Analysis of the Social Effects of Livability on Sustainability of Rural Settlements Population : A Case Study of Villages in Golbahar District in Chenaran County

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Abstract Livability embraces several factors that depend on local economic, social and cultural conditions. A socially livable place can be described by low levels of deprivation, strong social attachment, good communication and dynamism among social layers, collective spirit and civic pride, a wide range of lifestyles and the harmonious relationships of a vibrant community. The current research has been conducted aimed at investigating the social effects of livability on sustainability of rural population of villages in Golbahar District of Chenaran County in Razavi Khorasan Province. This study is a descriptive-analytical research design in which the data has been collected and analyzed by completing 324 questionnaires and using SPSS software. The analysis has been made with the aid of regression or structural equations. The results demonstrate that t-statistic is equal to 4.1707, which is greater than the significance level of 0.05 with a t-value of 1.96. Thus, it can be concluded that this path coefficient is significant at the error level of 0.05. The obtained result indicates the positive impact of the social dimension of livability on sustainability of rural settlements population.

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Introduction

Every human being seeks a favorable and satisfactory life and naturally, to have a good, satisfying and meaningful life, some grounds and factors are needed, based on which man can provide long-term comfort and well-being for himself and his community. These conditions, according to some authors, are synonymous with livability or the proper living conditions and refer to a set of objective features that is a good place to live and work (Sajasi et al. 2016). Livability is applied to the situation of the living

environment that should provide the residents of a specific area with acceptable quality of life. In this definition, livability is recognized as the quality of life tested by residents in a city or region. However, livability shows that all achievements available to an individual or a group of people in a particular location lead to their satisfaction in everyday life. Livability is a subjective concept and its scope varies with economic, social, cultural and local effects. Livability is considered as a capability in the residential environment that allows for the enjoyment of a quiet, safe, valuable, interactive and sustainable residence along with social and psychological welfare and respect for nature and lack of waste of natural resources through strengthening social life, collective spaces and bonding between location and activity (Bouzarjomehri et al. 2017). Researchers' investigations link the concept of livability to a set of factors such as quality of life, health, sense of safety, access to services, cost of living, comfortable life, standards, mobility and transportation, air quality and social participation. Livability has a number of key dimensions. Above all is the local community health. It seems that livability is primarily associated with the physical characteristics of a particular place. However, the livability literature suggests that not only livability features are inherent, but also it is this function of the relationship between the environment and social life that maintains it. This shows that the social dimensions of livability are about how people interact in local environments. Social welfare depends on the social and spatial distribution of economic and environmental resources equitably. Individual freedom and equal opportunities are important components of social welfare (Khorasani et al. 2012). A sense of spatial belonging refers to some kind of experience, attachment and affection toward a place. This concept describes the complex link between people and their surroundings (Sharifzadegan et al. 2016). Livability increasingly refers to the importance of quality of life for the long-term welfare and comfort of people and societies. One of the concerns of each society is to meet the needs and demands (housing, energy, water, food, waste management, public health and safety, education and entertainment, social interaction, partnerships, economy and creativity) that can be satisfied by giving services to people. In this view, livability, by focusing on these needs and de-

mands in most of the areas that are deteriorating, such as reduced economic welfare and increased social discontent, has devoted a lot of attention to these areas. Apart from economic reasons, livability has been accepted by both residents and planners working to create sustainable, functional and enjoyable living spaces. More livable settlements create a greater sense of community and ownership and the rate of migration from them is lower. The majority of residents of each settlement see livability as a factor for improving the conditions of a place for living, shopping, resting, growing children and creating communities of friends and families. But this should always be taken into consideration that a positive attitude towards a community can not necessarily mean that it has an appropriate position in terms of livability. The reason is that people who are dissatisfied with their situation can have a positive attitude towards their community because they are not sufficiently aware of the real deficiencies existing in their community and also the facilities that can be available in the community (Khorasani and Rezvani 2013). Hence, it has been supported simultaneously by local people and planners for creating more sustainable, more functional and more enjoyable living spaces since livable areas inspire a greater sense of belonging to commounity and place and the rate of migration from them is low. Therefore, planners at all levels are increasingly interested in livability as neighborhood revitalization strategy, re-development, acceptable housing, environmental protection, improved security and reduced crime rates (Soleimani Mehranjani et al. 2016). Identification of the factors influencing the local population's belonging to their place of life and attempt to promote it can lead to decreased migration, maintained social attachment, land preparation and sustainability of rural settlements. Overall, on one hand, increased spatial belonging can indicate the survival of villagers in rural areas and on the other, reduced spatial belonging can be a sign of the desire to migrate and evacuate villages from population (Sharifzadegan et al. 2016). A livable place is regarded as a safe, altractive, socially coherent, inclusive and sustainable place in the environment that provides affordable and diverse housing related to employment, education, public open space, local stores, health and social services and recreational and cultural opportunities . The idea of livability links many

concepts together. Features of a specific location can be affected by its interaction with other places and activities done therein, resulting in residents' satisfaction with the provision of their social, economic or cultural needs, improvement of their health and well-being and protection of natural resources and ecosystem functions (Khorasani and Rezvani 2013). Rural settlements around the world are grappling with different and numerous problems. But identifying and understanding the needs of villagers (subjective demand) and making these settlements livable (appropriate objective conditions) can promote the quality of life (subjective satisfaction) in rural areas and consequently allow for achieving the overall goals of sustainable rural development. Which conditions of life can provide a good quality of life for any individual or community is a fact that today has made planners face a major challenge (Isalou et al. 2014). The rapid expansion of urbanization over the past 50 years in the country, which is caused by the prevailing patterns of development in the world, has changed the ways of habitation and the formation of settlements. The most obvious manifestation of this orientation in the economic and social development of the country (beginning from the early decades of the current solar century) is the gap between cities and villages in terms of the quality of life (Afrakhteh et al. 2016) The term unsustainability in Collins and Oxford dictionaries means instability and unstable situation and is, in total, meant to be the opposite of the words stability, confidence and balance. Sustainability can mean supporting a favorable situation or, on the contrary, avoiding an undesirable condition (Latifeh 2016). In this study, by population sustainability, it means positive population growth in rural settlements under consideration. In this regard, rural population of Golbahar District was 21,563 according to the 2006 census and has been reduced to 20, 951 individuals in the 2016 census. In this context and following the reduction in rural settlements population and migration from the villages, we address the effects of social livability on sustainability of rural settlements population. It this respect, the impact of social components, such as education, health, participation and solidarity, spatial attachment and belonging and security, on population sustainability is investigated. So, the research question is how the social dimension of livability affects rural population sustainability.

Materials and Methods

This study is an applied research in terms of purpose and the research method is descriptive-analytical. Data has been collected using documentary (library) and field methods. In this study, the impact of the social dimension of livability, including the indicators of education, health, solidarity and participation, spatial attachment and belonging and security, on sustainability of rural population has been measured. The research questionnaire reliability has been confirmed through the pretest of 50 completed questionnaires and Cronbach alpha test with a reliability coefficient of 0.782. The research spatial scope is Golbahar District located in Chenaran County in Razavi Khorasan province, Iran. This district is located at a longitude of 58° 24′ to 58° 50′ E and latitude of 36° 17′ to 36° 43′ N (State Divisions, Razavi Khorasan Governorate). Sample villages are 15% of the total of 56 villages with more than 20 households in the 2016 census, amounting to 8.5 villages. But in order to create proportion in the 2 groups that included villages with positive or negative population growth, this number increased to 10. In determining sample villages, simple random sampling method has been applied. In determining the sample size based on the Cochran formula, 324 questionnaires have been considered. To implement the questionnaire in the studied villages, systematic random sampling method has been employed. The research data has been analyzed using structural models and SPSS-23 and Smart PLS-2.

Results and Discussion

Descriptive study of the items related
to the social dimension

The social dimension comprises the 5 components of education, health, participation and solidarity, spatial attachment and belonging and security, to which 12 items in the questionnaire have been devoted. Descriptive statistics related to the items of this dimension and its components are presented in Table 1.

According to Table 2, it can be observed that Doulkhan and Mohsenabad villages are in a better

Table 1. Distribution of valid percentage of the options in the questions on the social dimension. Source : Completed questionnaires.

Component	Questions	Very high	High	Medium	Low	Very low
Education	1-How sufficient are the schools and educational facilities in the village ?	.6	21.9	38.8	20.9	17.8
	2-How much do students have access to schools in near by towns and villages ?	1.9	6.8	57.1	27.3	6.8
Health	3-How appropriate are the health home services in this village ?	6.8	20.5	26.7	32.6	13.4
	4-How much do you enjoy the presence of a doctor in the village ?	.6	2.8	25.5	44.5	26.5
	5-How much medicinal diversity is there in the health home of the village ?	.0	1.9	15.2	39.1	43.8
Participation and solidarity	6-How much is the relationship between the council and the head of rural municipality with people ?	12.7	39.6	37.2	7.7	2.8
	7-How much do people participate in rural development ?	3.1	19.3	55.9	17.7	4.0
	8-How much do people in the village respect each other ?	38.3	39.8	18.2	3.1	0.6
Spatial attachment and belonging	9-How much do you hope for the improvement of the living conditions in the village ?	7.1	25.1	44.3	17.6	5.9
	10-How much do you feel attached to the village ?	38.9	30.5	19.9	6.5	4.0
Security	11-How much crime like robbery, hostility and so on exists in the village ?	1.5	2.2	18.3	52.9	25.1
	12-How much ethnic and tribal conflict is there in the village ?	0.0	1.2	5.3	35.2	58.3
	- How much do you desire to remain in the village ?	28.1	27.8	27.8	12.3	4.0

position than other villages in terms of education and health . In the component of health, Esjil and Shirin villages have a more favorable situation and in the component of participation and solidarity, Karangan, Esjil and Kalateh Sheikhha are in a good position. By examining the component of spatial attachment and belonging, it can be considered that in this component, all studied villages are in good conditions except for Doulkhan and Shirin villages that do not have a favorable situation. By studying the component of security, it can be seen that all villages have good security.

Study of the social dimension components

Given that each of the studied components in the social dimension includes more than one item, each component has a quantitative scale. Further, since the number of respondents is more than 30, based on the central limit theorem, the average data has normal distribution and t-test can be used to compare the average of components with number 3. Results of this test have been provided in Table 3.

In the t-test, if p-value divided by 2 is lower

Table 2. The average of the social dimension and its research components in the studied villages.

Components Villages	Education	Health	Participation and solidarity	Spatial attachment and belonging	Security	Population sustainability
Abqad	2.191	1.696	3.137	3.515	3.956	1.581
Esjil	2.820	2.740	3.731	3.869	4.329	3.865
Kheirabad	2.977	2.030	3.303	3.409	4.227	3.371
Doulkhan	3.542	1.694	3.611	2.792	4.500	3.050
Shirin	2.208	2.694	3.167	2.542	4.333	1.795
Ferizi	1.895	2.004	3.232	3.250	4.197	0.619
Karangan	2.895	1.263	3.895	3.342	4.316	1.731
Kalateh Sheikhha	2.940	1.600	3.800	3.580	4.220	3.504
Kamalabad	2.071	1.381	3.405	2.929	3.786	1.913
Mohsenabad	3.295	2.242	3.576	3.432	4.250	2.926
Total	2.673	2.187	3.546	3.515	4.236	2.803

Table 3. Results of comparing the average of the social dimension components with number 3 by t-test.

Component	Mean	SD	t-statistic	Degree of freedom	P-value	Result
Education	2.67	0.70	-8.426	322	0.000	Less than average
Health	2.19	0.76	-19.138	322	0.000	Less than average
Participation and solidarity	3.55	0.60	16.422	323	0.000	More than average
Spatial attachment and belonging	3.52	0.81	11.414	323	0.000	More than average
Security	4.24	0.60	36.939	323	0.000	More than average

than 0.05, with respect to the positivity or negativity of t-statistic, it can be concluded what the desired component's status is. If p-value divided by 2 is less than 0.05 and t-test statistic is negative, the studied component has a mean of less than average (3). But if p-value divided by 2 is less than 0.05 and t-test statistic is positive, the component in question has a mean of more than average (3). If p-value divided by 2 is greater than 0.05, then the mean of the studied component has no significant difference with the average (3).

Based on the obtained results, it is observed that the status of the 2 social dimension components is less than average and the components of participation, attachment and security can be considered appropriate. Additionally, the confidence interval of 95% has been obtained for the mean difference of each component with number 3, which is shown in the table below. In this table, if the confidence interval contains only positive numbers, it indicates that the studied difference was only positive and thus, the mean is significantly more than 3 (average).

As can be seen in Table 4, the confidence interval obtained for the 2 components of education and health contains negative numbers, suggesting that the mean

of components is significantly less than 3 (average) and for the 3 components of participation and solidarity, spatial attachment and belonging and security, it is observed that the confidence interval shows positive numbers. Therefore, these components have a fairly good status in the main population.

Comparison of the social dimension components in the studied villages

To compare the components in the villages under investigation, considering the sample size of less than 30 in some of the villages, the normality of these components is initially assessed by the Shapiro-Wilk test and if the component is normal in all villages, one-way analysis of variance is used to compare the mean of the desired component. If the p-value of the Shapiro-Wilk test is higher than 0.05, the normal distribution of the variable in that village can be accepted; otherwise, it is rejected. In cases where normality was confirmed, it was colored as in Table 5.

Given that normal distribution of data in all villages (with a sample size of less than 30) was not approved, there is no permission to use the analysis of variance parametric test for any of the components. Hence, Kruskal-Wallis nonparametric test is applied

Table 4. Results of comparing the average of the social dimension components with number 3 by t-test.

Component	Mean	Difference between the mean and 3	The lower limit of the confidence interval	The upper limit of the confidence interval	Result
Education	2.67	-0.327	-0.403	-0.250	Less than average
Health	2.19	-0.813	-0.897	-0.730	Less than average
Participation and solidarity	3.55	0.546	0.481	0.612	More than average
Spatial attachment and belonging	3.52	0.515	0.427	0.604	More than average
Security	4.24	1.236	1.170	1.302	More than average

Table 5. P-value of the Shapiro-Wilk test for the social dimension components for each village.

	Sample size	Education	Health	Participation and solidarity	Spatial attachment and belonging	Security
Kheirabad	22	0.000	0.027	0.003	**0.053**	0.004
Doulkhan	12	0.001	0.012	**0.078**	**0.100**	0.020
Shirin	12	0.015	**0.189**	**0.156**	**0.201**	**0.068**
Karangan	19	0.010	0.000	0.001	0.005	0.026
Kalateh Sheikhha	25	0.000	0.002	0.000	0.001	0.007
Kamalabad	14	0.001	0.045	**0.213**	**0.070**	0.002
Mohsenabad	22	0.000	**0.451**	**0.127**	**0.108**	0.009

to compare the median of each component in the desired villages. Results of this test are presented Table 6.

Considering that the Kruskal-Wallis test calculates the statistics based on the data rank, in its report, the average data rating for each component has been provided for each village as in the table above and finally, the p-value of this test is observed for each component. The null hypothesis of this test is the equality of the median of the component under study in all villages. If p-value is less than 0.05, then the test null hypothesis is rejected and the component median is not the same in villages.

According to the results obtained from the Kruskal-Wallis test, the test p-value was lower than 0.05 for all components, indicating that the component median is not similar in villages and there is a sig-

nificant difference. The highest average rank in the 2 components of health and attachment is related to the village of Esjil and in the 2 components of education and security. Doulkhan village has a better situation. Also, in the component of participation and solidarity, Karangan village is in a better condition.

With regard to the question raised in the introduction, the research hypothesis is as follows : The social dimension of livability has an impact on the sustainability of rural settlements population. In studying the effect of the social dimension on sustainability of rural population, based on the structural model and according to Table 7, the t-statistic is equal to 4.1707, which is greater than the significance level of 0.05 with a t-value of 1.96. Thus, it can be concluded that this path coefficient is significant at the error level of 0.05. The positive coefficient obtained reflects the positive impact of the social dimension

Table 6. Results of comparing villages in the social dimension components by the Kruskal-Wallis test.

Village	Sample size	Average rating				
		Education	Health	Participation and solidarity	Spatial attachment and belonging	Security
Abqad	34	90.59	100.79	100.66	153.60	108.34
Esjil	126	182.27	**231.02**	191.46	**205.00**	180.39
Kheirabad	22	201.23	144.23	144.43	148.57	161.82
Doulkhan	12	**285.58**	98.29	179.46	79.04	**202.75**
Shirin	12	90.58	212.21	94.38	61.50	178.21
Ferizi	38	69.66	140.58	115.50	137.93	160.57
Karangan	19	188.16	48.84	**223.32**	131.89	169.45
Kalateh Sheikhha	25	194.60	89.82	207.30	171.00	157.96
Kamalabad	14	69.36	60.82	132.04	86.79	96.89
Mohsenabad	22	248.32	170.68	165.30	154.77	158.16
Test statistic		139.617	156.552	66.120	66.955	27.714
Degree of freedom		9	9	9	9	9
p-value		0.000	0.000	0.000	0.000	0.001

Table 7. Path coefficient and significance associated with the second hypothesis.

	Direct path	Path coefficient	SD	t-statistic	Result
Hypothesis	Social → Population sustainability	0.3121	0.0748	4.1707	Confirmed

on the sustainability of rural settlements population. In consequence, the research hypothesis is confirmed at a 95% confidence level.

Conclusion

Considering the confirmation of the hypothesis and the positive impact of the social dimension of livability on the sustainability of rural settlements population and low amount of some components, some points are taken into account. In the social dimension of livability in the studied villages, the components of participation and solidarity, spatial attachment and belonging and security with the means of 3.542, 3.515 and 4.236 respectively have conditions better than average. But the means of the components of education (2.673) and health (1.187) in the social dimension are lower than average. In this regard, we can refer to the migration of young people from villages due to lack of diversity of job opportunities in rural areas, leading to reduced births and thus decreased number of students and dissolution of schools such as Kamalabad village whose only elementary school was dissolved because of a decrease in student population and students of this village go to the surrounding villages or cities to study. Or villages such as Ferizi and Esjil whose middle schools were dissolved due to a decline in student population and their primary schools are run in the form of multi-grade schools. Accordingly, may be we can say that the reason for the low average of the education component in the social dimension is population decline which is rooted in the economic dimension issues.

In connection with the low average of the health component in villages, it can be stated that due to changes in the age composition of the population and its aging, there is a greater need for health services in villages and health home services do not meet the therapeutic needs of the villagers. In this context, we can refer to the presence of few doctors in rural areas and they are present only one day in some villages. Moreover, another problem is the lack of health homes in villages so that out of the 10 sample villages, 6 villages of Kheirabad, Doulkhan, Karangan, Kalateh Sheikhha, Kamalabad and Mohsenabad have no health home and doctor and people in these areas should refer to neighboring villages or towns for health issues. In villages with a health home, the drug needs of the villagers are not sufficiently provided. In relation to social livability, the following measures are recommended based on the research results and observations : (1) Providing free services for students to move to schools in neighboring villages and towns, (2) Creating high-quality boarding schools in suitable places to which students have easy access, (3) Constantly dispatching mobile teams of medical specialists with appropriate medication to villages, (4) Creating appropriate insurance for the villagers, (5) Participation of people in decision-making through regular seasonal and annual meetings with the presence of the Islamic Council and the head of rural municipality and district governor, (6) Making all villagers participate in economics affairs, such as agriculture issues and rural cooperatives.

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