Environmental impact of Binaloud industrial estate on social-ecological sustainability of rural settlements

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Development of industrial areas in villages can produce numerous positive socio-economic outcomes. Results of many studies show an improvement in the living conditions of villagers after the establishment of industrial areas in villages. The present study is intended to investigate the impact of Binaloud Industrial Estate on social sustainability of rural settlements in Ahmadabad district of Mashhad. This research is an applied study in terms of purpose, whose results can be used in planning. To measure the effects of the industrial estate, its social dimension (including four components of population, education, welfare and service) has been considered, which has been evaluated by multiple questions. Out of 58 villages in Ahmadabad district of Mashhad where Binaloud Industrial Estate is located (research statistical population), 42 villages were chosen. To determine the number of sample villages, demographic factor (villages with more than 100 inhabitants) was used. Afterwards, considering the factor of distance dimension and access to Binaloud Industrial Estate, 10 villages were selected out of 42 villages and were applied as the population of the research sample. Based on Cochran formula, unlimited population size was used to determine the sample size. Accordingly, the sample size was obtained to be equal to 279. The sample size of each village has been estimated with respect to the proportion of the household size in each village. To compare the average of respondents' opinions concerning the impact of industrial estates on social sustainability of rural settlements, the mean of this variable was compared with number 3 (medium) using t-test, whose results suggested that p-value divided by 2 of this test is less than 0.05 and t-statistic is positive (16.732). Therefore, it can be concluded that the mean effect of the industrial estate on social sustainability of villages is more than medium. Accordingly, it can be stated that the establishment of industrial estates is effective in social sustainability of villages.
Keywords: industrial estates; rural settlements; rural social development; sustainability; Binaloud Industrial Estate

Introduction

In recent times, Iranian economy was dependent on agriculture with its own sub-sections (farming, ranching, forestry, fishing and hunting). Workers in the country have largely been engaged in agricultural activities. The transformation occurred in Iran's biological environment has also changed the livelihood condition of inhabitants of this land. Knowledge and recognition on a case-by-case basis have caused that a large proportion of people residing in rural areas become aware of their biological problems and deficiencies and look for a solution. Thus, in near and far prospects, they have found their shelter in cities because city has been the embodiment of clear horizons with open doors for the residents of villages (Langroudi, 1991).

Generally, the development of industrial areas in villages can have numerous positive socio-economic impacts. Results of many studies show an improvement in the living conditions of villagers after the establishment of industrial areas in villages.

Establishment of these industrial estates in different provinces of the country has made a lot of environmental, economic, social and physical effects on the region, particularly the rural community. The current fundamental problem is the uncertainty about the impact rate of industrial estates on the sustainability of rural settlements. Thus, the present research aims to do a case study concerning the impacts of Binaloud Industrial Estate on the sustainability of rural settlements in Ahmadabad district of Mashhad city while considering the place and importance of industrial estates in rural areas.

This industrial estate was approved on 5/17/1992 by the Cabinet of Ministers and was set up in 1993. This estate with an area of 110,000 ha and an industrial size of 70 ha is located in 50 km from Mashhad-Neyshabour road. The number of units put into operation is more than 54 units and there are 3,399 individuals employed and around 514 projects are under construction (Razavi Khorasan province industrial estates website).

Now, with respect to what has been mentioned above, the present study seeks to answer the following question: Is the establishment of industrial estates effective in rural social sustainability? Based on the research questions, the research hypothesis, which is in line with the questions raised, is as follows: It seems that the establishment of industrial estates is effective in social sustainability of villages.

Barqi et al. (2013) concluded that the establishment of Aqla Industrial Estate has economically made considerable effects on the development of neighboring rural areas. Hamzeei et al. (2014) performed a study and argued that in most social and cultural indicators, especially relationship with the media, enjoyment from services for Khayyam Industrial Estate in Neyshabour has

caused positive changes in the condition of rural workers and this can ultimately be deemed as a step towards the influence of industrial culture on rural areas and cultural change.

Qadiri Ma'soum et al. (2015) carried a research and demonstrated that the establishment of Sharif Industrial Estate has had a desirable impact on total quality of life indicators in villages under study. Meanwhile, the transport index has taken the greatest effect and the health index has taken the least impact from this estate.

Hajinezhad and Mozaffari (2016) obtained some results from one sample t-test demonstrate the positive impacts of mines on the growth of social indicators in Firouzeh village. Lanjouw's (2000) study about the consequences of the establishment of industry in rural areas of Latin America (Ecuador and El Salvador) revealed that employment generation in the non-agricultural sector is a suitable strategy for rural employment (Lanjouw, 2000).

Elabras et al. (2009) concluded that the formation of industrial units in villages enhances awareness about development, strengthens economic foundations and leads to coordination with the processes of development and application of human resources. Overton and Murray (2007). reported that the development of rural industries helps desirable reconstruction of rural areas in economic terms. Taufique and Pandey (2015) concluded that industrial development in rural regions causes to reduce the rate of migration and create job opportunities.

Methods

The dominant research approach is descriptive and analytical in terms of nature and method, but besides that, documentary and field methods have also been employed so that in the stage of description, the required data has been obtained through documentary and field methods. The field section, in addition to direct observation and interview, is based on the preparation and completion of questionnaires at two levels of the head of rural households and experts (head of rural municipality, head of the district, governor, experts of the Agricultural Jihad and the Islamic Revolution Housing Foundation). In the analytical method (statistical analysis), Wilcoxon statistical test, T-test, Kruskal-Wallis test, Kolmogorov-Smirnov test and SPSS software have been applied for the inference of results and analysis of information obtained from field observations.

Statistical population and sample size

Of 58 villages existing in Ahmadabad district of Mashhad where Binaloud Industrial Estate is located (research statistical population), 42 villages were chosen. To determine the number of sample villages, demographic factor (villages with more than 100 inhabitants) was used and then, the villages were divided into three demographic groups (100-499, 500-999, 1000-2499). Afterwards, considering the factor of distance dimension and access to Binaloud Industrial Estate, 10 villages were determined out of 42 villages and were used as the population of the research sample. Based on Cochran formula, unlimited population size is used to determine the sample size. Accordingly, the sample size was obtained to be 279. The sample size of each village is calculated regarding the proportion of the household size in each village. Considering that less than 15 samples cannot be representative of the village, in villages where the sample size is lower than 15, the number 15 is considered.

Table 1. Number of questionnaires set for each of the studied villages. Source: Health statistics house of sample villages in 2016

Village population classification	Frequency number	Village name	Population number	Number of households	Sample size proportion	Estimated sample size (rounding the obtained numbers upward)	Sample size after considering at least 15
100-499	23	Qasemabad	105	244	0.08	23	23
		Derakht-e Sefidar	100	32	0.01	3	15
		Jamal Deh	358	108	0.03	9	15
500-999	11	Seidabad	959	280	0.09	26	26
		Fakhr Davoud	878	274	0.09	26	26
		Pivehzhan	776	287	0.09	26	26
		Hoseinabad	590	183	0.06	17	17
1000-2499	8	Avareshk	2135	652	0.21	59	59
		Soltanabad-e Namak	2152	622	0.20	56	56
		Dizbad-e Sofla	2138	569	0.18	51	51
Total	42	10	10330	3112	1	296	314

For the statistical population including 3112 research households (heads of rural households), the total sample size was 314 households. Given that there is a possibility of non-return or incomplete filling of the questionnaire, about 34 more questionnaires have been distributed and reviewed so that if a questionnaire is deleted, the required sample size still exists. The questionnaires have been distributed in proportion to the frequency of households in each village. Sampling of the head of rural households was done through systematic random method.

The concept of sustainability within the framework of rural sustainability represents the balance and dynamism of rural settlements regarding natural, ecological, social, cultural and physical structure of the environment such that it guarantees the sustainability of settlements during temporal and spatial trends (Langroudi & Yari, 2010). Overall, rural sustainability can be assumed as a process during which the well-being of rural inhabitants and ecosystem are preserved and improved altogether. Economic growth is accompanied by social justice and environmental protection, and capability and durability of settlements are added. Economic diversification and income sources increase and social cohesion and participation are institutionalized. Hence, rural sustainability is greatly dependent on their reproduction capacity over time in different natural, social and economic dimensions and is largely based on flexibility, participation, social cohesion and economic diversification (Hesar et al., 2012).

Sustainability indicators of rural settlements

Sustainability indicators are the most important tool that help individuals, institutions, communities and societies make better and more appropriate decisions about their future (Shah Vali et al., 2006: 50). Therefore, one of the issues raised at the first meeting of the UN Commission on Sustainable Development was the development of standards for measuring sustainability (Moldan & Bilharz, 2002). To assess the sustainability of rural settlements, there is a wide range of indicators and in the indexology of sustainability based on an area, city or village, it is necessary to consider some indicators to investigate the status quo for each of sustainability, ecological, economic and social dimensions (Siyahkouei et al., 2011).

Numerous studies regarding the evaluation of the sustainability of rural settlements have applied integrated methods or local indicators (Tavakkoli & Rostami, 2013). However, understanding the sustainability of rural settlements requires attention to all human-environmental dimensions on the local, regional and trans-regional scales of the area under consideration.

Social indicator

The social sphere is the broadest dimension of sustainability. In the literature on sustainability, the indicators that are related to fundamental needs and quality of life improvement are placed in this area. Generally, social criteria lay stress on human resource development to provide social welfare and support for all families, healthy urban and rural environment, preparation of the ground for the participation of citizens and political development, support for the poor and low-income classes of the city and promotion of their lives (Hesar et al., 2012).

In defining social sustainability, a group of researchers has referred to four major and decisive elements: Social justice, social solidarity, participation and security. In this sense, components such as equal opportunities along with progress for all humans, living with cooperation, equal opportunities for all people in line with social roles together with the security of livelihood and safety of human settlements against natural hazards have been considered as the basis of measuring social sustainability (Taheri et al., 2010).

Social sustainability embraces dynamic population indicators, education, quality of employment and income, quality of housing services, health, social security, the quality of access to information, national-institutional structures and social participation; each of these criteria involves attributes that are used in social analysis (Vali et al., 2006).

In the process of strategic planning, a special place has been considered for assessing the level of social sustainability as the ground leading to social development of rural settlements. In this sense, social sustainability can promote the social capacities of rural residents through the indicators explaining it and enhance the ability of villagers and rural settlements to apply natural, social and economic resources consistent with sustainable development goals (Taheri et al., 2010).

In this way, social sustainability in rural areas is defined as healthy living through addressing the basic needs of the rural community while considering the quality of life along with maintaining the environmental quality associated with the economic system on the path to achieving the highest level of life satisfaction. In this sense, social welfare and sustainability cannot be sustainable without the health of the environment and economic mobility so that with the interaction of the three dimensions of sustainability, poverty reduction, social investment and a socially secure society are shaped (Torjman, 2000).

Nevertheless, in metropolitan rural areas, investigations reveal that population density, education, communications, rural institutions and quality of life enjoy high value in the analysis of social sustainability (Hesar et al., 2012).

Industrial estates in rural areas

Industrial policies in countries are mainly aimed at increasing production and creating job opportunities. These goals in rural industrialization have been combined with rural development strategies to create industrial growth centers in rural areas. For this reason, the creation of industrial areas is one of the common patterns of industrialization in these countries for the facilitation of and focus on supportive activities and services required by the industry since these areas can be a good stimulus for the formation of industrial units and an appropriate platform for increasing production, improving the productivity of industries and enhancing their sustainability in the process of industrialization in rural areas. For this reason, rural industrialization is largely synonymous with the creation and expansion of industrial areas in rural regions (Astaneh, 2004). The poorest communities in the world are often formed by people with no agricultural land or a small land, who mainly live in rural areas. Given that income from agricultural activities in these communities may create employment just for earning livelihood, diversification of non-agricultural activities can undoubtedly be considered as an effective factor in reducing the rural poverty of these communities. Village industrialization is widely recognized as a dynamic lever for development. Creation of employment, distribution of income, diversification of rural economy and space reduction of inequality in socio-economic development are traditionally regarded as primary goals of rural industrialization (Rukn al-Din Eftekhari et al., 2002).

Below we presented the most important indicators explaining social sustainability based on the qualitative and subjective indices.

Table 2. Indicators explaining social sustainability based on qualitative and subjective indices. Source: Pour Taheri et al., 2010

Indicators	
Extroversion and interactivity	European Commission, 2001
Social accountability	Prpperdin, 2002
Hope for the future	Pepperdin, 2002: 2-8) (SFSO, 2002
Feeling of happiness	Pepperdin, 2002: 2-8) (SFSO, 2002
Social interaction	European Commission, 2001
Social participation	SFSO, 2002; Tschirley, 1996; CSIR, 2003
Social solidarity	Pepperdin, 2002
Job satisfaction	Bryden, 2005
Social trust	Pepperdin, 2002
Place attachment	Pepperdin, 2002
Fear of abnormalities	CSIR, 2003; Somper & Allen, 200
Feeling of deprivation	European Commission, 2001
Housing satisfaction	United nation, 2003)
Income satisfaction	SFSO, 2005
Satisfaction with the functioning of institutions	SFSO, 2005
Satisfaction with the amount of access to services	Countryside Agency Eurostat, 2002
Satisfaction with the quality of access to services	Countryside Agency Eurostat, 2002

Effects of industrial estates and areas

Development of industrial areas, in addition to creating sustainable employment through seasonal recruitment in the cold months of the year when farming activity is minimized, is considered as a source of supplementary income for low-income and vulnerable households. Establishment of industry in rural areas, in addition to increased income, brings about income stability, a change in the patterns of consumption and reduced income differences between townspeople and villagers. By the same token, the Economic and Social Commission for Asia and Oceania emphasized the outstanding role of these industries in its thirty-ninth meeting in 1983 and argued that such industries are very useful for the developing countries in the Skap region in a variety of ways and can help them in dealing with economic and social problems (United Nations, 1988).

The industrial sector as an important system in the village environment structure is of crucial importance due to employment generation, increased incomes and reduced rural poverty, especially in societies dominated by agricultural economy (Bazrafshan et al., 2013). Industrialization of villages in its real sense is one of the most important functions for creating employment and raising the individuals' income (Taqavi & Shafi'ei, 2000).

The weakening of traditional economic activities in rural areas, such as agriculture, mine and forest over the last few decades, has caused that the application of new strategies to strengthen economic foundations and diversification of economic activities in rural areas become urgent more than ever (Byrd et al., 2009). Therefore, in the current situation, it is essential to pay attention to the development of other economic activities of rural communities such as industrialization of rural areas (Sharifzadeh et al., 2002).

Results

Social dimension comprises four components of population, education, welfare and services to which items 10 to 19 in the questionnaire have been allocated. In the following table, descriptive statistics associated with the items of this dimension and its components have been provided.

Table 3. Descriptive statistics related to the items of social dimension

Component	Question	Very low	Low	Medium	High	Very high	Mean	SD	P-value of chi square test
Population	Establishment of industrial estates is effective in reducing the	0.00	0.86	23.34	53.60	22.19	3.97	0.70	0.00

	migration of villagers to cities Industrial estates are effective in the return of migrants to villages	0.00	0.00	30.17	50.29	19.54	3.89	0.70	0.00
	Industrial estates are effective in increasing the population of villagers	0.00	9.48	35.34	41.95	13.22	3.59	0.84	0.00
Education	Industrial estates are effective in increasing the literacy level of villagers	0.29	6.03	63.79	23.28	6.61	3.30	0.69	0.00
	Industrial estates are effective in raising the education quality of villagers	0.29	6.61	59.48	28.45	5.17	3.32	0.69	0.00
Welfare	Industrial estates are effective in raising the welfare level of villagers	0.00	2.01	22.99	52.30	22.70	3.96	0.73	0.00
	Industrial estates are effective in enhancing the villagers' interest in ruralization	0.00	0.86	33.05	45.69	20.40	3.86	0.74	0.00
	Industrial estates are effective in increasing the number of people covered by insurance	0.00	9.20	43.97	40.52	6.32	3.44	0.75	0.00
	Industrial estates are effective in raising people's participation in rural affairs	0.29	11.78	62.93	20.40	4.60	3.17	0.70	0.00
Services	Industrial estates are effective in directing rural infrastructure facilities	0.57	1.72	20.40	41.67	35.63	4.10	0.82	0.00

Study of social dimension items

Considering that these items are measured on a 5-point Likert scale, they have an ordinal scale and the median of these items are compared with number 3 (the middle number of the 5-point Likert spectrum), using Wilcoxon test. According to the obtained

results, it is observed that all items related to the social dimension are more than average. In other words, the industrial estate has been effective in all items evaluated in the social dimension.

Beside Wilcoxon test, the proportion of the data less than 3 can also be compared with the proportion of the data greater than or equal to 3 with the aid of binomial test. If the proportion of the data greater than or equal to 3 is higher, it can be concluded that the industrial estate has been effective in the studied indicators. The binomial test results have been presented in the table below.

Table 4. Results of comparing the proportion of the numbers lower than or equal to 3 with the numbers greater than 3 in social dimension items using the binomial test

Component	Item	Category	Number	Observed proportion	Tested proportion	P-value of the proportion test	Result
Population	Reducing villagers' migration to the city	<3	3	0.01	0.50	0.00	More than average
		>=3	344	0.99			
		Total	347	1.00			
	Migrants' return to the village	<3	0	0.00	0.50	0.00	More than average
		>=3	348	1.00			
		Total	348	1.00			
	Increasing the population of villagers	<3	33	0.09	0.50	0.00	More than average
		>=3	315	0.91			
		Total	348	1.00			
Education	Raising the literacy level of villagers	<3	22	0.06	0.50	0.00	More than average
		>=3	326	0.94			
		Total	348	1.00			
	Raising the education quality of villagers	<3	24	0.07	0.50	0.00	More than average
		>=3	324	0.93			
		Total	348	1.00			
Welfare	Rising the welfare level of villagers	<3	7	0.02	0.50	0.00	More than average
		>=3	341	0.98			
		Total	348	1.00			
	Raising the villagers' interest in ruralization	<3	3	0.01	0.50	0.00	More than average
		>=3	345	0.99			
		Total	348	1.00			
	Increasing the individuals covered by insurance	<3	32	0.09	0.50	0.00	More than average
		>=3	316	0.91			
		Total	348	1.00			
	Increasing people's participation in rural affairs	<3	42	0.12	0.50	0.00	More than average
		>=3	306	0.88			
		Total	348	1.00			
Services	Directing infrastructure facilities and services towards villagers	<3	8	0.02	0.50	0.00	More than average
		>=3	340	0.98			
		Total	348	1.00			

Considering the p-value obtained for the binomial test which is less than 0.05 in all items and given that the observed proportion in all items for the data greater than or equal to 3 is higher, it can be concluded that the studied proportion is significantly higher than 0.5; that is, the proportion of medium to high responses in items is greater than the proportion of the responses less than medium. Hence, the industrial estate is effective in all the studied items.

Study of social dimension components

Since each of the studied components in the social dimension includes more than one item (except for the component of services which, like its item, has been previously examined) and has a quantitative scale, the average of the data has a normal distribution regarding the volume of data that is more than 30 and based on the central limit theorem. Besides, t-test can be used to compare the mean of components with number 3. Results of this test are shown in the following table.

Table 5. Results of comparing the mean social dimension components with number 3 by t-test

Component	Mean	SD	t-statistic	Degree of freedom	P-value	Result
Population	3.818	0.648	23.556	347	0.000	More than average
Education	3.307	0.650	8.825	347	0.000	More than average
Welfare	3.606	0.573	19.728	347	0.000	More than average

Based on the obtained results, the status of all three social dimension components is higher than average. Further, 95% confidence interval for the average difference of each component with number 3 has been obtained, which is displayed in the table below. In this table, if the confidence interval contains only positive numbers, it indicates that the studied difference is only positive and thus, the average is significantly more than 3 (medium).

Table 6. Results of the comparison of the mean social dimension components with number 3 by T test

Component	Mean	Average difference and 3	Lower limit of confidence interval	Upper limit of confidence interval	Result
Population	3.818	0.818	0.750	0.887	More than average
Education	3.307	0.307	0.239	0.376	More than average
Welfare	3.606	0.606	0.546	0.667	More than average

As can be observed in the above table, the confidence interval obtained for all three components consists of only positive numbers, which suggests that the mean of components is significantly more than 3 (medium).

Comparison of social dimension components in studied villages

To compare the components in the villages under investigation, with respect to the sample size of less than 30 in some villages, the normality of these components is initially examined by Kolmogorov-Smirnov test and if the component is normal in all villages, one-way analysis of variance is applied to compare the mean of the desired component. Given that the normality of data distribution was not confirmed in all villages (with a sample size of less than 30) and the obtained p-value is lower than 0.05, the use of the parametric ANOVA test is not allowed for any of the components; thus, the nonparametric Kruskal-Wallis test is applied to compare the median of each component in the intended villages. Results of this test have been provided in the table below.

Table 7. Results of comparing the studied villages in social dimension components using Kruskal-Wallis test

Village	Sample size	Population	Education	Welfare	Services
Avareshk	63	240.24	266.21	252.90	179.92
Pivehzhan	30	62.82	104.05	63.89	113.68
Jamal Deh	15	92.37	116.57	98.33	87.20
Hoseinabad	22	143.16	131.70	130.84	126.91
Derakht-e Sefidar	15	67.93	114.77	101.50	117.77
Dizbad-e Sofla	55	214.39	169.34	200.05	233.15
Soltanabad	60	206.83	187.19	207.22	214.33
Seidabad	30	199.65	173.78	190.83	187.42
Fakhr Davoud	30	215.00	178.17	202.53	199.83
Qasemabad	27	53.67	120.69	62.96	100.00
Test statistic		159.46	108.30	145.26	89.03
Degree of freedom		9	9	9	9
P-value		0.000	0.000	0.000	0.000

Since Kruskal-Wallis test calculates the statistics based on the data rank, in its report, the average data rank for each component has been presented for each village in the table above. Finally, p-value of this test for each component is observed. The null hypothesis of this test is the equality of the median of the studied component in all villages. If p-value is lower than 0.05, the null hypothesis is rejected and the median of the component is not the same in villages. Based on the results obtained from Kruskal-Wallis test, p-value of the test is less than 0.05 for all components, which indicates that the median of the component

is not similar in villages and there is significant difference. The highest average rank in all three components of social dimension is related to Avareshk village and the lowest average rank is related to Pivehzhan village.

Conclusion

Establishment of industrial estates in rural areas has potential and actual capabilities to attract job seekers in villages and can be effective in modifying rural population problems in terms of employment and activity. Creation of new job opportunities that is the feedback of the construction of industrial estates can prepare the ground for decreasing inequalities between the village and city and improving the sustainability of villagers' settlements. Additionally, development of such industrial areas is a suitable stimulus for the formation of industrial units and an appropriate platform for increasing the production and productivity of active industries and consequently enhancing the sustainability of industrialization in villages. By creating industries in rural areas, providing income and employment and reducing rural poverty through non-agricultural activities, it is possible to change the village space into a biologically familiar atmosphere and achieve the sustainability of rural settlements both economically and socially and environmentally.

To compare the average of respondents' opinions about the impact of the industrial estate on social sustainability, the mean of this component was compared to number 3 (medium) using t-test, whose results are shown in the following table.

Table 8. Results of comparing the mean effect of the industrial estate on social dimension with number 3 using t-test

Examination	Mean	SD	T statistic	Degree of freedom	P-value	Hypothesis result
Mean effect of the industrial estate on social dimension	3.708	0.541	24.402	347	0.000	Approved

It can be observed that p-value divided by two is less than 0.05 and t-statistic is positive (24.402). Thus, it can be stated that the null hypothesis indicating the ineffectiveness of creating industrial estates in social sustainability of villages is rejected. In other words, the mean effect of the industrial estate on social sustainability of villages is more than average.

Therefore, it can be concluded that the establishment of industrial estates is effective in social sustainability of rural areas; that is, the second hypothesis is approved with 95% confidence.

The confidence interval method for the difference of 3 from the mean:

One method to test the hypothesis of comparing the average with number 3 is to obtain the confidence interval for the difference of 3 from the mean. If this confidence interval contains only positive numbers, it can be concluded that the desired average is significantly greater than 3. If the confidence interval contains only negative numbers, it is concluded that the mean of the target population is significantly less than 3. And finally, if the confidence interval contains zero number, it is concluded that the mean of the population has no significant difference with number 3. Confidence interval for the difference of 3 has been obtained from the average impact of the industrial estate on social dimension, which has been presented in the following table.

Table 9. 95% confidence interval for the difference of 3 from the average impact of the industrial estate on social dimension

Upper limit	Lower limit	Confidence interval including	Confidence interval result
0.7653	0.6511	Only positive numbers	The mean under study is significantly greater than 3

Considering the above table, it can be mentioned that the confidence interval only contains positive numbers. Hence, the average impact of the industrial estate on social dimension is significantly more than 3 (medium). Therefore, it can be concluded that the establishment of industrial estates is effective in social sustainability of villages; that is, the second hypothesis is approved.

In this regard, results of the present study reveal that Binaloud Industrial Estate has had positive effects on the sustainability of its surrounding rural settlements and accordingly, the following points are stated:

- Although the construction of the industrial estate has paved the way for reduced migration, it is recommended that the ground be prepared for accepting migrants in villages through increased number of industrial units and activities and consequently greater use of local labor force.

- Creation of physical conditions such as easy access to industrial estates through appropriate ways and facilities of the estate, which can have an important role in the sustainability of rural settlements.

- Creation of technical and vocational schools and knowledge work in rural areas or industrial estates and attraction of rural students in proportion to the type of industrial activities in the region and their attraction in line with social sustainability of rural settlements.

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