the indices.
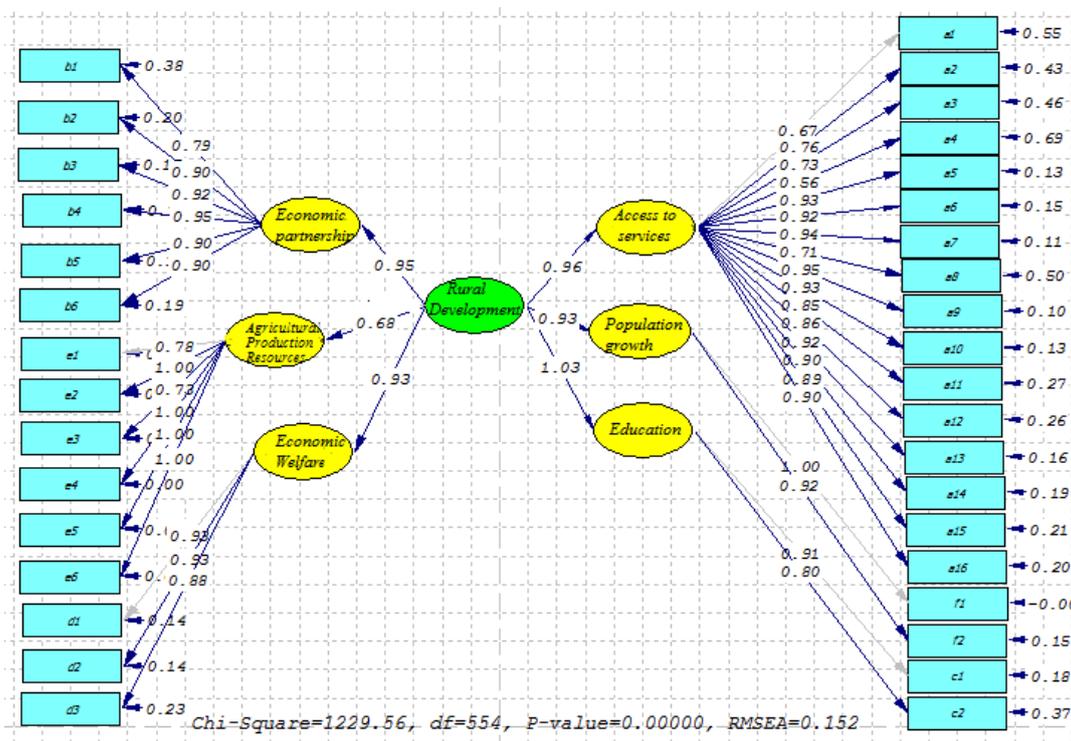
Figure 3. Factor analysis in standard coefficients mode
(Source: Research findings, 2019)

Table 4. Factors Extracted by the Amount Factor Loading and Percentage of Variation by Each Factor

Bartietts= 2965.476   KMO= 0.820

(Source: Research findings, 2019)

index	Factor loading	Percentage of variance change by each factor	Factor
	0.667		
Access to training centers	0.766		
Access to cultural centers	0.733		
Access to sports centers	0.561		
Access to office centers	0.936		
Access to political centers	0.922		
Access to health centers	0.942		
Access to service centers	0.711		
Access to business centers	0.956	26.38	Access to service centers
Access to communication centers			
Access to religious centers	0.933		
Access to the gas network	0.851		
Access to the sanitary water network	0.861		
Access to electricity network Access to the landfill,	0.923		
Access to the sewer network,	0.902		
Access to sanitary waste collection	0.892		
	0.901		
unemployment rate	0.791		
Activity rate	0.903		
Dependency Ratio	0.924	14.16	Economic partnership
Agricultural employment rate	0.951		
Industry employment rate	0.905		
Service employment rate	0.909		

index	Factor loading	Percentage of variance change by each factor	Factor
Livestock per capita	0.885		
The ratio of housing to total households	0.932	10.22	Economic Welfare
Ratio of durable housing to total housing	0.933		
family size	1	3.12	Population growth
Growth rate	0.921		
Total literacy rate	0.912	5.76	Education
Literacy rate for women	0.806		
The ratio of cultivated land to total land	0.781		
Per capita gardens and landscapes	1		
Per capita land	0.730	8.62	Agricultural production resources
Per capita water lands	1		
Per capita dryland	1		
Per capita gardens	1		

Figure 3 shows the value of t- statistics. The confidence level of factor loadings is examined using *t*-test. If *t*-statistic is outside the range -1.96 to +1.96, the model is significant, which shows that all factor loadings are significant at the confidence level of 0.95. The calculated *t*-value for each of the indices is greater than 1.96 and , thus, the factor loadings at 0.95 is significant. Moreover,

calculated *t*-values for each of the factor loadings of latent variables (access to services, population growth, education, economic welfare, agricultural production resources, and economic participation) are above 1.96. Therefore, it is possible to show the convergence of the studied indices for measuring the concepts at this valid stage.
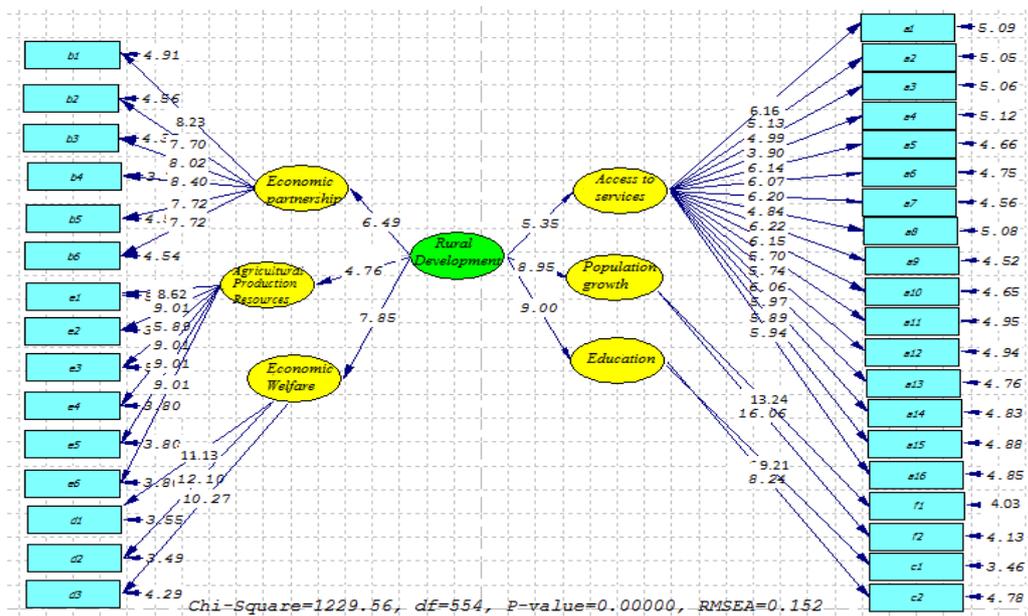

Figure 4. Factor Analysis in a Significant State (t-value)
(Source: Research findings, 2019)

Then, in the framework of FANP model, the factors extracted from factor analysis and their indices

were analyzed using ANP model and their final weight was calculated according to Table 5.

Table 5. Final weight of the studied indices
(Source: Research findings, 2019)

index	Significance factor	Final weight	Percentage	Index	Significance factor	Final weight	Percentage
family size	0.0148	0.0149	1.48	unemployment rate	0.0288	0.0289	2.89
Access to the sanitary water network	0.0149	0.0149	1.49	Access to gas	0.0291	0.0292	2.91
Activity rate	0.0152	0.0153	1.52	Access to sanitary waste collection	0.0301	0.0302	3.01
Access to electricity network	0.0155	0.0155	1.55	Per capita garden land	0.0316	0.0317	3.16
Industry employment rate	0.0157	0.0158	1.57	Percentage of women literacy	0.0322	0.0322	3.22
Access to religious centers	0.0169	0.0169	1.69	Percentage of total literacy	0.0341	0.0342	3.41
Access to cultural centers	0.0178	0.0179	1.78	Per capita dry land	0.0351	0.0351	3.51
Dependency Ratio	0.0179	0.0179	1.79	Percentage of service employees	0.0374	0.0374	3.74
Access to service centers	0.0181	0.0182	1.81	Ratio of cultivated land to total land	0.0389	0.0390	3.89
Access to communication centers	0.0188	0.0189	1.88	per capita Livestock	0.0402	0.0403	4.02
Access to business centers	0.0192	0.0192	1.92	Per capita watery lands	0.0428	0.0428	4.28
Access to the landfill	0.0195	0.0196	1.96	Percentage of agricultural workers	0.0432	0.0433	4.32
Access to political centers	0.0211	0.0211	2.11	Ratio of durable housing to total housing	0.0438	0.0439	4.38
Access to training centers	0.0225	0.0226	2.25	Ratio of residential unit to household	0.0441	0.0442	4.41
Access to Centers of Excellence	0.0231	0.0232	2.31	Per capita gardens and landscapes	0.0444	0.0444	4.44
Access to the sewer network,	0.0266	0.0266	2.66	Growth rate	0.0452	0.0452	4.52
Access to sports centers	0.0268	0.0269	2.68	Per capita arable land	0.0453	0.0454	4.53
	0.0272	0.0272	2.72	total	1	0.99	100

Then, each of the indices was integrated after gaining the final weight. VIKOR technique was used to integrate and rank the villages under study. The results of this ranking are presented in Table 6.

Table 6. Ranking of villages using the VIKOR technique
(Source: Research findings, 2019)

Name of the village	Index Q	Rank	Name of the village	Index Q	Rank	Name of the village	Index Q	Rank	Name of the village	Index Q	Rank
Masur	0.012	1	Dare Bijan	0.047	41	Khalilan Paien	0.057	81	vardahdeh	0.070	121
Dehmohsen	0.012	2	Kavekali	0.047	42	Charkhestane	0.057	82	Seiednar	0.071	122
Darai	0.012	3	Chamghorgh	0.047	43	dehnosoki	0.057	83	Najaf Abad	0.071	123
Dinarvand Bala	0.013	4	Dinarvande Paien	0.048	44	Fath Abad	0.057	84	Lalari Yek	0.072	124
Robat Namaki	0.015	5	AsgarAbad	0.048	45	Amir Abad	0.057	85	Paitakhte Yek	0.073	125
Tappeh Goji	0.018	6	Pasil	0.048	46	Heydar Abad	0.057	86	Yek Borje	0.073	126
Razan	0.021	7	Sarabe Jaldan	0.048	47	Chenar Kal	0.058	87	Vera Zardi	0.074	127
Sorkhe Deh Paien	0.023	8	Zarin chogha Bala	0.048	48	Medbe	0.058	88	Parelah	0.075	128
Sarab changaie	0.027	9	Paghale	0.049	49	Ghaleno	0.058	89	Akbar Abad	0.075	129
Pirged	0.029	10	ayazAbad	0.049	50	Dehno Karim	0.058	90	Gezleh	0.075	130
Tir Bazar	0.030	11	Kasian Rostamkhani	0.049	51	Jolakamar	0.058	91	CheshmePapi	0.076	131
Eskin Olia	0.031	12	Ayoshane Seil	0.049	52	Shabandar	0.058	92	partpil	0.078	132
Seif Abad	0.032	13	Chenar Shore	0.049	53	dehno	0.058	93	kolagah	0.078	133
Poshte Jazaeri	0.033	14	Dehsefid	0.049	54	silreza	0.058	94	dahga	0.082	134
Dehno Pirejed	0.033	15	Sarabe Ganjali	0.049	55	Ghasem Abad	0.058	95	Rozgirah	0.083	135
Koh Mine	0.035	16	Kargane	0.049	56	Golemkabod	0.059	96	Mahtar	0.085	136
Deh Noroz	0.036	17	Abshabandar	0.050	57	Shekar Abad	0.059	97	Regsefid	0.087	137
Dolat Abad	0.039	18	Gilvaran Paien	0.051	58	Chaghahoroshi	0.059	98	Poshtkereh	0.088	138
Sheraf Bag	0.041	19	Bade	0.052	59	Cheshmedareh	0.059	99	Kornokar	0.091	139
Dolatshahi	0.041	20	Dareh Abas	0.052	60	Sarab elias	0.059	100	beralike	0.093	140
Chamanjir	0.041	21	Zard abad	0.052	61	Khelaj dareh	0.059	101	sarreg	0.096	141
Mian Gelal	0.042	22	Kalechobe Bala	0.053	62	Nomale	0.059	102	dafkandar	0.096	142
Khanjankhani	0.042	23	Ghnat Kasian	0.053	63	Mehrenar mohamad	0.059	103	Saleh hamid	0.098	143
Kahriz	0.042	24	Cheshme Ali	0.053	64	Khamsiane Rishsefid	0.059	104	sayerem	0.100	144
Mahdi Abad	0.042	25	Sorkhe Lize	0.054	65	BangPileh	0.059	105	Kolabti	0.103	145
ZahedShir	0.042	26	Milmilk	0.054	66	Polhava	0.060	106	Karbostan	0.105	146

name of the village	Index Q	rank	name of the village	Index Q	rank	name of the village	Index Q	rank	name of the village	Index Q	rank
CheshmeParian	0.043	27	Chaghabal	0.054	67	HaftCheshmeh	0.061	107	Khangah	0.106	147
Tajere Sadat	0.043	28	Khamsiane Paien	0.054	68	Khane Chobi	0.063	108	totChehre	0.110	148
Sarab Pardeh	0.044	29	Bidhol	0.055	69	Minoo Bala	0.063	109	Rozmianaki	0.114	149
Remele	0.044	30	Pirmahi	0.055	70	sokeh	0.064	110	gandabeh	0.115	150
Gilavand	0.044	31	Bidgije Yek	0.055	71	Talkestan	0.065	111	$Total\ development\ =$ $\frac{Total\ index\ Q}{Number\ of\ villages}$=0.056		
Paraponeh	0.045	32	Pilgah	0.055	72	Sarabe Kian	0.065	112			
Belilvand	0.045	33	tahmasebi	0.055	73	Cha Bagh	0.065	113			
Chenar Kheiri	0.045	34	Sarabe Maleki	0.056	74	Totdar	0.066	114			
Tangpanj	0.045	35	zaliab	0.056	75	Gareh	0.067	115			
Dare Hendian	0.045	36	Dehsefid Bala	0.056	76	dehsefid	0.068	116			
Sangtarashan	0.045	37	Shoja Abad	0.056	77	Bandjoob Do	0.068	117			
Badie se	0.045	38	Koloy	0.056	78	Khosrokhani	0.068	118			
Sarabe Robat	0.046	39	Girchan	0.056	79	Takaneh	0.069	119			
Bahramjo	0.046	40	Shirkhani	0.057	80	Zarinjoo	0.069	120			

Measuring the level of rural development in the district- Table 6 shows the ranking of the villages under study in terms of the level of eligibility. Among the 150 villages examined in Khorramabad county, Masour village with the coefficient of 0.020 has the highest level and ten villages of Dahmohsen, Darayi, Dinarvand bala, Tappeh Gaji, and Robat Namaki with coefficients 0.02, 0.023, 0.026, 0.027, and 0.028 are ranked second to sixth, respectively, and are known as developed villages. It could be said that all 6 villages, known as developed villages, are the villages of the center of the rural district. Besides, due to their central location, they have higher eligibility level than other villages. Moreover, these villages and most of the developing villages have been settled in the lowland areas and largely part of the populated villages of the county. This indicate that these villages have good access to economic, social, and cultural services. In contrast, the villages that are known as underdeveloped villages including Gandabeh, Roozmianki, Toutchehreh, Khangah, Karboustan, Kolabti, and Sirom are in the lowest level, or less developed. Most of them are mountainous and have a smaller population. Besides, due to their distance from the main

centers, they do not have good access to their required services

Evaluation of the Sustainability of the Total District- Table (6) shows the ranking of the villages according to VIKOR model. According to this model, Q index shows the ranking of the villages in the development process, ranging from zero to one. The closer this to zero, the more developed the village is and the closer to one, the level of development decreases. To obtain the total development rate of the villages in the study area, the sum of the Q index is divided by the total of villages (150) and the average development in the district as a whole is obtained. The average development in the total study area is 0.056. The mean level of development shows that the development in the whole area is at an average level. Indeed, it can be said that the villages under study in Khorramabad have a moderate level of development.

In Table 7 below, for a better view of the development level of the villages under study, they were classified into five groups of underdeveloped, less developed, medium-developed, developing and developed villages based on the value of Q. As the table shows, villages with Q-index of 0.08 to

0.1 were identified as underdeveloped villages, and 17 out of the 150 villages were classified in this group. The villages with a Q-index of 0.06 to 0.08 are identified as the less-developed villages among which 28 of the 150 villages are in this category. Villages with Q-index of 0.04 to 0.06 are medium-developed with 87 villages. Most of the villages under study are in this group. The fourth group of villages with a Q-index of 0.02 to 0.04 is known as developing with 12 villages . Finally, the villages with the Q-index 0 to 0.02, which are classified as the developed villages, have 6 villages.

Table 7. Classification of Total Area Development
(Source: Research findings, 2019)

Number of villages in each group	Q Index value	Development status
Under developed	0.08-0.1	17
Less developed	0.06-0.08	28
Medium- developed	0.04-0.06	87
Developing	0.04-0.02	12
Developed	0.02-0	66

Map 2 shows the spatial distribution of villages according to the level of development. As it is seen in the map, the spatial distribution of development in the rural districts of Khorramabad has not been homogeneous and in some districts (west of the county) the developed villages are concentrated and dense. Instead, they are located in the northern, central, and eastern regions with medium-development. Moreover, deprivation and isolation have a significant percentage of the villages located in the south of the county. Overall, if the whole county is divided into the northern and southern parts, one can see that the northern part of the county is more developed and the southern part is less developed or undeveloped. Indeed, the mountainous and low population of these villages caused, on the one hand, insufficient population thresholds to provide many services and, on the other hand, not only hamper the access of villages to the services of other area but also challenge the spatial organization of the villages. Overall, the results in Map 2 show that the spatial distribution pattern of development in the rural districts of Khorramabad is mainly clustered due to demographic, service, educational, economic, and productive factors. Moreover, the spatial pattern of development in Khorramabad shows the imbalance in the spatial structure and polarization of eligibility of the rural areas in such a way that the disruptions in the performance of the spatial system of the villages of Khorramabad with the

polarization of the deployment of activities and services in these area is obvious. Accordingly, if the development of rural areas in the city is ignored, the resources and capabilities of these areas will be lost and the villages will be evacuated.

4.2. Analyzing the extent to which the factors affect the development of rural areas

Figure 4 shows the standardized coefficients, correlation coefficients and intensity of the relationship between variables of agricultural production resources, education, and access to services, economic welfare, economic participation and population growth with rural development variable. The intensity of the relationship is a between zero and one. The closer this to one, the stronger the relationship will be. As can be seen in Figure 4, the intensity of the relationship between the variable of access to services and rural development is 0.95. This value is 0.94 for the economic welfare and economic variables, 0.71 for agricultural resources, 0.68 for education, and 0.56 for the population growth. The variables of access to services, economic welfare, and economic participation compared to other variables were more correlated with the rural development variable and the population growth variable had the least correlation with the rural development variable in the studied villages in Khorramabad.
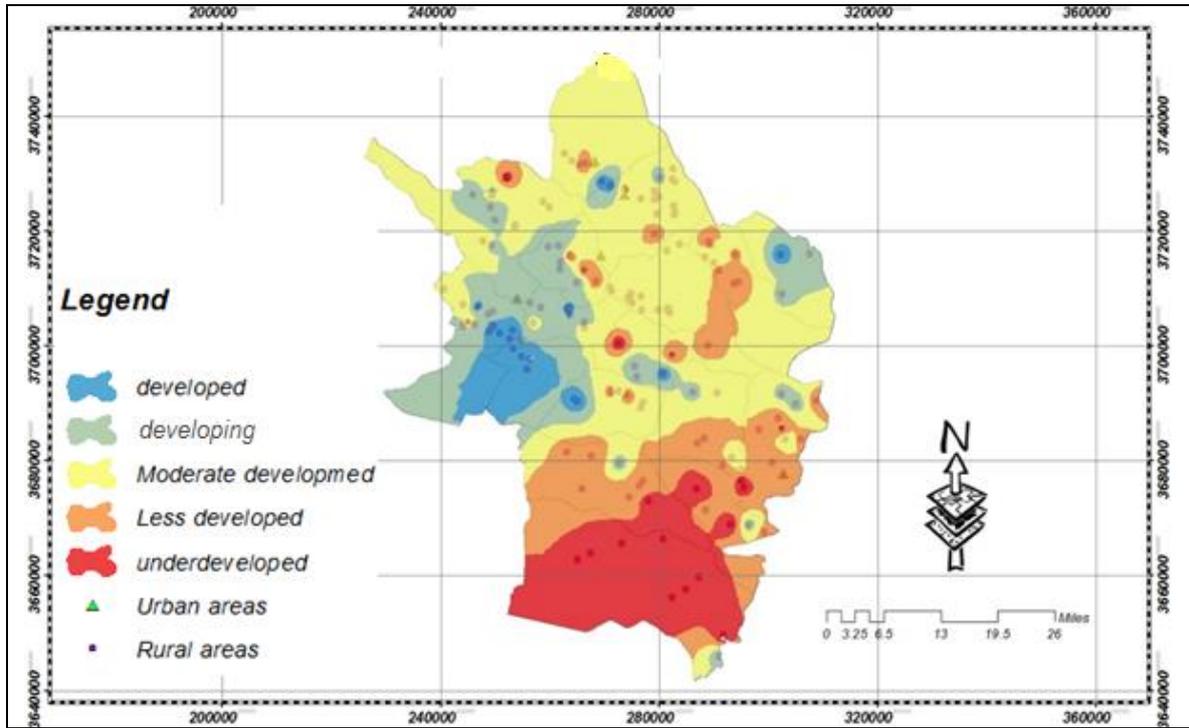
Figure 5. Spatial pattern of villages of Khorramabad based on the level of development
(Source: Research findings, 2019)

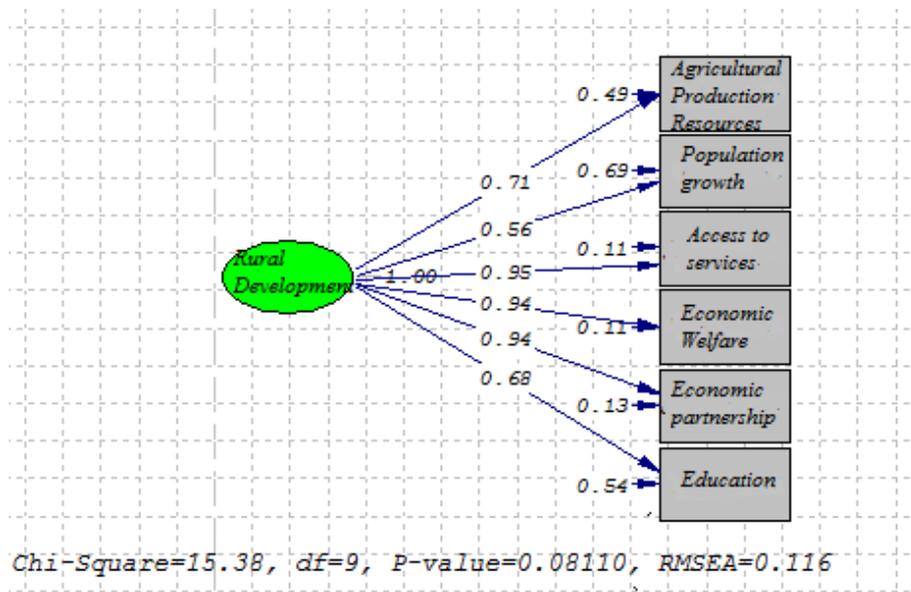Chi-Square=15.38, df=9, P-value=0.08110, RMSEA=0.116

Figure 6. Standardized Coefficient Values
(Source: Research findings, 2019)

In Figure 5, *t*-values show the significant relationship between the variables. To be significant, t-values must be greater than 1.96. In Figure (5), all 6 variables are more than 1.96 and; therefore, the relationship is significant.

R2 value, or coefficient of determination, shows the contribution of each of the independent variables (economic participation, economic welfare, population growth, education, and access to agricultural production services and resources)

to the dependent variable (rural development). This value in LISREL software output for service access is 0.68; for economic participation equals to 0.58; for economic welfare equals to 0.56; for agricultural resources equals to 0.43; for education 0.18; and for the population growth is 0.09. This means that the access to services accounts for 68% of the variations in rural development variables

which has the greatest effect on rural development. Next, economic participation, economic well-being, agricultural production resources, and education accounted for 58%, 56%, 43%, and 18% of the variations, respectively. Finally, the population growth with 0.07% has the lowest effect among these six variables on rural development.
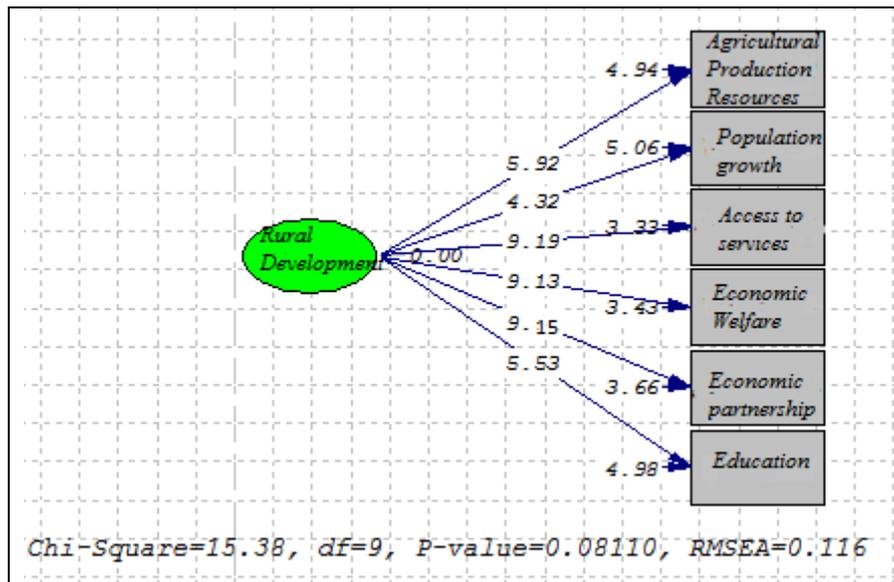

Figure 7. T-values
(Source: Research findings, 2019)

5. Discussion and Conclusion

Balanced development is one of the essential prerequisites for sustainable development that stresses the equilibrium of living conditions and the various aspects of development for all people. However, the imbalance between areas in various social, economic, and cultural contexts will cause spatial discord. In this sense, the study tried to examine and analyze this issue in the rural district of Khorramabad county. Concerning the results, this study achieved the following results:

- Khorramabad county has relatively good conditions in the process of development. In this process, integrated development has not been realized. Some components (access to services, economic participation, and economic welfare) have proper conditions, while others (agricultural production resources, education and population growth) are in an inappropriate situation. These conditions resulted in the decline of the villages.

- The level of development in Khorramabad county has confronted spatial inequality not only by topic-specific but also by the area-specific factors. This

inequality has led to the formation of a center-periphery spatial pattern that has caused the marginalization (and deterioration) of disadvantaged villages.

A comparative review of the results of this study with those of other researchers can be traced in the following studies being conducted by Riyahi et al. (2015), Ziaian et al. (2015), Rokneddin Eftekhari & Aghayari Hir (2015), Rahmani Fazli et al. (2015), and Saeedirad et al. (2014).

Based on the results, realizing the principles and goals of sustainable development in rural areas requires an integrated effort based on facilities, capabilities, and capacities of rural areas, in an attempt to reducing inequality and spatial imbalance, the acceleration of the development process of such areas.

References

1. Afrakhteh, H., Riyahi, V., & Javan, F. (1394/2015). Economic sustainability of rural settlements in Razvanshahr City. *Journal of Geography (Quarterly Iranian Journal of Geography), 13*(46), 93-113. [In Persian]

2. Ahmad Beigi, Z. (1388/2009). *Survey of sustainability indices in rural development.* National Conference on Environment and Sustainable Development, Islamic Azad University, Hamadan Branch. [In Persian]

3. Amanpour, S., Mokhtari Chelcheh, S., Hosseini Kohnouj, S. R., & Veisi, E. (1394/2015). Spatial Analysis and Evaluation of Rural Development (Case Study: Counties of Chaharmahal & Bakhtiyari). *Journal of Research and Rural Planning, 4*(10), 97-110. [In Persian]

4. Antonescu, D. (2012). Identifying regional disparities in Romania: a convergence process perspective in relation to European Union's territorial structures. *Procedia Economics and Finance*, 3, 1148-1155.

5. Azkia, M., & Dibaji Faroushani, S. (1395/2016). Criticism of rural development programs in Iran. *Journal of Social Studies and Research in Iran, 5(1*), 103-125. [In Persian]

6. Beig Mohammadi, H., & Azadi, Y. (1393/2014). Ranking of Shirvan districts in terms of human development indices. *Journal Geographical Data (SEPEHR), 21*(81), 9-16. [In Persian]

7. Bond, R., Curran, J., Kirkpatrick, C., Lee, N., & Francis, P. (2001). Integrated impact assessment for sustainable development: a case study approach. *World Development, 29*(6), 1011-1024.

8. Dixon, J. (2003). *Targeting agricultural services for different utilities for rural and sustainable agriculture development in Iran*, (Norouzian, F., Trans.). Proceedings of the first conference on agricultural exploitation systems in Iran (Challenges and Solutions). Tehran: Ministry of Agriculture Jihad. [In Persian]

9. Dobie, P. (2004). Models for national strategies: building capacity for sustainable development. *Development Policy Journal*, *1*, 1-18.

10. Duran, D. C., Gogan, L. M., Artene, A., & Duran, V. (2015). The components of sustainable development-a possible approach. *Procedia Economics and Finance*, *26*, 806-811.

11. Ebrahimzadeh, I., Mousavi, M., & Kazemizad, S. (1391/2012). Spatial Analysis of Regional Disparities between the Central and Border Areas of Iran. *Geopolitics Quarterly*, 8(25), 214-235. [In Persian]

12. Firoozi, M. A., Mohamadi Dehcheshmeh, M., & Mokhtari Cholcheh, S. (1397/2018). Investigating the District Inequality in the Towns of Khuzestan Province. *Journal of Geography and Regional Development*, 15(2), 217-240. [In Persian]

13. Glasbergen, P. (2004). The environmental cooperative: self-governance in sustainable rural development. *The journal of environment & development*, *9*(3), 240-259.

14. Groninger, J., Ruffner, C., & Walters, S. (2013). Sustaining rural Afghanistan under limited central government influence. *Stability: International Journal of Security and Development*, 2(2) 1-12.

15. Hekmatnia, H., & Mousavi, M. (1392/2013). *Model application in Geography with emphasis on urban and regional planning* (3Th Ed.). Tehran: Azadpima Publications. [In Persian]

16. Kaboudvand, B., Miedamadi, S. M., Farajolah Hoseini, S. J., & Paseban, F. (1397/2018). Measuring the sustainability levels of rural development in Karaj County. *Journal of Village and Development, 17*(2), 69-86. [In Persian]

17. Kalantari, K., Irvani, H., & Vafaiejnejad, S. M. (1382/2003) Measurement of rural development in Torbat-e-Heydariyeh County. *Journal of Geographical Research, 35*(1), 41-54. [In Persian]

18. Khosrobeigi, R., Shayan, H., Sojasi Qeidari, H., & Sadeghloo, T. (1390/2011). Assessment and Evaluation of Sustainability in Rural Areas: Using TOPSIS- FUZZY Multi-criteria Decision-Making Technique. *Journal of Rural Research*, 2(5), 151-185. [In Persian]

19. Lehtonen, M. (2004). The environmental–social interface of sustainable development: capabilities, social capital, institutions. *Ecological economics*, *49*(2), 199-214.

20. Madu, I. A. (2007). Spatial Patterns and the Underlying Factors of Rural Development in the Nsukka Region, Southeastern Nigeria. *Journal of Rural and Community Development*, *2*(2) 25-34.

21. Maleki, S., Mokhtari, S., & Taheri Keshtkar, L. (1396/2017). *Spatial Analysis and Assessment of the Level of Development of the District of the City of Kermanshah Using AHP FUZZY, Journal of Development Strategy, 50,* 254. [In Persian]

22. Pichs, R., Swart, R., Leary, N., & Ormond, F. (2000). Development, Sustainability and Equity. In Proceedings of the Second IPCC Expert Meeting on DES, Havana, Cuba.

23. Pourjafar, M. R., Mahmoodinejad, H., Ilka Shahin., & Aghebat Bekheir, H. (1391/2012). A meta-analysis of rural tourism development evaluation with an emphasis on strategic factors (SWOT). *Journal of Environmental Science and Technology*, 14(2), 61-79. [In Persian]

24. Rahmani Fazli, A. R., Darvishi, H. A., Bigham, M., & Biranvandzadeh, M. (1391/2012). *Leveling of rural settlements in West Azerbaijan using TOPSIS technique.* National Conference on Sustainable Agriculture and Environment, Hamadan. [In Persian]

25. Rezvani, M. R., & Sahneh, B. (1391/2012). Evaluation of rural development area using fuzzy logic method. *Quarterly Journal of Village and Development*, 3. 1-32. [In Persian]

26. Riyahi, V., Azizpour, F., & Nouri, A. (1395/2016). Environmental Sustainability Analysis of Rural Settlements Case study: Khoramdareh County. *Journal of Rural Development Strategies*, 3(2), 155-173. [In Persian]

27. Rokneddin Eftekhari, A. R., & Aghayari, H. (1386/2007). Rural Development Sustainability Scale: Case Study of Hir Sector. *Journal of Geographical Research Quarterly, 61, 31-44.* [In Persian]

28. Roldán, A, B., & Valdés, A. S. (2002). Proposal and application of a sustainable development index. *Ecological Indicators Journal,* 2(3), 251-255.

29. Saeedi, A. (1389/2010). *Ten articles on recognition of rural settlements (1Th Ed.).* Tehran: Publication of Mehr-e-Minoo. [In Persian]

30. Saeedirad, M., Rahmani, B., Manshizadeh, R.A., & Jalali, M. (1393/2014). Leveling Analysis of rural settlements around the city Oshtorinan*, Journal of Researches in Earth Sciences 19*, 71-82. [In Persian]

31. Sakurai, T. (2006). *Role of social capital in economic development: Evidence and issues*. Potential of Social Capital for Community Development.

32. Salvati, L., Venanzoni, G., & Carlucci, M. (2016). Towards (spatially) unbalanced development? A joint assessment of regional disparities in socioeconomic and territorial variables in Italy. *Land Use Policy*, *51*, 229-235.

33. Seminova, N., Nickolaevna B., Svetlana, G., Eremina, O., Makeikina, S., & Mikhailovna I. (2016). Assessment of Sustainable Development of Rural Areas of Russia. Indian Journal of Science and Technology, *9*(14), 2-6.

34. Shayan, M., Ghanbari, D., & Bazrafshan, D. (1395/2016). Ranking and Analyzing the Stability Status of Rural Settlements (Case Study: Zarrindasht County). *Geography and Territorial Spatial Arrangement,* *8*(26), 179-196. [In Persian]

35. Taghvaei, M., & Saboori, M. (1390/2011). Determining and Analysis the Development levels and Degree of Counties in Hormozgan Province. *Geography and Environmental Planning, 23*(2), 53-68. [In Persian]

36. Teymouri, S., Shakoor, A., & Gandomkar, A. (1395/2016). Leveling and Development of Rural Settlements Land Based on Human Capacity from the Standpoint of Land use Planning Aspect (Case study: the central sector of Shiraz), 6(21), 93-102. [In Persian]

37. Yarihesar, A., Badri, S. A., Pourtaheri, M., & Faraji, S. H. (1392/2013). Study and defining the process for selecting sustainability evaluation and appraisal indicators for Rual habitats of metropolitan areas case: Tehran metropolitan. 11(32), 127-148. [In Persian]

38. YIlmaz, B., Dasdemir, I., Atmis, E., & Lise, W. (2010). Factors affecting rural development in Turkey: Bartin case study. *Forest Policy and Economics*, *12*(4), 239-249.

39. Yu, T., Zhang, J. X., Sun, L. J., & Huang, W. Y. (2009). Research on Rural Spatial Distribution in China Based on Urban-Rural Integrated Planning Management. In *2009 Fourth International Conference on Computer Sciences and Convergence Information Technology*, 296-299.

40. Zarei, Y. (1395/2016). Evaluation of rural development with emphasis on some socio-cultural indicators tudied: Khorasan Razavi province. *Social and Cultural Studies of Khorasan, 11*(2) 51-75. [In Persian]

41. Ziaian, P, Firouzabadi, A., Anvari, & Velaei, M. (2015). Growth rate of rural development in Marhamat Abad Villages of Miandoab County. Space Economy and Rural Development , 1*4, 129-146.* [In Persian]

تحلیل فضایی توسعه‌یافتگی سکونتگاه‌های روستایی مبتنی بر رویکرد توسعه پایدار

(مطالعهٔ موردی: روستاهای شهرستان خرم‌آباد)

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چکیده مبسوط

۱. مقدمه

توسعه پایدار روستایی فرآیندی است که ارتقای همه‌جانبه حیات روستایی را از طریق زمینه‌سازی و ترغیب فعالیت‌های هم‌ساز با قابلیت‌ها و تنگناهای محیطی (به مفهوم عام آن) مورد تأکید قرار می‌دهد. در همین رابطه مهم‌ترین هدف توسعه پایدار روستایی عبارت خواهد بود از قابل زیست کردن عرصه‌های زندگی برای نسل‌های فعلی و آینده با تأکید خاص بر بهبود و توسعه مداوم روابط انسانی- محیطی. بر همین اساس، پژوهش حاضر درصدد است به ارائهی تصویری منطقی، روشن و قابل درک از چگونگی وضعیّت توسعه در نواحی روستایی شهرستان خرم‌آباد بپردازد که اهداف اختصاصی زیر را هم در بر دارد: تحلیل فضایی و سنجش درجه‌توسعه‌یافتگی و رتبه‌بندی مناطق روستایی شهرستان خرم‌آباد؛ وضعیت‌سنجی شاخص‌های متعارف توسعه‌یافتگی مناطق روستایی شهرستان خرم‌آباد.

۲. مبانی نظری

در مورد توسعه نگرش‌ها و نظریات گوناگونی ارائه شده است از جمله رویکرد کیفیت زندگی، مبادله اجتماعی، توسعه یکپارچه و توسعه پایدار که در این مطالعه چارچوب توسعه پایدار مورد تاکید می‌باشد. امروزه رویکرد توسعه‌ی پایدار به عنوان چارچوبی برای تحلیل

پایداری نظام سکونتگاه‌های انسانی به طور عام و سکونتگاه‌های روستایی به‌طور خاص از ارزش و اعتبار بالایی برخوردار است. مفهوم توسعه‌ی پایدار در برگیرنده‌ی موارد و موضوع‌هایی چون توانمند شدن افراد بسیار فقیر، ایده‌ی توسعه‌ی خوداتکاء، ایده‌ی توسعه‌ی هزینه- اثر، موضوع مهم کنترل سلامت، فناوری مناسب، استقلال غذایی، آب بهداشتی و مسکن برای همه است و مفهومی است که در آن ابتکارات مردمی مورد نیاز و سعادت بشر در این مفهوم گنجانده شده است با توجه به موارد فوق تعریف پایداری روستایی به صورت زیر است: فرآیندی همه جانبه، موزون و درون زا که در چارچوب آن توانایی‌های اجتماعات روستایی برای رفع نیازهای اساسی مادی و معنوی و کنترل مؤثر بر نیروهای شکل دهنده نظام سکونت محلی (اکولوژیکی، اجتماعی، اقتصادی، کالبدی-فضایی، نهادی) و سرزمینی رشد و تعالی می‌یابد

۳. روش شناسی

روش‌شناسی این پژوهش کمی مبتنی بر منطق قیاس و براساس روش داده‌پردازی و براساس هدف کاربری است. جامعه آماری تحقیق روستاییان روستاهای شهرستان خرم‌آباد را در می‌گیرد. با توجه به گستردگی محدوده مورد مطالعه حدود ۲۰ درصد از روستا که برابر با ۱۵۰ روستا می‌باشد از طریق نمونه‌گیری مرحله‌ای انتخاب شده‌اند.

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بدین صورت که ابتدا روستاها به سه دسته روستاهای کوهستانی، دامنه‌ای و دشتی طبقه بندی شده‌اند سپس هر کدام از این سه دسته، به سه دسته روستاهای با جمعیت زیاد، متوسط و کم طبقه بندی شده و در نهایت با نمونه‌گیری تصادفی ساده از هر دسته ۵۰ روستا و در مجموع ۱۵۰ روستا انتخاب شده است. برای بررسی توسعه سکونتگاه‌های روستایی از تعداد۲۶ شاخص عینی که از سالنامه آماری و سرشماری نفوس و مسکن سال ۱۳۹۵ بدست آمده استفاده شده است. در گام اول با استفاده از مدل FANP وزن نهایی شاخص‌ها محاسبه شده، سپس با استفاده از تکنیک ویکور رتبه‌بندی روستاها انجام گرفته است. در نهایت آزمون تحلیل مسیر برای تعیین سهم هر عامل در میزان توسعه‌یافتگی مناطق روستایی بکار گرفته شده است

۴. یافته‌ها

رتبه بندی روستاهای نمونه در شهرستان خرم‌آباد به لحاظ توسعه یافتگی نشان می‌دهد که روستای ماسور با مقدار ضریب ۰.۰۲۰ در رتبه اول و در بالاترین سطح توسعه یافتگی و روستاهای ده محسن، دارایی، دینارو بالا، رباط نمکی و تپه گجی با مقدار ۰.۲۲، ۰.۲۷، ۰.۳۵، ۰.۳۷ و ۰.۳۹ در رتبه‌های دوم تا ششم قرار دارند. همچنین روستاهای سیرم، کل آب تی، کربوستان، خانگاه، توت‌چهره، روزمیانکی و گندابه با ضرایب ۱.۰۰، ۱.۰۳، ۱.۰۵، ۱.۰۶، ۱.۱۰، ۱.۱۴و ۱.۱۵ در پایین‌ترین سطح از توسعه قراردارند. میزان توسعه کل روستاهای ناحیه مورد مطالعه برابر با ۰.۵۶ می‌باشد که بیانگر این است که توسعه درکل ناحیه در حد متوسط قرار دارد

با استفاده از تحلیل خوشه‌بندی K میانگین، مناطق روستایی شهرستان در پنج سطح مناطق توسعه یافته، مناطق نسبتا توسعه یافته، مناطق با توسعه متوسط، مناطق در حال توسعه و مناطق توسعه نیافته یا محروم از توسعه طبقه‌بندی شده‌اند. در گروه اول یعنی روستاهای توسعه یافته ۶ روستا(۴ درصد)،گروه دوم یا مناطق نسبتا توسعه یافته ۱۲روستا (۸ درصد) در گروه سوم یعنی مناطقی با توسعه متوسط ۶۷ روستا(۶.۴۴درصد) در گروه چهارم یا مناطق کمتر توسعه یافته ۵۸ روستا(۶.۳۸درصد) و در گروه پنجم یا مناطق روستایی توسعه نیافته ۷روستا (۶.۴درصد) قرار گرفته اند. الگوی فضایی روستاها بر مبنای سطح توسعه را نشان می‌دهد. به طور کلی

اکثر روستاهای توسعه یافته و درحال توسعه در قسمت غرب شهرستان واقع شده‌اند. روستاهای توسعه یافته در قسمت غرب قرار گرفته‌اند. این روستاها دارای موقعیت نزدیکی به جاده‌های اصلی و نزدیکی به مرکز بخش و مرکز شهرستان هستند که نشان‌دهنده وضعیت دسترسی مطلوب می‌باشد. روستاهای نسبتا توسعه یافته نیز اکثرا در قسمت غرب شهرستان و در مجاورت روستاهای توسعه‌یافته و مراکز شهری قرار گرفته‌اند. همچنین اکثر روستاهای توسعه نیافته در قسمت جنوب و جنوب‌شرق شهرستان واقع شده‌اند. بیشتر این روستاها از مرکز شهرستان و مرکز بخش دور بوده و وضعیت دسترسی مطلوبی ندارند

۵. بحث و نتیجه‌گیری

مبتنی بر یافته‌ها، این پژوهش به نتایج زیر دست یافت:
شهرستان (ناحیه) خرم آباد، در فرایند توسعه یافتگی، در وضعیت نسبتا مناسبی قرار دارد. در این فرایند، توسعه یکپارچه تحقق نیافته، در برخی از مولفه‌ها (دسترسی به خدمات، مشارکت اقتصادی و رفاه اقتصادی) از شرایط مناسب و در برخی مولفه‌های دیگر(منابع تولید کشاورزی، آموزش و رشد جمعیت) از وضعیت نامناسب‌تری قرار دارد. این شرایط، برخی از روستاها را در مسیر زوال قرار داده است؛

● سطح توسعه یافتگی در شهرستان (ناحیه) خرم آباد نه تنها از جنبه موضوعی، بلکه از جنبه موضعی (مکانی) با نابرابری فضایی رو به رو شده است. این نابرابری زمینه ساز شکل‌گیری الگوی فضایی مرکز - پیرامونی شده است که منجر به حاشیه‌ای شدن (و زوال) روستاهای کم برخوردار شده است؛

● با توجه به یافته‌ها و نتایج پژوهش، تحقق اصول و اهداف توسعه پایدار در نواحی روستایی نیازمند تلاشی یکپارچه مبتنی بر امکانات، قابلیت‌ها و ظرفیت‌های نواحی روستایی است تا ضمن کاهش نابرابری‌ها و عدم تعادل‌های فضایی، بتواند روند توسعه این نواحی را تسریع ببخشد.

کلمات کلیدی:تحلیل فضایی، توسعه سکونتگاه‌های روستایی، رویکرد توسعه پایدار، شهرستان خرم آباد.

تشکر و قدردانی