An Investigation on Degree of Development of Rural Areas by Means of Planning Model: A Case Study in Bandar Anzali, Iran

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Abstract: In the process of planning for the rural development, it is important to recognize the structural features of development levels and also be aware of the environmental potentials and capacities of the investigation regions. The first step is identification and grading the regions in terms of social, economic and the related services. In this field, standard variables are used as method of evaluation. The aim of present research was to find out descriptive and analytically evaluate the degrees of development for Bandar Anzali's suburbs and villages. Statistical population has included 28 villages of Bandar-e Anzali. In the study, 32 indices were considered. Finally, the number of indices was narrowed down to five indices. The degree of the development of the villages were analyzed and determined. The findings showed that the villages did not receive economic, social and services are equally benefited. The villages of Bandar Anzali were categorized as 66.6% developed, 22.9% less developed and 10.5% undeveloped. These differences demanded a unified and balanced plan for the preparation of programs and the execution of purposeful projects in the rural areas of the investigating regions.

Key words: Planning model · Rural development · Indices · Bandar Anzali · Social and economical developements

INTRODUCTION

Development is an encompassing trend to increase humanitarian and social capabilities to respond to civilized and social needs of society [1]. The rural development is a process of expansion of the domain of people's choices, intensifying their participation, enabling them to make decisions for the creation of their own atmosphere [2]. In other words, the rural development as a concept of a collection of experiences in the methods of organizing production, creating welfare and trade which has a long history in the rural activities and also is not confined to a specific system or country [3]. The importance of rural development in the developed countries is mostly due to the role of rural areas in their economy [1, 4]. The ultimate goal of rural development is to reduce poverty [5]. In order to understand the concept of sustainable development it necessary to learn more about development of economic principles and practice for natural resource management which identify the desirable environment. To achieve this goal, it is essential to use the facilities and potentials optimally and identify the limitations and obstacles [6]. For deep understanding of

the limitations, it is essential to have a comprehensive attitude toward the environmental issues in planning of the rural development. It is necessary to focus on the problems, make suitable approaches and set proper criteria [4, 7].

In the process of planning and developing the rural areas in terms of the level of development, review indices such as: roads, health, communication, education, etc are among the indices that show a certain area is whether advantaged or disadvantaged [6, 8]. Since in all planning programs it is necessary to use scales for full understanding therefore for the present research special models were utilized [9].

The purpose of present project is to investigate the degree of development in rural areas of Bandar Anzali. Through the data collections and field observations, the levels of development of the city are identified and recorded on political map by means of 32 indices for the socioeconomic and cultural variables. These indices were reduced to five important indices for the facilitation of the substructure and superstructure services which are summarized in the respective Tables.

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MATERIALS AND METHODS

The method used in this research is a descriptive and analytical. The techniques applied for the collection of data were based on literatures and field observations. The organization and classification of the information were carried out by means of model with the standardized variables and use of SPSS software.

Objective of the Study: This research aims to calculate the degree of development of the villages in Bandar Anzali according to Z-score model [10].

The Location of Bandar Anzali: Bandar Anzali is cities of Guilan Province in northern Iran [11]. According to the census of 2006, it has a population of 133134. Bandar Anzali has a central section and two rural districts named Chaharfarizeh and Lijarkihassanroodand 28 rural (Figure 1) [12].

The study area located by the Caspian Sea has a wet and moderate climate [13]. The average temperature of Bandar Anzali has been between 4.5 and 29.2 degrees centigrade [9, 13]. The annual precipitation was 1854.3 millimeters [14, 15].

Model of Standardized Variables and its Application in Rural Studies: One of the grading methods for the development is the method of standardized variables or (Z-score). It provides the planners with a reliable criterion for the study and analysis of development [13].

The indices used in this method include the population growth and other important variables for rural development. To create relative equilibrium among all the regions, it is the duty of all the planners to identify the deprived and privileged villages according to define criteria [16].

The Procedure of Standardized Variables in Action: The Z-score is used which includes three stages:

Stage 1: The indices are of the most essential and vital signs of the status of any society. In fact, the indices are a picture of the whole society; how is the society going? Is it in a severe situation? Does it improving? In the first stage, the indices are determined (Table 1) [7].

Stage 2: The mean and standard deviation of the collected data are calculated and written at the bottom of the respective column (Table 2). The SD of the population growth is defined by the following equation:

$$\sqrt{\frac{\sum X^2}{N} - X^2} = \sqrt{\frac{76.55}{7}} - 15.22 = 2.1$$

Stage 3: The data become standardized through Z-score. After that and grading is performed (Table 3). The ranking is done on a scale from big to small sizes [9]. The standardized values of the growth of rulral population is defined as follows:
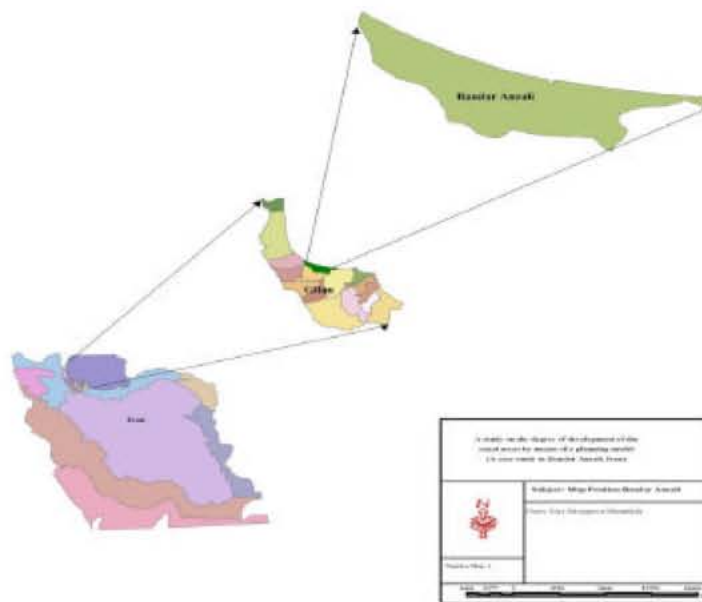

Fig. 1: Geographical location of Bandar Anzali

Table 1: An overview of the rural services in Bandar Anzali, 2006

Sub and super structure

Areas	Sports centers	Town councils	Other religious polaces	Imamzadeh (Holy shrines)	Mosques	Banks	Tea houses	Butcher's shops	Bakery	Grocery stores	Access to newspapers	Telephone	Public transport	Post boxes
Abkenar	*	*		*	*	*	*	*	*	*	*	*	*	*
Eshpela		*					*		*	*		*	*	*
Eshtarkan				*	*						*		*	
Bashman		*		*	*		*	*	*	*	*	*	*	*
Torbebar	*	*			*		*		*	*	*	*	*	*
Chaibijar	*	*			*		*				*	*		
Khomeiran		*			*		*		*	*		*	*	*
Roodposht		*		*	*		*		*	*		*		
Sangachin	*	*		*	*		*	*	*	*	*	*	*	*
Siahkhale Sar					*		*		*	*	*	*	*	*
Siah Vazaan	*	*			*		*		*	*		*	*	
Shileh Soar		*	*		*		*		*	*		*	*	*
Aliabad	*		*		*		*		*	*	*	*	*	*
Kapoorchaal	*	*	*		*	*	*	*	*	*	*	*	*	*
Kachalak	*	*			*		*		*	*	*	*		
Karbalai Mehdigoodeh														
Karkan		*	*	*	*		*		*	*	*	*	*	*
Koochak Mahale		*			*		*		*	*		*	*	*
Galoogah												*	*	
Mahroozeh											*		*	
Moaf		*		*	*		*		*	*		*		*
Torbegoodeh		*			*				*	*		*		
Hassanrood	*	*	*	*	*		*		*	*	*	*	*	*
Shanghayepardeh		*					*		*	*		*		
Talebabad		*		*	*		*	*	*	*	*	*	*	*
Golshan	*	*			*		*		*	*	*	*	*	*
Lijarkihassanrood	*	*		*	*	*	*	*	*	*	*	*	*	*
Jafroodpaeen	*	*			*		*		*	*	*	*	*	*

Source: The general, social and economic features of the residential areas of Bandar-e Anzali in the year 2006 and the field studies of 2008

Continue

Sub and super structure

Areas	Libraries	Pharmacies	Health center	Rural miwife	Dentists Physicians	Health house	bathrooms	TV (channel 3)	TV (channel 2)	Tv (channel 1)	Running gas	Electricity	Running water	Paved roads
Abkenar	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Eshpela								*	*	*		*	*	*
Eshtarkan								*	*	*		*	*	*
Bashman	*	*				*	*	*	*	*	*	*	*	*
Torbebar								*	*	*	*	*	*	*
Chaibijar								*	*	*		*		*
Khomeiran			*				*	*	*	*		*	*	*
Roodposht								*	*	*		*		*
Sangachin			*			*	*	*	*	*	*	*	*	*
Siahkhale Sar	*		*					*	*	*		*	*	*
Siah Vazaan						*		*	*	*		*	*	*
Shileh Soar						*		*	*	*		*	*	*
Aliabad	*					*	*	*	*	*	*	*	*	*
Kapoorchaal	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Kachalak			*			*	*	*	*	*	*	*	*	*
Karbalai Mehdigoodeh											*		*	
Karkan		*						*	*	*	*	*	*	*
Koochak Mahale								*	*	*		*	*	*
Galoogah								*	*	*		*		*
Mahroozeh								*	*	*		*		*
Moaf								*	*	*		*	*	*
Torbegoodeh					*			*	*	*	*	*	*	*
Hassanrood		*	*		*	*		*	*	*	*	*	*	*
Shanghayepardeh						*		*	*	*	*	*	*	*
Talebabad					*	*		*	*	*	*	*	*	*
Golshan						*	*	*	*	*		*	*	*
Lijarkihassanrood	*	*	*		*	*	*	*	*	*	*	*	*	*
Jafroodpaeen	*		*		*	*		*	*	*	*	*	*	*

Source: The general, social and economic features of the residential areas of Bandar-e Anzali in the year 2006 and the field studies of 2008

Table 2: Based on the model of standared variables, the percentages, mean and the standard deviations of the employed pouplation in the villages of Bnadar Anzali, 2006

Name of the areas	Population	growth rate (1996-2006)	X²	employment	X²	Literacy	X²	substructure	X²	superstructure	X²
Abkenar	2994	-2.4	5.75	81	6561	72.7	5285.2	20	400	14	196
Eshpela	200	-1.6	2.56	83.9	7039.2	74.3	5520.4	8	64	6	36
Eshtarkan	56	-3.4	11.56	43.3	1074.9	70.5	4970.2	6	36	4	16
Bashman	1405	2.1	4.41	84.5	7140.2	85.5	7310.2	16	256	10	100
Torbebar	329	-1.6	2.56	75.8	5745.6	70.9	5026.8	11	121	8	64
Chaibijar	86	-1	1	91.7	8408.9	73.7	5431.6	6	36	3	9
Khomeiran	405	-1.1	1.21	62.5	3906.2	76.6	5867.5	11	121	9	81
Roodposht	396	0.1	0.10	84.6	7157.2	80.6	6496.3	7	49	7	49
Sangachin	2421	0.6	0.36	90.2	8136	85.4	7293.1	15	225	9	81
Siahkhalesar	508	-2.3	5.29	58.7	3445.7	70.4	4956.1	15	225	10	100
Siah Vazaan	210	-1.5	2.25	90.7	8226.5	69.5	4330.2	8	64	9	81
Shileh Soar	354	-2.3	5.29	59.1	3492.8	62.3	3757.6	8	64	9	81
Aliabad	896	-0.6	0.36	87.7	7708.8	80.5	6480.2	13	169	9	81
kapoorchaal	1848	-1.2	1.44	79.2	6272.6	84.4	7123.3	20	400	16	256
Kachalak	526	-1	1	83.1	6905.6	75.4	5685.1	14	196	8	64
Karbalai Mehdigoodeh	66	-	-	-	-	83.6	6988.9	4	16	0	0
Karkan	560	-1.1	1.21	62.4	3893.8	65.5	4290.2	10	100	8	64
Koochak Mahale	560	-1.1	1.21	62.4	3893.8	65.5	4290.2	10	100	8	64
Galoogah	2	-18.5	43.2	90	8100	0	0	6	36	2	4
Mahroozeh	20	6.2	38.44	80	6400	94.1	8854.8	5	25	1	1
Moaf	219	-3.8	14.44	78.2	6115.2	70.8	5012.6	7	49	5	25
Total		-40	448.6	1542.4	114522.7		117373.9	218	2716	152	1408
Mean		2		77.1		76.2		10.9		7.6	
		4		5944.4		5806.4		118.8		57.8	
SD			4.3	14.8		7.9		4.1		3.5	
Torbegoodeh	299	2	4	95.6	9139.4	84.3	7106.4	10	100	3	9
Shanghayepardeh	230	1	1	80.6	6496.4	85.3	7276	9	81	3	9
Talebabad	2025	2.9	8.41	80	6400	84.3	7106.4	11	121	13	169
Lijarkihassanrood	3210	7	49	82	6724	93.2	8686.2	19	361	12	144
Hassanrood	1266	2.5	6.25	78.4	6176.6	85.9	7378.8	14	196	10	100
Golshan	838	2	4	80.3	6468.1	80.8	6528.6	13	169	9	81
Jafroodpaeen	760	1.7	2.89	79.1	6256.9	84.1	7072.8	15	225	9	81
Total		27.2	76.55	503.64	47661.4	597.9	51155.2	91	1253	59	593
Mean		3.9		71.9		85.4		13		8.4	
		15.21		5169.6		7293.2		165		70.6	
SD	2994	2.1		40.5		3.8		3.7		3.7	

Table 3: Based on the standardized variables, evaluation of the standardized values of the indices of population, employment, literacy etc of villages of Bandar Anzali in 2006

Name of the areas	Growth rate	Percentage of employment	Literacy	Substructure	Superstructure	Z-score	R
Abkenar	-1	0.26	-0.44	2.9	1.8	5.5	4
Eshpela	-0.8	0.46	-0.25	-0.70	-0.45	-1.74	19
Eshtarkan	-1.2	-2.3	-0.72	-1.2	-1	-6.42	27
Bashman	0.02	0.5	11.8	13.3	0.68	26.6	1
Torbebar	-0.83	-0.09	-0.67	0.02	0.11	-1.46	16
Chaibijar	-0.62	0.08	-0.31	-1.2	-1.3	-3.35	23
Khomeiran	-0.7	1	0.05	0.02	0.4	0.77	8
Roodposht	-0.4	0.51	0.56	-0.95	-0.17	-0.45	12
Sangachin	-0.32	0.89	1.2	1	0.4	3.17	5
Siahkhalesar	-1	-1.2	-0.73	1	0.68	-0.95	15
Siah Vazaan	-0.8	0.92	-0.85	-0.70	-0.45	-1.89	21
Shileh Sar	-0.9	1.3	-1.9	-0.70	0.4	1.57	7
Aliabad	0.60	0.72	-0.54	0.51	0.4	1.57	6
Kapoorchaal	-0.7	0.14	1	2.9	2.4	5.74	3
Kachalak	-0.6	0.41	-0.10	0.76	0.11	0.58	9
Karbalai Mehdigoodeh	-	-	0.93	-1.7	0	-0.77	14
Karkan	-0.7	-0.99	-1.3	0.21	0.11	-2.67	22
Koochak Mahale	-1	-0.09	0.31	-0.70	0.11	-1.81	18
Galoogah	-4.7	0.87	0	-1.2	-1.6	-6.63	28
Mahroozeh	0.9	0.19	0.31	-0.70	0.11	-1.81	20
Moaf	-1.3	0.07	-0.6	-0.95	-0.74	-3.42	24
Torbegoodeh	-0.90	0.03	-0.28	-0.81	-1.5	-3.42	25
Shanghayepardeh	-1.4	0.21	-0.02	-1.1	-1.4	-3.71	26
Talebabad	-0.47	0.2	-0.28	-0.52	1.2	0.2	11
Lijarkihassanrood	1.5	0.24	2.1	1.6	0.97	6.41	2
Hassanrood	-0.67	0.16	0.13	0.27	0.43	0.32	10
Golshan	-0.90	0.21	-1.2	0.5	0.16	-1.73	17
Jafroodpaeen	-1.04	0.18	-0.34	0.54	0.16	-0.5	13

Table 4: The Z-score model for the ranking of the villages of Bandar Anzali, 2006

Levels	Name of the villages	Number of villages	Percentage	Population	Percentage
1	Bashman, Lijarkihassanrood, kapoorchaal, Abkenar, Sangachin, Aliabad, Shileh Sar, Khomeiran, Kachalak,	9	33.3	14971	66.6
2	Hassanrood, Talebabad Roodposht, Jafroodpaeen, Karbalai Mehdigoodeh Siahkhale Sar, Torbebar, Golshan, Koochak Mahale	9	33.3	5142	22.9
3	Eshpela, Mahroozeh, Siah Vazaan, Karkan, Chaibijar, Moaf, Torbegoodeh, Shanghayepardeh Eshtarkan, Galoogah	10	33.4	2378	10.5
Total		28	100	22491	100

$$Z = \frac{X - \overline{X}}{\delta} = \frac{2 - 3.9}{2.1} = 0.90$$

Finally, the villages are catagorized in three levels: Level one: is developed villages; Level two refers to less developed villages and Level three includes undeveloped villages (Table 4).

RESULTS AND DISCUSIONS

Based on the data of Z-score, the normal curve of the villages was drawn by means of SPSS. By definition, a normal curve shows the correlation between x and y which is given as Y=f(x) [17]. In a normal curve, the value of skewness is zero and in case of asymmetry, the values will be greater or less than zero. The value of skewness is positive when the data points are skewed to the right [18]. Therefore, here the skewness is positive because the value is greater than zero and it is skewed to the right (Figure 2). The kurtosis is 13.452. In a normal curve, the kurtosis is 3 and if it is greater than 3. This indicates that the scores are over-distributed around the mean [18]. Accordingly, since the kurtosis is greater than 3, as shown in Table 2; there is higher kurtosis.

As Table 4 indicates, with a percentage of 33.3 among all the villages and the population of 14971 which is 66.6% of the total villages of the city are ranked in the first level. Thus, they are considered as the most privileged villages.
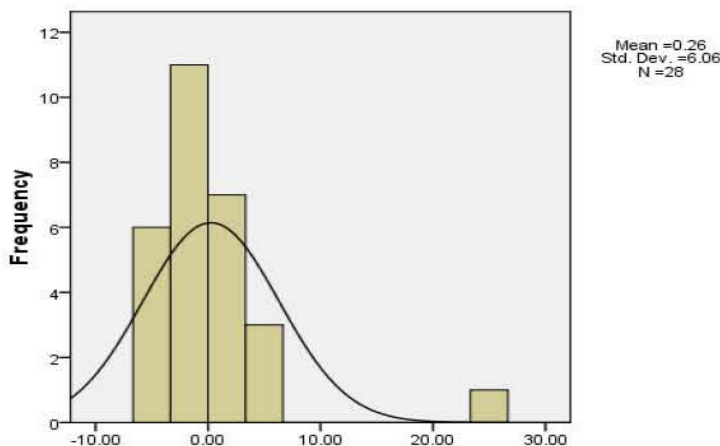

Fig. 2: The normal curve for the value of skewness and kurtosis of the villages
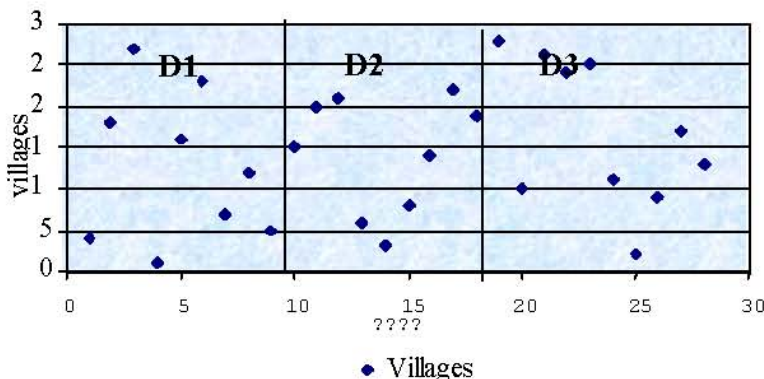

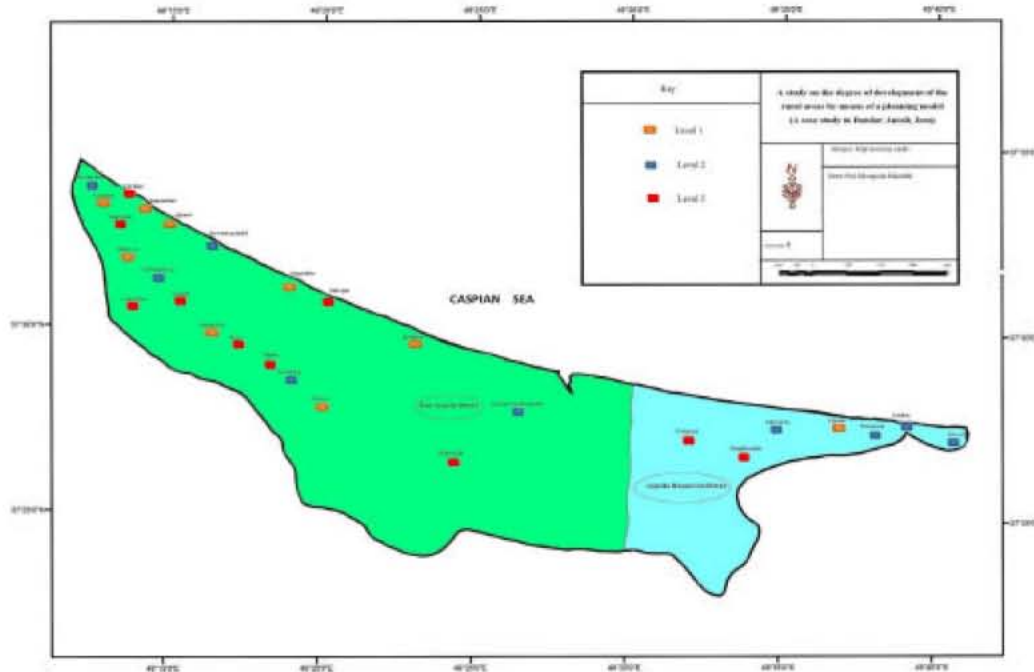Fig. 3: The Z-score method for the ranking of the villages of Bandar Anzali

Fig. 4: The Z-score model for the map of the ranking of the villages of Bandar Anzali

Such villages with a percentage of 33.33 among all the villages and the population of 5142 which is 22.9% of the total villages of the city are ranked in the second level. Thus, they are considered as less developed villages. Such villages with a percentage of 33.4 among all the villages and with the population of 2378 which is 10.5% of the total villages of the city are ranked in the third level (Figure 3). Finally, the ranking of the villages of Bandar Anzali according to the Z-score model has been shown on the map of the city (Figure 4).

CONCLUSION

Based on the information summarized in Table 4, it can be understood that there is incongruence and imbalance among the villages in terms of development. Based on Table 3 eight villages of the rural district of Chaharfarizeh and two villages of the rural district of Lijarkihassanrood were privileged and the others were deprived. Among the villages, the total number of the villages only 39.3% was privileged and 60.7% was deprived. Finally, considering the attractions of the villages of Bandar Anzali and regarding the low degree of development, (60.7%), Bandar Anzali can be regarded as one of the least advantaged cities in Guilan province.

Recommendations and Suggestions: Based on the findings of the present research, the following suggestions can be made for further development of villages:

- It is necessary to assess the degree of development of the villages by means of planning models.
- It is recommended to establish a geograhy department with rural specialty so that the planning models can be used to identify the degree of development of each village.
- It is suggested to set up a research center in the centers of the province to check the degree of accessibility to services in the villages.
- The less developed villages should be indentified and reported to adminstrators who are in charge of the respective departments in the province.
- The potentials and capabilities of the less privileged villages should be identified and planning should be made according to the available facilities.
- The Ministry of Agriculture is advised to make use of the researches conducted at the higher education institutions so that they can move toward the objectives of development in the rural areas.
- NGOs can be set up in the villages and the rural youth can be invited to serve the villagers.

- The plans and programs should be revised under the supervison of the planners.
- The government's investment, planning and substantial actions are needed for the promotion of Bandar Anzali in terms of economic, social and cultural developments.

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