

The spatial analysis of effective factors on development of border rural regions of Saravan, Sib and Suran

Dr. Mohammad AjzaShokuhi ¹, Dr. Barat Ali Khakpoor ², Abdolsami Sepahi ³

¹. Assistant Professor, Department of Geography, Faculty of Letters and Humanities, International Branch of Ferdowsi University of Mashhad, Mashhad, Iran

². Associate Professor, Department of Geography, Faculty of Letters and Humanities, International Branch of Ferdowsi University of Mashhad, Mashhad, Iran

³. Ph. D Student in Geography and Urban Planning, International Branch of Ferdowsi University of Mashhad, Mashhad, Iran
sepahi1387@yahoo.com

Abstract: Development planning in Iran in recent 50 years is mostly based on section strategies and is mostly without development views and attitudes based on development conditions. The study area as a sub system of Iran residencies system was not far from these problems and was encountering with some issues as low literacy and employment, the lack of good communication ways, the shortage of health facilities, low agriculture and industries level and etc. indeed, these conditions leads into structural balance and development level in the region. The current study aimed to recognize and evaluate the effective factors in the development of rural areas of Saravan town and field and library methods were applied both to evaluate the indices. To evaluate the development HDI and taxonomy were applied and for data analysis, the advanced statistical methods such as multivariate regression, factor analysis techniques were applied. The final results of this study showed that spatial distribution of development indices in the region was not balanced as environmental and geographical conditions and establishment of rural residencies had considerable effect in distribution of the indices and services. Also, the exact share of health factors variables, agriculture, border trading were the most effective factors in determining the development level of the region.

[Mohammad AjzaShokuhi, Barat Ali Khakpoor, Abdolsami Sepahi. **The spatial analysis of effective factors on development of border rural regions of Saravan, Sib and Suran.** *Life Sci J* 2012;9(4):4823-4829] (ISSN:1097-8135). <http://www.lifesciencesite.com>. 725

Keywords: Factor analysis; rural development; regression; Saravan; HDI

1. Introduction

The geographical environment has spatial and temporal dimensions consisting of different elements as city and village. Today, the villages are faced with different issues making consideration to the villages due to the dominance of systematic relations between effective factors in formation of geography space, city and village and the mutual effect of these two aspects.

Now, the villages are faced with some problems as the shortage of living space, low population and imbalanced distribution in various regions, sending migrants, the shortage of good employment, inadequate income, low education level, education, health, life expectancy, etc and the lack of regional balances and high difference between urban and rural facilities exacerbate these problems.

Therefore, until social and economical opportunities in rural regions are as today form, any attempt to solve it increases the regional inequalities, migration from villages and more problems in rural regions (Badri, 1989, 28). To reduce the inequalities, the planning should be used to balance between the population and environment facilities in the employment of each region and other effective factors in the development of each Geography region.

The villages in Iran are of great importance before land reformation. The rural economy in Iran is used to provide economical needs of the society and in terms of political issues, the destiny of Iran is with their destiny due to the dependency of Iran to villagers activities but after the advent of oil in Iran economy and the growth of single product economy, the real position of village was eliminated and positive rural economy of Iran was turned into a consumption economy. It seems that to achieve a prosperous economy out of dependency and single product economy, special attention to rural areas and planning rural problems is necessary.

The evaluation of rural development as make the planners informed with the most important capabilities and the lack of facilities of the regions is of great importance. As after the Islamic revolution, by the activity of Jihad in villages of Iran more services are predicted. It seems that in population stability in rural areas we didn't achieve positive results. Thus, despite considerable costs, there are many problems in rural areas and to investigate these issues and its reasons and services distribution we should do more studies. This study is carried out in this regard.

The strategic rural development is used to improve the rural life. It should consider all spatial elements and development indices and inside and outside effective factors (consulting engineers D.H.V, 1992, 20). What is considered of development is the full development of villages and in which all the systems are in mutual action and systematic attitude instead of section attitude should be considered. Thus, rural integrated development is dependent upon increasing production and variety of facilities and organizing spatial network of rural dispersed residential and defining the position of village in national development plans (Saedi, 1998, 157). The mentioned processes like other rural regions affected rural areas of Saravan and Sib and Suran (Management and planning organization of Sistan Baluchistan, 2006, 6).

Of sum of the population of Saravan town in 1996, 58651 people were in urban areas and 109476 people in rural areas. Of the sum of the population of Saravan town in 1996, 58651 people were in urban areas and 109476 people were in rural areas and the urbanization rural people in this town was 34.01% and 65.99% that compared to the similar ratios in total province (46.2% urban, 53.88% rural), the high share of living in rural area and the importance of this living model in social composition of the population of the town is observed well (Plan and budget organization of sistan and Baluchistan, 1997, 40). The comparison of the employment composition in major parts of town showed that of sum of the employed people of the town 40.3% were in agriculture, 21% in industries and 38.2% in service activities. While the similar indices in total province were 33.1%, 22.7% and 44.2% (ibid, 4). It is considered that in the first degree, agriculture had the highest share in employment of this town that is done mostly in rural areas. Despite the high importance of agriculture in employment of the villages compared to other towns of the province in changes of urban and rural population of two recent period of statistics, it is observed that urban population growth rate of this town is two times more of similar rate of the province, while urban population growth rate for total province is 4.49%. This rate in Saravan was 9.46% and Saravan town had the highest urban population compared to other towns in the province. The above items show that migration from village to city in this town compared to other regions of province despite high potentials of rural areas was high. If this trend continues, not only the problems of urban regions are increased, but also, agricultural potentials of the villages related to employment are reduced. The current study was carried out in 14 towns of this city in 2007. To evaluate the development level of the towns, taxonomy and combinational development

indices were applied. The applied indices in this study were used in accordance with statistics of 1996 and the comparison of the results with the statistics of 2006. The current study aimed to study the effective factors in development in human and natural aspects and by advanced techniques, the share of each of the factors in rural regions development of Saravan was defined exactly to find the final aim of achieving a good model of rural development in this town. The applied indices in this study were the combination of economical, social, etc items.

The rural regions of this town have the following issues:

- 1- Considerable migrant sending of the regional villages
- 2- The type of traditional agriculture despite the high capabilities of agriculture
- 3- The lack of adequate capital to do productive activities in the village
- 4- International and illegal activities

Based on the social, economical and political changes of Iran and formation of some issues as unduly development of cities population, increasing population, the increase of migration from rural areas to cities, the lack of national consideration to spatial structure of rural regions, the existence of the villages with low capability, geographical isolation and the weakness of communicative networks, low employment condition in villages as the characteristics of rural areas of most regions in the country and rural areas in the studied region. The following hypotheses and questions are raised:

- 1- The developments of border markets are effective in stability of the population in rural areas of Saravan town.
- 2- The cooperation companies of date product can create the most important aspect of employment in rural areas of Saravan town.
- 3- There is an association between development degree of rural areas and agricultural abilities.

Questions

- 1- Which are the employment capabilities in border villages of Saravan town?
- 2- Which are the effective measurements from the view of villagers of Saravan town to improve the development levels?

2. Research method

In this study, library, field and analytical methods were applied. In the first stage, the required resources were identified and by the existing statistics, the notes were taken and another part of the data of this study was provided by questionnaire, interview and direct observation.

In the second stage, the obtained data were classified and organized. For the analysis of spatial condition of developing the studied region, the data of statistics of 1996, 2006 were used.

In the third stage, the data were analyzed and after plotting the chart and map, factor analysis and HDI and taxonomy models were used. For exact calculation of the effective factors in the development, multi-variate regression was applied. In sum, the method is based on analytical-inductive method.

Data collection instruments

1- By referring to scientific centers as libraries and scientific centers, the theoretical and scientific resources were collected.

2- The required statistics were applied of the organizations and offices of Sistan and Baluchistan and planning management organization of the province.

3- The required maps were provided from survey organization (the map of Iran villages) and geography organization of army forces and by Iran statistics center data by Arc View software, it was done during the required plots.

Data analysis method

At first, the required data were entered by SPSS software and then the data analysis was done by statistics techniques of factor analysis and multivariate regression.

1- The analysis of the maps was done by Gis and Arc View software.

2- In the next stage, we investigated the condition of services in towns of the region and by showing the indices on the map, the existing condition of the indices was identified.

3- By factor analysis technique and multivariate regression in spss software to predict the development priorities model, the development index was considered as dependent variables and factor scores were considered as independent variable.

4- Finally by combining the factors, the conclusion and recommendations are presented.

The geographical condition of the study area

The study areas is Saravan, Sib and Suran in the east of Sistan and Baluchistan and geographically are in the same border from north and north west to Khash, west and south west to Iranshahr and Sarbaz and from east and south east to Pakistan. Saran is with the area of 13905 km², Sib and Suran with the area of 6780 km².

3. Filed indices

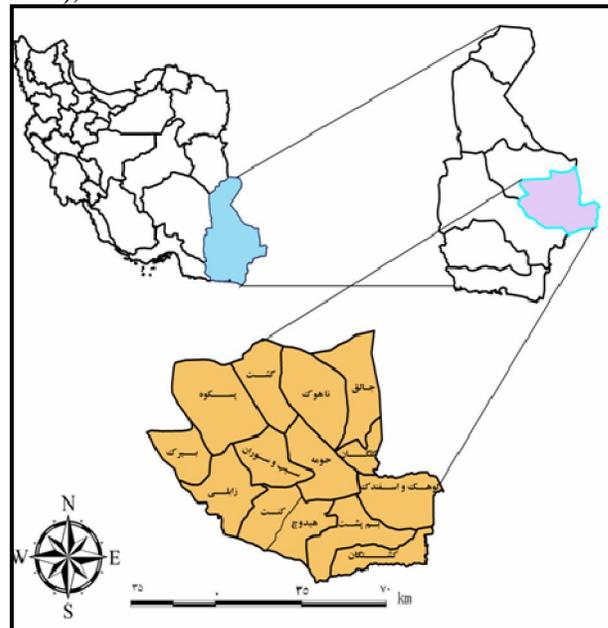
For better clarification of the condition of development of Saravan town villages and prioritizing the effective needs in the development based on the comments of the villagers themselves, a questionnaire with 28 questions was designed and

was distributed by simple random method based on the population of each suburb, 30 samples were given. As the needs and facilities of rural regions of border suburb are different from other regions the study indices are divided into border suburb and non-border.

Table 1: The political divisions of Sistan and Baluchestan province, Saravan, sib and Suran

Locations	The number of towns	division	suburb	The number of cities	residential village
Sistan and Baluchistan	14	40	102	36	8908
Saravan town	----- -	3	8	5	443
Sib and Suran	-----	2	4	2	264

Source. Management and planning organization, statistical journal of Sistan and Baluchistan, 2009),



Source. The authors

The study indices

- 1- Cooperative companies of producing date
- 2- Employment
- 3- Agriculture
- 4- Communication ways
- 5- The cooperative companies of agriculture
- 6- Border trading
- 7- Husbandry
- 8- Border market

The results of the study indices in border suburb Based on Multiple Respose method in SPSS soft ware, the field interpretations were scored and the results are shown in Table 2.

Table 2: The scores of field indices of border suburb of Saravan towns

Number	Index Dehestan	1	2	3	4	5	6	7	83
		1	Bamposht	22	28	20	30	26	30
2	Keshtegan	21	27	19	29	25	29	19	29
3	Kuhak Esfandak	22	26	17	30	27	30	18	30
4	Jaleq	27	29	16	30	25	28	19	30
5	Kolegan	24	30	17	30	27	28	19	29
6	Nahug	25	29	27	29	30	27	18	28

After defining the scores of each suburb, the share of each index is defined by factor analysis. The investigation of the study variables in this part shows that totally two factors among the existing factors had the considerable effect on rural border regions of this town. The first factor 43.06%, second factor 29.31% variance is observed. In the first factor, the border trading indices, employment, cooperative companies of data production had the highest share achieving 95%, 75% and 64%, respectively. Table 3. Also, Table 4 shows the factor scores of these indices.

Table 3: The variances of field indices of border suburb of Saravan town

First factor		Second factor	
Index	Variance percent	Index	Variance percent
Border trading	0.95	Agriculture	0.68
Employment	0.75	Communication ways	0.65
Border market	0.69	Husbandry	0.57
Date production cooperative companies	0.64		
Agriculture production cooperative companies	0.64		

Table 4: Factor scores of field indices of border suburb

Dehestan	Factor 1	Rank	Factor 2	Rank
Bamposht	-0.954	1	0.156	6
Keshtegan	-0.465	5	-0.471	5
Kuhak Esfandak	-1.015	3	-0.779	4
Jaleq	0.249	6	1.252	1
Kolegan	0.651	4	1.053	3
Nahug	1.534	2	-1.210	2

Source: The calculations of authors

Rural Development Index (RDI)

In this section, to achieve the better recognition of the development of the villages in the region and classification of the villages in terms of

the classification development in three levels (supra development, middle development and sub-development) is done. In this study, HDI technique was used as a practical method but instead of using three required indices in the method of UN, 26 indices in economical, social, cultural, structural and agriculture are used.

Leveling the development of the studied villages by RDI

For hierarchical leveling of the villages of Saravan, RDIT technique was applied by which 26 indices in fourteen suburb of Saravan were selected in accordance with the statistics of 2003 and based on the results were analyzed.

The selected indices are as following:

- 1- The percent of total population of the villages
- 2- The percent of the literate population of total villages
- 3- The percent of the villages with water network
- 4- The percent of the villages with electricity
- 5- The percent of the villages with Asphalt way
- 6- The percent of the villages with health centers
- 7- The percent of the villages with health house
- 8- The percent of the villages with drugstore
- 9- The percent of the villages with physician
- 10- The percent of the villages with dentist
- 11- The percent of the villages with assistant nurse and midwifery
- 12- The percent of the villages with health assistant
- 13- The percent of the villages with social worker
- 14- The percent of the villages with telephone services
- 15- The percent of the villages with post mail services
- 16- The percent of the villages with agency services and post office
- 17- The percent of the villages with Islamic council
- 18- The percent of the villages with rural cooperative company
- The percent of the villages with elementary school
- The percent of the villages with guidance school
- The percent of the villages with high school
- The percent of human resources in agriculture sector of the villages
- The percent of the fields of the villages
- The percent of the deep well of the villages
- The percent of the tractor in villages

- The percent of the packing industries of data products in villages

Table 5: Determining the RDI of Saravan town based on the statistics of 2003

No.	suburb	Deprivation index	RDI	Final rank of rural development	Final rank of deprivation index
1	Bamposht	0.88	0.12	12	3
2	Keshtegan	0.70	0.30	5	10
3	Kuhak, Sfindak	0.70	0.30	6	9
4	Jaleq	0.88	0.12	12	3
5	Kalegan	0.90	0.10	13	2
6	Nahug	0.92	0.08	14	1
7	Birak	0.78	0.22	10	5
8	Zaboli	0.48	0.52	3	12
9	Paskuh	0.73	0.24	8	7
10	Sib and Suran	0.34	0.66	1	14
11	Humeh	0.52	0.48	4	11
12	Gasht	0.77	0.23	9	6
13	Kant	0.79	0.21	11	4
14	Hiduch	0.72	0.28	7	8
	Mean		0.31		
	SD		0.19		

Source. Authors' calculations

By investigating Table 5 and estimation of the development and rural deprivation of Saravan town by rural development technique, the suburb are classified into the following groups:

a. Supra development suburb

Sib, Suran and Zaboli suburb are in the first rank in terms of development levels and in terms of development index is higher than 52%. In terms of suburb rank, Sib and Suran are in the first position with the index 66%. Normally, the villages of this suburb are close to the center of suburb and in terms of national and economical facilities are in better position.

b. Mid-development suburb

The Dehestans that are between 12.50% in terms of development index are in this group and Humeh, Hiduch, Paskuh, Gasht, Birak, Kent, Keshtegan and Kuhak Esfandak are in this level.

c. Sub development suburb

Jaleq, Kalegan, Nahuk, Bamposht are lower than 12% in terms of development index and these suburb don't have natural, economical, etc facilities compared to other suburb.

The prediction model of development priorities of Saravan town based on multi variate regression model and factor analysis

By applying SPSS software and multivariate regression model, we can present the priority of developing rural regions based on factor scores. In these calculations, RDI is considered as dependent variable and factor scores are considered as independent variables.

The results of the calculations showed that R2 is the calculated determination coefficient as 95% and it shows that 95% of the development changes in

the applied indices in its evaluation are related to these three factors. By reducing the percent of independent variables, determination coefficient is reduced the same and in case of its increase, the development of above regions are added. Table 6.

In Table 7, variance analysis calculates the significance of regression in linear relation between the variables with significance level Sig. 0.000 and significance at 98% is supported.

By Table 8 showing that the index in the regression model, the prediction model of development priorities of rural areas of Saravan town are presented. Thus, the regression prediction equation is calculated as following:

$$Y=0/312+0/148F_1+0/109 F_2+0/091 F_2$$

The significance level showed that the effects of first and second factor had the highest significance level, respectively. To predict the priorities of rural development of Saravan town was important because one unit change in standard deviation of development will change as 0.705, 0.520, 0.434 unit. Beta values show high importance of first factor compared to other factors. Thus, by considering regression model, we can say that prediction factors of development of the rural areas with bottom to up levels are:

- 1- Improving and increasing health services, development of communicative facilities (telephone, post office)
- 2- The development of elementary school, guidance school and high school, increasing the Asphalt communication lines
- 3- The development of date packing industry and additional activities, increasing the access to tractor

Table 6: The statistics of multivariate regression analysis of development indices of Saravan town suburb

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.977(a)	.955	.941		.05080

a Predictors: (Constant), REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1

Table 7: The variance analysis regression of multivariate regression analysis of development indices of Saravan town suburb

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.546	3	.182	70.563	.000(a)
	Residual	.026	10	.003		
	Total	.572	13			

a Predictors: (Constant), REGR factor score 3 for analysis 1, REGR factor score 2 for analysis 1, REGR factor score 1 for analysis 1

b Dependent Variable: RDI

Table 8: The coefficients of development regression indices of Saravan town suburb in the model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.312	.014		22.953	.000
	REGR factor score 1 for analysis 1	.148	.014	.705	10.494	.000
	REGR factor score 2 for analysis 1	.109	.014	.520	7.737	.000
1	REGR factor score 3 for analysis 1	.091	.434	.6459	.000	

a Dependent Variable: RDI

First hypothesis

The development of border markets affects population stability in rural areas of Saravan town.

In the investigation of field indices of border suburb as a need for population stability in the first and second degree of the development of suburb and the results showed that 69% of variance is located between the variables and it is in the first factor of the study. In addition, first factor includes 43.06% of society variance. Any change in facility of rural areas to the development of border markets affects directly on the development of the region and population stability compared to other factors. Thus, based on all the above items, we can say that first hypothesis is accepted and development of border markets affects the population stability in rural areas of Saravan town.

Second hypothesis

The cooperative companies of producing data are the most important aspect of employment in rural areas of Saravan town. Among the investigated indices in field studies, this index is consisting of 64% variance among border suburb. Among non-border suburb, it includes 89% of the variance. This shows that data production cooperative companies among rural areas of non-border of Saravan town are important to create job and the above hypothesis is supported.

Third hypothesis

There is an association between development degree of rural areas and agriculture abilities.

The loaded variables in the third factor have high correlation ranging 0.54-0.72% and it shows high share of agriculture in the rural development of Saravan town. In addition, in the prediction model, development priorities of Saravan town are achieved based on factor scores and rural development, the agricultural facilities are on the priority. This hypothesis is supported.

The investigation of research questions

First question

1- Which are the employment capabilities in border villages of Saravan town?

The results of field studies among border suburb of Saravan showed that among the raised questions in this field, border trading showed 95% of variance, development of border market 69% of variance and husbandry showed 57% of variance. It can be said that the most important employment capabilities in border rural regions of the studied area is border trading, development of border markets and husbandry.

Second question

2- What are the effective measurements from the view of villagers of Saravan town to improve development?

The results of analysis of the questions of this part by factor analysis technique showed that communicative ways development showed 0.96% variance, the development of cooperative companies of producing date with 0.89% variance, the development of cooperative companies of producing agriculture, 0.87% variance and increasing job showed 0.67% variance.

It can be concluded that the effective measurements by the villagers for development of these regions are 1- The development of communicative ways, 2- The development of cooperative companies of date production, 3- Development of cooperative companies of agriculture production, 4- increasing job.

4. Presenting the strategies and recommendations

The priority of needs is the initial principles in planning. The prediction of what improves the development level of each society is of great importance. By considering the findings of this study, the following recommendations are presented to improve the life condition and increasing development level in the villages of Saravan town:

1- First priority to increase the development level of the villages, improving the health facilities as this factor is one of the effective factors in all the indices.

2- The investigation of literacy factor in the region shows that this index is one of the infrastructural factors affecting all the development indices as directly and it is not in good condition. To improve the index condition by considering the position of each suburb, first priority is considering the villages located in Jaleq, Paskuh, Bamposht, Kuhak Esfandak, Gasht, Nahuk, Birak, Hiduch, Gashtegan, Kalegan and Kant. In improving the literacy condition the development of high school, guidance school and elementary schools with training specialized forces are recommended.

3- The third effective factor on the development of villages is improving agriculture condition. The results of this study showed that agriculture had considerable share on the development of the region. The improvement of this index is possible via investigating the capabilities of each region and exact identification of its abilities. The exact investigation of climatic conditions, region water and soil, controlling surface water is effective. Also, improving communicative ways are in the third priority.

4- The development of the facilities of access to drinking water, the development of communicative ways is in the next priority. Development of border markets in the region provides the background for stable employment and reduces the illegal activities in the region directly. By considering the priority of the needs and comments of villagers, the development of border market is recommended. The development of cooperative companies of producing date and agriculture production cooperative companies are the needs presented by people and its development is recommended.

5- To improve the life condition of people we can recommend another applied research based on the existing condition of each suburb as next researches of the researchers.

6- To develop date industry, we can propose the various stages of production, investment,

export and marketing, etc as a study in continuing work to the students of this field.

7- The development of border markets in creating stable job as applied is another issue to continue this work that can be effective in development of the region.

8- To improve the index of education, absorbing the forces including native and non-native as long-term commitment as a special adoption via education can be the solution of problems of shortage of specialized force.

9- In health index as the most important and effective index in development of this region based on the findings of this study, we can absorb domestic forces of the province by increasing the percent of native acceptance in medical fields of total province.

Corresponding Author:

Abdolsami Sepahi

Department of Geography and Urban Planning
International Branch of Ferdowsi University of
Mashhad, Mashhad

E-mail: sepahi1387@yahoo.com

References

- 1- Badri, Ali. 1991. Locating development of villages center, case study of Gazran of Qom, MA thesis, supervised by Dr. Mehdi Taleb. Tehran. Tarbiat Modares University.
- 2- Papli Yazdi, Hossein and Mohammad Amir Ebrahimi. 2006. Rural development theories, Tehran. SAMT publication.
- 3- Planning and budget organization. 1975. The evaluation of three-year performance of fifth plan. Tehran. Plan and Budget organization.
- 4- Plan and budget organization. 1986. Basic plan of monitoring Islamic Republic of Iran. Tehran. Plan and budget organization.
- 5- Planning and management organization of Sistan and Baluchistan. 2006. Statistical journal of 2005. Management and planning organization.
- 6- Planning and management organization of Sistan and Baluchistan. 2007. Statistical journal of 2005. Management and planning organization.
- 7- Saeedi, Abas. 1998. Rural Geography basics. Tehran. SAMT publication.
- 8- Soleimani tabar, Maryam. 2003. The investigation of spatial structure and analysis of rural development indices in Barsir town. MA thesis of Geography group of Tarbiat Moalem University

12/3/2012