

Indicators of Development in Pokaran Tehsil in Jaisalmer District, Rajasthan

D.K. Saha, Y.N. Mathur, W.A. Khan and Roopendra Singh

Central Arid Zone Research Institute, Jodhpur 342 003, India

Abstract: An attempt has been made to identify the various socio-economic and infrastructural parameters for development in Pokaran tehsil of Jaisalmer district. For identification of various parameters, factor analysis was done. Seven factors were extracted which accounted for 64.4% of the total variability. Factor I, the factor in infrastructural development, accounted for 24% variability, and showed high loading on power supply, health institutions, educational institutions and communication. Factor II had high loading on adult cattle unit, concentration of human population, size of family and scheduled tribe, accounting for 10.4% of the variability. It can be regarded as the factor of livelihood and demographic characters. Infrastructure facilities have emerged as the most important factor for development in Pokaran tehsil.

Key words: Indicator, development, factor analysis, socio-economic, infrastructure.

Indian society is undergoing transformation since independence. Various development programmes have been launched for the upliftment of rural and urban masses, which are bringing changes in the socio-economic fabric of the country. However, the development is not uniform as some areas have been largely ignored, and in some areas, the development is not systematic. For long term viability, the development should be sustainable in nature. As per Brundland Commission (World Commission on Environment and Development, 1987), sustainable development means meeting the needs of the present without compromising the ability of future generations to meet their own needs. For sustainable development of any region, the identification of various parameters, particularly the social, economic and infrastructural ones at grassroot level, which

are compatible with the socio-economic structure of population, is essential. Likewise, the identification of various socio-economically backward regions is necessary to mitigate the regional disparities in development.

In the arid areas of western Rajasthan, so far no studies have been reported on various socio-economic and infrastructural factors that are contributing to integrated sustainable development. Therefore, an attempt is made here to identify some of the important socio-economic and infrastructural factors which contribute in development of a region.

Materials and Methods

The study was carried out in Pokaran tehsil of Jaisalmer district as part of a larger project on integrated mission for sus-

tainable development of Pokaran tehsil. District, Tehsil and village level data were collected from census handbook (1991) and various government departments. For identification of various socio-economic, demographic and infrastructural parameters, factor analysis was performed.

Twenty two socio-economic, demographic and infrastructural parameters at village level, like the availability of educational institutions, health institutions, marketing or co-operative societies, banks, communication network like roads, rail and telecommunication, and levels of literacy, female literacy, worker's participation, sex ratio, size of family, category of farmers like marginal and small, concentration of schedule caste and schedule tribe population, were considered for factor analysis. Qualitative data were quantified by giving appropriate score. In order to maintain uniformity among the socio-economic, demographic and infrastructural variables, equal weightage was given to all the variables through score, depending on the socio-economic condition of the area. For example, higher score was given for the availability of higher secondary schools, public health center, metalled road, village near to a urban centre, availability of post office, telephone, etc. Irrigation was not considered as a development indicator as only 4.87% villages had irrigation facilities. It is, however, recognised that irrigation is one of the most important factors for agricultural development and social development.

Results and Discussion

Before discussing the indicators of development' the socio-economic and infrastructural characteristics of the population inhabiting 164 villages of Pokaran tehsil

is discussed in brief. Analysis of village level and tehsil level data revealed that most of the villages are socio-economically and infrastructurally backward (Saha, 1997). By and large, the villages are sparsely populated, with a density of 13 persons sq. km compared to 84 persons sq. km in the arid regions of western Rajasthan.

The level of education is quite appalling as 82% population in the tehsil is illiterate. About 98% female population is illiterate. It is important to note that four villages are totally illiterate. Furthermore, in 17% villages, there is no female literate, while in 43% villages, less than one per cent literacy is recorded.

The economy of the region is largely based on agriculture, besides animal husbandry. The land use pattern of the tehsil revealed that unirrigated land, including fallow land, increased by nearly 3% from 1990-91 to 1991-92. However, there was a marginal increase of irrigated areas during this period. The cropping pattern of Pokaran tehsil is, by and large, similar to that in other arid areas, where pearl millet is the principal crop with some arid legumes like clusterbean, sorghum, pulses and oil seeds. During 1996-97, the maximum area was under pearl millet, followed by sorghum and sesame. Since livestock economy is predominant, farmers keep large sizes of herds, combining different types of livestock.

The mean score, variance and coefficient of variation are presented in Table 1 reveal that there is high variability in the characters under study. Most of the characters show high correlation among themselves (Table 2). These correlations were used for factor analysis.

Table 1. Mean score, variance and coefficient of variation of different characters

Characters	Mean score	Variance	C.V. (%)
Educational institutions (X1)	3.79	15.76	104.74
Health institutions (X2)	1.74	2.62	93.10
Transport (X3)	2.40	0.46	28.33
Approach to village roads (X4)	1.12	10.49	289.20
Water supply (X5)	5.47	1.79	24.49
Communication (X6)	4.62	1.21	23.80
Power supply (X7)	0.53	0.93	124.52
Total literacy (X8)	6.37	0.65	12.71
Female literacy (X9)	4.41	1.63	29.02
Schedule caste (X10)	1.17	1.14	91.45
Schedule tribe (X11)	1.57	0.54	47.13
Density of population (X12)	4.95	1.63	25.85
Size of family (X13)	3.46	3.72	55.78
Population concentration (X14)	2.0	0.02	8.00
Distance from urban centre (X15)	4.20	5.71	56.90
Female work participation (X16)	0.52	0.77	169.00
Total work participation (X17)	2.11	1.0	47.39
Small farmer (X18)	0.66	1.12	160.00
Marginal farmer (X19)	0.23	0.60	339.00
Sex ratio (X20)	2.87	0.81	31.39
Adult cattle unit (ACU) (X21)	2.15	1.12	49.30
Cooperative societies (X22)	1.40	1.48	87.00

The centroid method (Thurstone, 1947) was employed to extract factors and the factors thus obtained were rotated following equamax method as varimax method failed to converge. From factor analysis, several factors were extracted, which accounted for 64.4% of the total variability. The factor loadings and their commonalties, after four clockwise rotations, are presented in Table 3, arranged in the order of percentage variation accounted for by the factors. The characters within the factors are also arranged in the order of their loading on the factor. Factor I, accounting for 24.1% of variability, recorded high loading on power supply, health institutions, educa-

tional institutions and communication. Thus, Factor I can be regarded as the factor of infrastructural development. Factor II, with high loadings on livestock population or adult cattle unit, population concentration, size of family and scheduled tribe, accounted for 10.4% variability, and can be regarded as the factor of livelihood and demographic characters.

Factor III had high loading on total literacy and female literacy. It accounted for 7.4% variability, and can be regarded as the factor of social development. Factor IV had high loading on water supply, transport, approach to village roads, co-operative

Table 2. Correlation matrix

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1	1.00	0.61**	0.47**	0.33**	0.41**	0.65**	0.43**	0.19*	0.30**	-0.12	-0.15*
X2		1.00	0.43**	0.23**	0.22**	0.55**	0.47**	0.16**	0.33**	-0.05	-0.18*
X3			1.00	0.53**	0.39**	0.49**	0.45**	0.11	0.31**	-0.26**	-0.10
X4				1.00	0.30**	0.43**	0.19*	0.15*	0.25**	-0.07	-0.19*
X5					1.00	0.31**	0.18*	0.09	0.12	-0.09	-0.05
X6						1.00	0.46**	0.30**	0.45**	-0.08	-0.13
X7							1.00	0.12	0.16*	-0.06	-0.15*
X8								1.00	0.63**	-0.07	-0.01
X9									1.00	-0.07	-0.02
X10										1.00	-0.02
X11											1.00

Table 2 (contd.)

	X12	X13	X14	X15	X16	X17	X18	X19	X20	X21	X22
X1	0.31**	-0.04	0.59**	0.21**	0.06	-0.06	0.08	-0.05	0.02	0.40**	0.47**
X2	0.26**	-0.02	0.37**	0.11	0.07	0.01	0.08	-0.06	0.03	0.41**	0.47**
X3	0.35**	-0.06	0.43**	0.21**	-0.05	-0.14	-0.05	-0.12	0.16*	0.26**	0.43**
X4	0.20**	-0.15	0.35**	0.17*	0.07	-0.05	-0.13	-0.05	0.00	0.34**	0.27**
X5	0.05	-0.02	0.26**	0.15**	0.05	-0.05	0.50	-0.04	0.03	0.27**	0.31**
X6	0.22**	-0.13	0.53**	0.13	-0.02	-0.05	0.01	0.01	-0.05	0.41**	0.58**
X7	0.31**	0.00	0.23**	0.16*	0.01	-0.05	0.04	-0.04	0.10	0.16*	0.34**
X8	-0.01	-0.15*	0.14	0.16*	-0.02	0.19*	0.18*	0.13	-0.25**	0.01	0.26**
X9	0.17*	-0.19*	0.20**	0.14	0.01	-0.12	0.05	0.00	-0.02	0.10	0.35**
X10	-0.17*	0.06	-0.10	-0.27**	0.02	0.14	0.19*	0.18*	-0.15*	0.03	-0.11
X11	-0.07	0.00	0.25**	-0.03	-0.09	-0.01	0.04	0.03	-0.04	-0.16*	-0.12
X12	1.00	0.00	0.47	0.10	-0.03	-0.19*	-0.19*	-0.33**	0.22**	0.18*	0.17*
X13		1.00	-0.23**	-0.09	0.10	0.00	0.00	0.03	0.28**	-0.26**	-0.22**
X14			1.00	0.11	0.13	0.09	0.03	-0.05	-0.08	0.67**	0.50**
X15				1.00	-0.06	-0.18*	-0.13	-0.19*	0.28**	0.10	0.15*
X16					1.00	0.38**	0.00	0.00	0.11	0.06	0.03
X17						1.00	-0.01	0.14	-0.35**	-0.02	0.06
X18							1.00	0.46**	-0.07	0.05	-0.02
X19								1.00	-0.16*	0.07	-0.07
X20									1.00	0.07	-0.08
X21										1.00	0.37**
X22											1.00

* Significant at 5% level, ** significant at 1% level.

societies, and accounted for 6.6% of variability. It can be regarded as the factor of communication and social cohesiveness. Factor V accounted for 6% of variability and had high loading on small farmers, marginal farmers, density of population and schedule caste. It can be regarded as the

factor of socio-economic and demographic characters. Factor VI, accounting for 5.2% variability, had high loading on sex ratio and distance from urban centre, and can be called as social-spatial factor. Lastly, factor VII, accounting for 4.7% variability, had high loading on female work partici-

Table 3. Equamax rotated factor matrix

Characters	Factor I	Factor II	Factor III	Factor IV	Factor V	Factor VI	Factor VII	Comm- onality
Power supply	0.73	0.06	0.09	0.14	-0.03	0.06	-0.03	0.57
Health institutions	0.72	0.17	0.21	0.16	0.01	0.01	0.05	0.61
Educational institutions	0.58	0.37	0.20	0.38	0.03	0.07	0.02	0.67
Communication	0.55	0.34	0.36	0.36	0.01	-0.09	-0.06	0.69
Adult cattle unit (ACU)	0.03	0.82	0.00	0.28	0.13	0.01	0.01	0.77
Population concentration	0.27	0.81	0.15	0.20	-0.05	0.04	0.10	0.77
Size of family	0.32	-0.44	-0.32	-0.11	0.12	0.37	0.28	0.64
Schedule tribe	-0.18	-0.39	0.05	0.10	0.03	0.09	0.20	0.24
Total literacy	0.06	-0.05	0.86	0.01	0.15	0.14	0.09	0.79
Female literacy	0.21	0.05	0.84	0.03	0.00	0.07	-0.06	0.76
Water supply	0.16	0.06	-0.02	0.76	0.10	0.02	0.02	0.61
Transport	0.49	0.18	0.16	0.52	-0.16	0.14	-0.12	0.62
Approach to village roads	0.14	0.33	0.17	0.49	-0.14	0.00	0.02	0.41
Cooperative societies	0.34	0.35	0.34	0.37	-0.10	-0.17	0.02	0.52
Small farmer	0.04	0.03	0.10	-0.03	0.80	0.05	-0.06	0.66
Marginal farmer	-0.04	-0.00	0.02	0.01	0.78	-0.12	0.04	0.62
Density of population	0.43	0.37	0.06	-0.17	-0.44	0.24	-0.13	0.62
Schedule caste	0.05	0.10	-0.07	-0.40	0.40	-0.25	0.08	0.40
Sex ratio	0.04	0.07	-0.13	-0.01	-0.05	0.87	0.00	0.78
Distance from urban centre	-0.13	0.01	0.34	0.35	-0.20	0.50	-0.08	0.55
Female work participation	0.03	0.10	0.01	0.03	-0.00	0.16	0.85	0.76
Total work participation	-0.06	-0.01	0.04	-0.00	0.01	-0.47	0.72	0.74

pation and total work participation. It can be regarded as the factor of economic development.

It is apparent from factor analysis that infrastructure facilities, especially the power supply, health institutions, educational institutions and communication, are the most important factors for development in Pokaran tehsil. Many villages do not have these minimum basic facilities. Seventeen per cent villages had no schools, 128 villages had only primary schools, 27 had both primary and middle schools, 8 villages had primary, middle and higher secondary schools, and 86 villages had adult education centers.

The slogan on health for all by 2000 A.D. is a difficult proposition in the tehsil

as 77% villages lack basic minimum health facilities. The infrastructural facilities are a prerequisite for socio-economic development. Until these facilities are provided it would be difficult to improve the socio-economic conditions of the inhabitants of this vast region. Since these facilities are absolutely limited, the pace of socio-economic development is very slow.

Factor II, which has been named as the factor of livelihood and demographic characters, indicated the importance of livestock economy and spatial distribution of population or size of village. The villages in this area are scattered and sparsely populated, which is detrimental to development process. Most of the villages in Pokaran tehsil are also located far away from the tehsil headquarters.

Agriculture in this area is a big gamble due to climatic vagaries as farmers largely depend on rainfed agriculture. A sizeable part of the land is not suitable for agriculture due to sandy undulations. The introduction of canal irrigation to a very limited extent in the northern part of the tehsil (about 11% of the total geographical area) has changed the cropping pattern partially. The facility is limited to eight villages only. Consequently, the use of various improved farm practices like seeds of high yielding varieties, fertilizers and insecticides is insignificant in the tehsil, causing less productivity. The traditional farming is being practised for generations with little or no modifications. The livestock economy, on the other hand, ensures the survival of the population in the event of failure of agriculture. This is manifested in the large concentration of livestock population. The livestock population far exceeds the human population. Among the co-operative societies, the milk co-operative societies outnumber the other co-operative societies. The Khadi-Gramodyog, on the other hand, has enormous potentiality to strengthen the economy of this region because of availability of good quality wool.

Conclusions

The study indicates that Pokaran tehsil is devoid of important infrastructural facilities which are needed for long term

development. The physical characteristics of the tehsil are not conducive for agricultural development, although, with the arrival of Indira Gandhi Canal in the northern part of the tehsil, the scope of agriculture has broadened. However, agricultural development will be possible if the basic infrastructural facilities are provided. Therefore, proper infrastructural development will be necessary to encourage socio-economic development in the tehsil.

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