

## Identification of Indicators of a Model Village: Q Sort Approach

Sonitarani Sethy<sup>1</sup>, B. K. Singh<sup>2</sup>, Premlata Singh<sup>3</sup>, Nishi Sharma<sup>4</sup>, R.R. Burman<sup>5</sup> and Sukanta Dash<sup>6</sup>

### ABSTRACT

Villages are one of the earliest and important settlements in India. According to 2011 census of India, 68.84 per cent of Indians live in 640,867 different villages. For India to become a developed country, village development should be at the heart of all the developmental activities. The present study was formulated keeping the village development in mind how to monitor and evaluate the same. Accordingly, the objective was formulated to identify the indicators of a model village. The research was purposively conducted with the scientists and research scholars of Indian Agricultural Research Institute, New Delhi. Twenty scientists and twenty-six research scholars were randomly selected for this purpose. The collected data were tabulated, analyzed and interpreted using appropriate statistical tools. The result of Q sort indicated that education was perceived as the most important indicator. Finally, forty-one indicators were selected for factor analysis having a median score of more than equal to five. It revealed thirteen factors indicating the village development as, basic needs, innovativeness, media access, employment access, local institutions, sustainable resource use, self-mobilized institutions, social wellbeing and succor, food security institutions, improved input supply, inclusive development, government institutions related to safety and mail and cultural institutions.

**Keywords:** Indicators, model village, Q sort.

### INTRODUCTION

India lives in its villages which forms 68.84 per cent of its total population. Earlier the village was regarded as a physical, administrative, social and ritual unit. Since decades villages are maintaining the thousand years' reservoir of Indian history and cultural heritage in spite of much difficulty and differences and thus regarded as the paragon of Indian culture. Agricultural crowding which was the backbone of Indian economy and solidarity which resulted from the vertical unity of castes were the main characteristics of Indian villages. Villages are still serving as the micro-economy that shapes the macroeconomy of our country. Now a day's Indian villages are suffering agonies of change which showcases an image of an unhealthy and unhygienic place where poverty, illiteracy, unemployment, malnutrition, social evils are the main reasons for youth migration to urban areas. Still, only 32.7 per cent of rural households have access to toilet facilities (census 2011, GOI). Here comes the idea of holistic village development, making villagers empowered

enough that they can use their own resources to become self-sufficient and reconstruct their own economy. Of late, village development has come into the limelight in many developing countries. For the development of countries like India, it is indispensable. Village development in India now mainly focuses on poverty alleviation, infrastructure availability, and reconstruction of rural India. Since 600 million villagers cannot be accommodated in an urban area, so different developmental programmes in India are now focussing on providing urban amenities in Indian villages along with the aim of preserving the traditional, natural beauty of villages. Many efforts have been made by individuals and Government of India for the all-round development of village life. Swami Dayanand Saraswati, Daniel Hamilton, M.K.Gandhi, R.N. Tagore have talked about the concept of a model village in the context of one self-sufficient village with sustainable livelihood resources that will lead to a better life for village people. Many programmes have come into force with the purpose of village development but hardly they could completely

---

<sup>1</sup> M Sc. Scholar, <sup>2</sup> Former In charge, <sup>3</sup> CATAT, Head (Acting), Ag. Extension, <sup>4</sup> Senior scientist Principal scientist, <sup>5</sup> ICAR-IARI, New Delhi, Scientist, <sup>6</sup> ICAR-IASRI, New Delhi.

eradicate the problem of villages. Programmes like Pradhanmantri Adarsh Gram Yojna, Providing Urban amenities in Rural Areas and Nirmal Bharat Yojna are in the upfront for development of villages in different aspects. Indian Council of Agricultural Research has also taken initiative with a new programme called 'Mera Gaon Mera Gaurav' started on 25th July 2015 to enhance the farmer-scientist interface and direct transfer of technology having a close contact with local dialect to increase the agricultural productivity. New ongoing programme i.e. Sansad Adarsh Gram Yojna has been started for creating model villages through the adoption of villages by Member of Parliaments. Many parameters have been identified for achieving this goal. Still, there are no validated indicators that will distinguish a model village from one common village. So the present study was proposed to identify the key indicators that will depict a clear picture of a model village and will be helpful in monitoring and evaluation of the process of development.

### METHODOLOGY

The study was conducted in Indian Agricultural Research Institute, New Delhi. Twenty scientists and twenty-six research scholars were randomly selected as experts for identification of indicators thus making a total sample size of 46. Model village development is a multidimensional concept which will include various aspects of development. Keeping in view a large number of variables under study, Q sort technique was used for rank ordering the respondents perception of indicators of a model village. In this technique, respondents are required to sort the items into a number of predefined categories each having in it a specified number of items as required to form a normal distribution.

#### Pattern of scoring of the data obtained from the Q sort Technique

Category	Score	Ranks
Most important	9	8.5 to 9.5
Highly important	8	7.5 to 8.5
very important	7	6.5 to 7.5
Quite important	6	5.5 to 6.5
Somewhat important	5	4.5 to 5.5
Slightly important	4	3.5 to 4.5
Of little importance	3	2.5 to 3.5
Of very little importance	2	1.5 to 2.5
Least importance	1	-1.5 to 1.5

The categories are in rank order, the highest containing those items that are considered to be the most important and the lowest containing those items that are considered to be the least important. The respondents were asked to sort selected 67 indicators based on their relative importance into 9 categories which were assigned scores ranging from 1 to 9. Then factor analysis was used

for further reduction of no of indicators.

### RESULTS AND DISCUSSION

The indicators measuring the progress of a model village development are presented in the Table no 1 according to their relative importance as perceived by the respondents. Critical analysis of Q sorted data revealed the presence of educational facilities as the most important indicator of a model village whereas, accessibility to transportation, electricity and primary health care facilities were perceived as highly important. Likewise, twelve values were ranked as very important, seven as quite important, thirty-two as somewhat important, five as strongly important, five as of little importance, one as of very little importance and one as least importance. There were forty-one indicators having a median score of more than equal to 5.0. For a model village accessibility to educational facilities was perceived as most important as education is the most powerful tool for a sustainable positive change in a society. Transportation, electricity and primary health care facilities were very important as they will keep connected the villagers with the other world and can enjoy the technological development. Primary health care facility is considered as the minimum basic need for the development of a healthy human being which will lead to a healthy economy.

#### Factor analysis

The result of Q sort revealed 41 relatively important variables as perceived by respondents. These variables are intercorrelated and the 41x41matrix was then subjected to principal component factor analysis with Varimax rotation (Table no 2).

This procedure tries to maximize the sum of variances of squared factor loading matrix. The Varimax rotation technique leads to a new set of orthogonal axes, keeping the sum of squared loading for each row of the factor loading matrix intact. Moreover, the sum of products of loadings in any rows of the rotated factor matrix (Table no 3) equals the comparable quantity in the original factor loading matrix. As such the new axes explain (in total) just as much of the common variance as explained by the un-rotated loading matrix.

**Table 1: Relative importance of indicators as perceived by respondents**

Indicators	Mean score	Category
Educational facilities	8.74	Most important
Transportation facilities	8.04	Highly important
Electricity for all	7.74	
Accessibility to primary health center	7.59	
E-governance facility	7.46	Very important
Good Soil health	7.2	
Attitude towards social change	6.98	

Accessibility to safe drinking water	6.96	
Migration	6.89	
Operational Farmer organizations	6.78	
Scientific orientation	6.7	
Micro-irrigation & other water conservation irrigation techniques	6.67	
Employability	6.65	
Social well being	6.52	
Drainage facility	6.5	
Panchayat office	6.5	
Use of improved inputs (bio-fertilizer, variety etc)	6.13	Quite important
Organic farming	6.09	
Credit institution	6.04	
Social justice	5.83	
Public distribution system	5.81	
Water harvesting structures	5.61	
TVs	5.59	
Newspapers	5.46	Somewhat important
Mobile phones	5.41	
Operational SHGs	5.37	
Social evils(liquor drinking, smoking, dowry)	5.36	
Sanitation	5.34	
Accessibility to Post office	5.31	
Veterinary clinic	5.27	
Local market (haat)	5.22	
Seed bank	5.2	
Microenterprises	5.18	
Forest area	5	
Use of renewable energy resources	5	
Agro service center	5	
Cultivable land	5	
Religious institution	5	
Storage structure	5	
Youth club	5	
Police station	5	
Kitchen garden	4.987	
Farmer interest group	4.966	
Food processing	4.95	
Child health	4.934	
Use of biodegradable materials	4.921	
Sex ratio	4.88	
Community Hall	4.864	
Stubble burning	4.855	
Cyber café	4.831	
Seed replacement ratio	4.8	
Seed production	4.512	
Per capita availability of land	4.51	
Sewage water disposal	4.50	
Tenancy of land	4.5	
Cropping intensity	4.34	Strongly important
Village library	4.123	
Radio	4.11	
Computer	3.82	
Permanent fallow land	3.65	
Crop diversification	3.33	of little importance
Use of biodegradable material	3.11	
Death rate	2.88	
Irrigated land	2.865	
Custom hiring center	2.71	
Fair price shop	2.4	of very little importance
House type	1.49	Least important

The Varimax rotation merely breaks up this variance in a various way, the components as a group account for the same proportion of total explained variance. Interpretation of the rotated factors was done by selecting only those variables, which possessed a significant factor loading (greater or equal to 0.3). These variables are used as the defining variables for that factor. These significant variables and their factor loadings (absolute value without regard to sign) are presented below:-

**Table 2: Total variance explained**

Initial Eigenvalues			Extraction sum of squared loading			Rotated sum of squared loading		
Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
8.460	19.228	19.228	8.460	19.228	19.228	6.264	14.236	14.236
5.043	11.461	30.689	5.043	11.461	30.689	4.257	9.676	23.912
4.605	10.466	41.155	4.605	10.466	41.155	4.069	9.247	33.159
3.801	8.639	49.794	3.801	8.639	49.794	3.354	7.623	40.782
3.123	7.098	56.892	3.123	7.098	56.892	2.809	6.384	47.167
2.718	6.177	63.068	2.718	6.177	63.068	2.723	6.189	53.356
2.562	5.822	68.890	2.562	5.822	68.890	2.642	6.004	59.360
2.106	4.786	73.676	2.106	4.786	73.676	2.621	5.956	65.315
1.844	4.191	77.867	1.844	4.191	77.867	2.454	5.578	70.893
1.375	3.124	80.991	1.375	3.124	80.991	2.092	4.754	75.647
1.287	2.926	83.917	1.287	2.926	83.917	2.091	4.752	80.399
1.054	2.395	86.312	1.054	2.395	86.312	1.904	4.327	84.726
1.016	2.310	88.622	1.016	2.310	88.622	1.714	3.896	88.622
.989	2.248	90.870						
.722	1.641	92.511						
.651	1.480	93.991						
.594	1.349	95.340						
.520	1.182	96.522						
.482	1.095	97.617						
.412	.937	98.554						
.248	.564	99.117						
.173	.394	99.511						
.128	.290	99.801						
.087	.199	100.000						

The seed bank is the most innovative way of recovering from distress condition whereas ensuring food security in a village. All of the indicators point towards an innovative farmer. Hence this factor is named as 'innovativeness'.

**Table 3: Rotated Component Matrix**

	COMPONENT								
Education	.897								
Electricity	.887								
Transportation	.861								
Drinking water	.813								
Primary health centre	.809								
Drainage facility	.740								
Veterinary clinic	.628			.392					
Personal hygiene	.581			.345					
Police station	.448							.373	
Soil health	.880								
Organic farming	.823	.317							
Scientific orientation	.698	.385			.308				
Seed bank	.663			.542					
Social justice	.483					.327		.371	
TV	.865								
Mobile	.350	.792							
Newspaper	.336	.771							
E-governance facility	.354	.589							
Religious institution									.343
Employment opportunity		.715	.356						
Youth club		.648							.485
Microenterprises	.314	.608			.364				
Panchayat office		.831							
Credit institution	.301	.498							
Cultivable land			.798					.334	
Use of renewable energy resources			.735						
Water harvesting structures v49			.630						
Self-help groups						.947			

Farmer organization			.536	.427	
Social evil				.827	
Social wellbeing	.397			.564	
Migration			.3	.473	
			.78		
Local market					.910
Public distribution system			.306	.536	
Micro-irrigation facilities					.910
Use of improved inputs					.534
Attitude towards social change					.841
Agro service center		.331		.383	
Post office		.315			.677
Storage structures	.303	.413		.430	.503
Forest area			.319		

**Table 4: Factor 1**

Variable	Factor loading
Education	0.897
Electricity	0.887
Transportation	0.861
Drinking water	0.813
PHC	0.809
Veterinary clinic	0.740
Drainage	0.628
Sanitation	0.581

As it is evident from the result, education, electricity, transportation, drinking water, primary health center (PHC) and veterinary clinic are contributing most to the factor. Other indicators like drainage facilities and sanitation are also having a significant contribution to the factor. Education enlightens the body and soul of human beings and shows the path for a successful life in this competitive world. These all are coming under necessities, also declared under MDGs which must be availed to all the people to lead a normal life. This factor is termed as 'basic needs'.

Factor 2 contributes 11.46 per cent of total variance comprising of 4 indicators. The farmers, who vouchsafe for their soil health, will go for organic farming if he or she orients in a scientific way.

**Table 5: Factor 2**

Variable	Factor loading
Soil health	.880
Organic farming	.823
Scientific orientation	.698
Seed bank	.663

Factor 3 is made up of 4 factors explaining 10.46 per cent of total variance. All of the indicators are pointing towards the digital connectivity in the village which is very important to keep them updated and compete in the digital world as they have become the fastest medium for information delivery.

**Table 6: Factor 3**

Variable	Factor loading
TV	.865
Mobile	.792
Newspaper	.771
E-governance	.589

This is also in line with the aim of digital India initiative. Thus this factor can be named as 'media accesses'.

**Table 7: Factor 4**

Factor 4	Loading
Employment opportunity	.715
Microenterprises	.608
Agro service center	.331

This factor has 3 indicators which explain 8.63 per cent of total variance. These represent the opportunities for employment, services through micro-enterprises and other income generating opportunities in the village which is the main reason for rural migration nowadays. All the three are related to sustainable livelihood security which is the main aim of any developmental initiative. Lack of this factor is directly related to the distress migration of rural people to cities. Interventions in this sector are of utmost importance. Hence this factor can be named as 'employment accesses'.

**Table 8: factor 5**

Variable	Factor Loading
Panchayat office	.831
Credit institution	.498

This factor constitutes 2 indicators explaining 7.09 percent of total variance, where panchayat office having the highest factor loading which is a very important decentralization. The government of India is also reaching rural people through panchayats which is a local institution at grass root level for development and emblem for democratic decentralization. According to the needs and aspirations of the local people, Panchayati Raj Institutions have been the core of the decentralized development of planning and its implementations (Mishra *et al* 2012). Foster *et al* 2009 reported that the success of Hiware Bazar lies under the factors like traditional egalitarian technology system, effective gram sabha and gram panchayat, a charismatic village leader who mobilized community awareness and changed their social and resource use behavior. The credit facility has always been the most required element for starting any developmental work. A number of studies have estimated the benefits of formal credit in developing countries (Khandker and Farooqui 2003; Awotide *et al.* 2015; Narayanan 2016). These studies showed that access to formal credit contributes to an increase in agricultural productivity and household income. Hence this factor is termed as 'local institutions'.

**Table 9: Factor 6**

Variable	Factor Loading
Renewable energy	.798
Water harvesting structures	.735
Cultivable land	.630
Forest area	.319

Factor 6 is consisting of 4 indicators which explain 6.17 per cent of total variance. All of them point towards the use of renewable energy resources which is an indication towards the ongoing ecological poverty. Among the three global goals of FAO, one is the sustainable management and utilization of natural resources for the benefit of present and future generations. FAO defines agricultural development as the management and conservation of the natural resource base. Sustainable agriculture conserves land, water, and plant and animal genetic resources, and is environmentally non-degrading, technically appropriate, economically viable and socially acceptable. This will contribute to all four pillars of food security in a sustainable way (FAO, 2014). Hence this can be named as 'sustainable resource use'.

**Table 10: Factor 7**

Variable	Factor Loading
SHG	.947
Farmer organization	.536

This factor explains 5.82 per cent of total variance with 2 indicators. Both of the indicators are indicating towards the organized groups of men, women, youth in the villages. Many studies have shown that these groups are contributing to social networking and economic development in agriculture and allied sectors (Kalra *et al.* 2012; Kumar *et al.* 2015). These groups have to be exploited as the best option for enhancing the human resource productivity in a village. This factor is named as 'self-mobilized institutions'.

**Table 11: Factor 8**

Variable	Factor Loading
Social evil	.827
Migration	.564
Social wellbeing	.473

This factor comprises of 3 indicators and explains 4.78 per cent of total variance. These three indicators may appear diverse and yet they have something in common. A village can never prosper if the social evils persist in the village. Social evils like drinking intoxicating liquor, smack, drugs, and playing cards, dowry etc. drain away the energies and hopes of the villagers to help themselves as well as others. As many kinds of literature suggest poverty is the main push factor for distress migration which is the result of the misplaced developmental

investment. Lately, the government of India is trying hard to create sustainable employment opportunities which will foster rural development. Likewise, if all the members of a society inculcate the values of trust, happiness, brotherhood, content, kind and empathy it will contribute to the social as well as individual well-being. All are affecting the most important human resources in the village whose physical, mental and social health is the most contributing factor in the development of a model village. Thus this factor is named as 'social wellbeing and succor'.

**Table 12: Factor 9**

Variable	Factor loading
Local market	.910
Public distribution system	.536
Storage structure	.430

Factor 9 comprises of 3 indicators explains 4.19 per cent of total variance. Highest loading of the local market shows its importance. Marketing facility is of utmost importance for fetching a better price for the village produces. PDS ensures food security at village level at cheaper prices. Though the main occupation in the village is agriculture storage facility is a must. Keeping this in view this factor can be named as 'food security institutions'.

**Table 13: Factor 10**

Variable	Factor loading
Micro irrigation	.910
Improved input use	.534

This factor explains 3.12 per cent of total variance and is associated with the judicious use of resources that leads to a better agriculture with increased productivity with a better capacity to keep pace with the global agricultural scenario. Hence this factor can be named as 'Improved input supply'.

**Table 14: Factor 11**

Variable	Factor loading
Attitude towards social change	.841
Social justice	.371

The eleventh factor comprises of 2 indicators and explains 2.92 per cent of total variance. In order to be developed people should have a positive attitude towards changes in norms, technologies and lifestyle and development should include all irrespective of social factors like caste, creed, religion, and gender. Both the indicators emphasize the change and accepting it, which should be in dynamic equilibrium and including all members of society in the mainstream of development that will lead to equality. This factor is named as 'inclusive development'.

**Table 15: Factor 12**

Variable	Factor loading
Post office	.677
Police station	.373

This factor explains 2.39 per cent of total variance. These two are institutions, one taking care of mail, financial saving services and the other taking care of law and order of the country. The importance of post office in the village is clearly evident from the successful implementation of IARI-Post office linkage model developed by Indian Agricultural Research Institute for the betterment of farmers. Hence this factor can be named as 'government institutions related to safety and mail'.

**Table 16: Factor 13**

Variable	Factor loading
Religious institution	.485
Youth club	.343

This factor constitutes two indicators of a model village and explains 2.31 per cent of total variance. Both the indicators represent group activities that will lead to increased solidarity among people. Both of them provide a safety valve to the society by taking care of spiritual needs, interests and other cultural activities that maintain the socio-cultural harmony in the village. This factor is named as 'cultural institutions'.

### CONCLUSION

Development is a multidimensional concept. Despite the aforesaid indicators, there are many more dimensions of village development being emerged. While planning for any village developmental programme these indicators are to be kept in the center which will certainly contribute to the Indian economy in many ways. With all the urban amenities in a village while retaining its inner beauty and peacefulness will represent a holistic village development approach and maybe the rural-urban demarcation will be vanished in near future.

*Paper received on* : January 17, 2019

*Accepted on* : January 22, 2019

### REFERENCES

- Awotide, B. A., T. Abdoulaye, A. Alene, and V. M. Manyong. (2015). "Impact of Access to Credit on Agricultural Productivity: Evidence from Smallholder Cassava Farmers in Nigeria." Paper presented at the International Conference of Agricultural Economists, Milan, Italy, August 9–14.
- Food and Agriculture Organisation, UN (2014). Natural resource management and environment in small island developing states.
- Foster, S., Limaye, S., Mandavkar, Y., & Msangi, S. (2009). A Hydrogeologic and Socioeconomic Evaluation of Community-based Groundwater Resource Management-The Case of Hivre Bazaar in Maharashtra-India. World Bank GW-MATE Case Profile Collection, 22.
- Kalra, R. K., Anil, B., Tonts, M., & Siddique, K. H. M. (2013). Self-help groups in Indian agriculture: a case study of farmer groups in Punjab, northern India. *Agroecology and sustainable food systems*, 37(5), 509-530.
- Khandker, S. R., and R. R. Faruqee. 2003. "The Impact of Farm Credit in Pakistan." *Agricultural Economics* 28: 197–213.
- Kumar, V., Wankhede, K. G., & Gena, H. C. (2015). Role of Cooperatives in Improving Livelihood of Farmers on Sustainable Basis. *American Journal of Educational Research*, 3(10), 1258-1266.
- Mishra, A. K., Akhtar, N., & Tarika, S. (2012). Role of the Panchayati Raj institutions in rural development (an analytical study of Uttar Pradesh). *Management Insight*, 7(1).
- Narayanan, S. 2016. "The Productivity of Agricultural Credit in India." *Agricultural Economics* 47: 1–11.