

Role of Service Centers in Rural Development – A Geographical Study of Block Joya

Abstract

Service centers are central places, serving as trade and social centers for a tributary area. These centers perform central functions by virtue of their central locations. The centrality is the outcome of the quality and quantity of central functions performed by a settlement. The service center provides services and functions to the people of surrounding settlement, while the people of dependent settlement provide demand for the goods and services, which result an interaction pattern between central place and its surroundings area. The zone of influence or service area is the product of centrality score of the service centers.

Keywords: Service Center, Rural, Centrality Score, Development, Influence and Mean Spacing.

Introduction

Rural Service centers are those villages, which provide vital social services to the rural population of the surrounding village. Each center provides developmental services to nearby villages. The term "Rural Development" is the over all development of rural area to improve the quality of life of rural people, and it is a process leading to sustainable improvement in the quality of life or rural people especially the poor. Rural development is the need of the hour. It is not only constitutes the development of rural area but also aims of improving the well being and equality of life to the rural poor through collective process. "If a settlement is self-sufficient in four or more than four settlement and if it services a village or a group of villages in these functions in according to serving its own population; them it was considered as a service centre."

A central place theoretically enjoys a centrality in a given area or region with respect to a variety of functions or services for its continuous surrounding areas. Central places are varying size according to the centrality indices. A permanent settlement with certain central function discussed in the sequel, catering to the socio-economic needs of surrounding area may be treated as rural central place for the present purpose.

The main theoretical base of the growth centre concept is the 'Growth Pole' model. The model originates from the work of Francois Perroux who started from the view that economic growth does not occur everywhere all at once, but starts at a few specific growth poles and spreads through various at varying intensities and with varying effects.² Service centers are not only the base of rural development but also the nucleolus of the future town. The importance of the service centers is divided on the centrality of the functions and the influence area of the region.

Walter Christaller was introduced 'Central Place Theory' in 1930 to development the area after that many others modified this theory.³ Christaller viewed his theory as a 'general deductive theory' to explain the 'size, number and distribution of towns' in the belief that 'there is some ordering principle governing the distribution.'⁴ The central place is the most important aspect of the Christaller's theory. It is the centre of a region which provides one or more services to an area larger than itself. The services may be extensive or limited, but the service function is common to all central places.⁵

Aim of the Study

1. To explain size and spacing of settlements
2. To understand the hierarchy of rural service centre.

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Hypothesis

1. There is an impact of physical and human factors on the development of rural settlements.
2. Growth of service centers and the development of the influence area depends on the functions of the centers.

Data Base and Methodology

The methodological principles adopted for the study is based on primary and secondary sources of data. Primary data obtained from conducting field survey and visiting various offices. The secondary data has been used to analyse the spatial organization of settlements, distribution of facilities and arrange the central places in hierarchical order at block level. Both the qualitative and quantitative methods have been used in the present study. To examine the distribution and spatial variation of settlements and socio-economic facilities standard statistical technique like 'Nearest Neighbour Index', 'Mather's Model' of mean spacing has been used. The formula's are as follows–

* For Nearest Neighbour Index–

$$R_n = \frac{d_o}{d_e} \text{ and } d_e = \frac{1}{2\sqrt{N/A}}$$

Where, R_n = Nearest neighbour index

D_o = Mean observed distance of nearest neighbour settlements

D_e = Mean expected distance of settlements

N = Total number of settlements

A = Total area of the concerned region

NN Scale –

$R_n = 0$ (Clustered Pattern)

$R_n = \text{upto } 2.15$ (approaching uniform)

$R_n = \text{More than } 2.15$ (random pattern)

Mather's model of mean spacing is calculated from the following formula–

$$D = 1.0746 \sqrt{\frac{N}{A}}$$

Where, D = Mean spacing in unit length

A = Area of a given region

N = Number of settlement in a given region

1.0746 = Spacing constant

The complimentary region or hinterland of central places has been delineated using modified quantitative technique of V.L.S. Prakash Rao

Mathematical equation of method devised by V.L.S. Prakash Rao is as follows–

$$S.I. = TC/CA$$

$$R = \sqrt{TC/CA}$$

Where, S.I.= Sphere of Influence of central place (in Sq. Km.)

T.C. = Total centrality score of central place

A = Total area (Sq. Km.) of the study region

C = Total centrality score of all central places, and

R = Radius of circle indicating the sphere of influence (in Km.)

Study Area

The study area block Joya is situated in district Amroha. It is bounded on the north by block Amroha and south district Sambhal and East district Moradabad and in the west bounded by Tehsil Dhanaura. It has covered 442.63 Km² geographical area and have 116 village Panchayats, 209 villages and 11 Nyaypanchayats. N.H. 24 passage through in the study area and connected to study area with the national capital Delhi and state's capital Lucknow. It has 3.27 Lac population. Population growth rate is 21.53% in the study area and the population density is 335 persons/Km². It has 55.47% total literacy, 64.85% male and 44.43% female literacy.

Spacing of Settlements

Spacing is mainly defined as the location arrangement of villages with respect to each other generally speaking, this spacing refers to average distance at which the settlements are located and their functions distributed.⁶ Actually the space or pack of settlements is related to the principal of making optimum utilization of space. The best spacing is said to be emerged when the inhabitants using them well, on the whole, spent least amount of effort required in doing so. The calculation of spacing of settlements was first undertaken by 'Barnes and Robinson'.⁷ The spacing technique used by Mather⁸ has been employed in the present study, who studied in linear pattern of farm population in U.S.A. Mather's spacing is the distance between the two nearest settlements located at the centre of equilateral hexagons of equal size and well touched with each other on a geometric and homogeneous space of equidistant settlements.

Table–1
Mean Spacing of Settlements Block Joya (2011)

Sr.No.	Nyaypanchayat	Area (Sq.Km.)	No. of Settlements	Mean Spacing	Average Size of Settlements (Population)
1.	Papsara	62.69	26	1.67	1600
2.	Chandnagar	36.43	16	1.62	1032
3.	Deorhi Urf Hadipur	40.67	23	1.43	1389
4.	Kakrali	38.70	12	1.93	2163
5.	Patai Khalsa	34.17	18	1.48	1971
6.	Sivora	46.38	22	1.56	1834
7.	Jalalpur Ghana	32.61	18	1.45	1298
8.	Salamatpur	40.52	20	1.53	904
9.	Rajabpur	43.50	19	1.63	1292
10.	Shahpur	32.45	20	1.37	1645
11.	Deeppur	34.51	15	1.63	2458
Total Block Joya		442.63	209	1.52	1568

Source– Computed by the author on the basis of the census of 2011

On the basis of the above table to Block Joya has a mean spacing of 1.52 Km, while the Nyaypanchayats mean spacing lies in between 1.37 Km. in Shahpur to 1.93 Km in Kakrali. Based on computed value of mean spacing of settlements Nyaypanchayats have been grouped into three categories i.e., high, comprises only one Nyaypanchayat Kakrali. 5 Nyaypanchayats namely Salamatpur (1.37), Deorhi Urf Hadipur (1.43), Patai Khalsa (1.48), Jalalpur Ghana (1.45) and Shahpur (1.37) are in low mean spacing group and 5 Nyaypanchayats namely Papsara (1.67), Chandnagar (1.62), Sivora (1.56), Rajabpur (1.63) and Deeppur (1.63) are in medium mean spacing group of settlements.

Identification of Service Centers

Settlement can not be considered as central place unless it provides services and facilities to its own population and to the population of its surrounding settlements. There are 209 inhabited settlements in the Block Joya. Although all settlements provides some kinds of function but for the sake of convenience some settlements have been considered as the central place or service centre in the analysis by using some arbitrary criteria.

1. It held a permanent settlement
2. It has total population of 1500 and more.
3. It provides at least five different functions.

When the three criteria's are fulfilled, a settlement is as considered services centre in the present study on the basis of above defined criteria as many as 40 settlements have been identified as service centers in the block Joya.

Table-2
Distribution and Mean Spacing of Service centers of Different Hierarchic Order, Block Joya (2011)

Sr.No	Hierarchic order	Class Interval of Centrality Score	Service Center		
			Number	Mean Spacing	Percent
1.	Ist Order	19.17 – 138.78	32	4.00	80
2.	IInd Order	138.79 – 226.92	6	9.23	15
3.	IIIrd Order	226.93 – 317.35	2	15.98	5
Total			40	-	100

Source- Computed by author on the basis of 2011 Census

According to the above table the study area has 32 Ist order service centers, 6 IInd order service centers and 2 IIIrd order service centers. The centrality score of Ist order service centers is 19.17 to 138.78 and IInd order service centers has 138.79 to 226.92 centrality score. The centrality score of IIIrd order service centers is more than 226.93. Didauli (317.35) and Kailsa (302.95) provide IIIrd order facilities to the influence area.

Service Centers and Influence Area

V.L.S. Prakash Rao's method has been used to calculate the influence area. The degree of influence of each service center is measured by its centrality score. The service area assumed to be circular. "The zone of influence area is the product of centrality score of the central place".⁹ In the present study zone of influence of 32 Ist order service centers, 6 IInd order service centers and 2 IIIrd order service centers have been delineated using V.L.S. Prakash Rao's¹⁰ modified method.

Table-3
Service Centers and their Influence Area in Block Joya (2011)

Sr.No.	Name of Service Centers	Centrality Score	Population of the Centre	Served Population	Served Area (Sq.Km.)	R = Sq. TCA/A in Km.
1.	Sarkara Kamal	45.28	1734	3626	4.90	2.21
2.	Sarkari Aziz	42.45	2029	3374	4.59	2.14
3.	Papsara	88.27	3133	7067	9.55	3.10
4.	Gulariya	56.15	2915	4492	6.07	2.47
5.	Deorhi Urf Hadipur	56.47	1763	4521	6.11	2.47
6.	Dhakiya Chaman	45.80	5100	3663	4.95	2.25
7.	Adalpur Taj	77.36	1808	6194	8.37	2.89
8.	Kapasi	48.22	1816	3796	5.13	2.28
9.	Asgaripur	56.14	1936	4492	6.07	2.46
10.	Hasanpur Kalan	19.17	1725	3167	4.28	2.07
11.	Kala Khera	60.18	1691	4551	6.15	2.55
12.	Telipura Mafi	86.44	3286	6397	9.35	3.06
13.	Sirsa Khumar	55.76	4040	4462	6.03	2.46
14.	Shahpur	38.72	1658	3100	4.19	2.04
15.	Palaula	48.35	1822	3870	5.23	2.28
16.	Narangpur	68.62	1710	5498	7.43	2.72
17.	Masudpur	72.86	1846	5831	7.88	2.80
18.	Khata	58.34	1733	4669	6.31	2.51
19.	Katai	80.15	2496	6416	8.67	2.94
20.	Fattehpur Mafi	71.45	2635	5720	7.73	2.78
21.	Puranpur	63.56	3377	5091	6.88	2.62

22.	Ramhat	44.62	2614	3574	4.83	2.20
23.	Didauli**	317.35	9069	25419	34.35	5.86
24.	Patai Khalsa*	218.37	9689	17486	23.63	4.86
25.	Atrasi	208.40	4542	16687	22.55	4.75
26.	Budhanpur*	202.65	1815	16228	21.93	4.68
27.	Kankarkheda	127.18	4844	10182	13.76	3.71
28.	Bagarpur Imma	116.65	1945	9339	10.62	3.55
29.	Chandnagar	138.78	3774	11115	15.02	3.87
30.	Chak Kalilet	136.36	1565	10915	14.75	3.84
31.	Kailsa**	302.95	3852	24257	32.78	5.73
32.	Rajabpur*	221.38	5076	17723	23.95	4.89
33.	Payanti Kalan*	226.92	10941	18174	24.56	4.95
34.	Choudharpur	217.56	6082	17420	23.54	4.85
35.	Haryana	87.51	3184	7008	9.47	3.08
36.	Pandki	72.84	3321	5831	7.88	2.80
37.	Ikonda	42.56	2342	3404	4.60	2.15
38.	Jiwai	48.73	2346	3900	5.27	2.30
39.	Shekhupura Mafi	67.75	3590	5424	7.33	2.71
40.	Sahaspur Ali Nagar	51.47	3696	2960	4.00	2.00

Source– Computed by the author on the basis of 2011 census

* IInd Order Service Center, ** IIIrd Order Service Center

According to the above table 15.23% area has been served by the IIIrd order service centers and 31.80% area served by the IInd order service centers. First order service centers served 52.97% area of the study region. So, the role of service centers in the rural development depends on the function of the service centers and high centrality of the function.

Spatial Organization of Service Centers

Spatial organization of service centers have special significance in the context of spatial planning and generation of convincing spatial development framework aimed at integrated socio-economic development of the region. Spatial organization of service centers is closely connected with the physical conditions, transportation system and distribution of settlements in the study region.

Table-4
Spatial Organization of Service Centers in Block Joya (2011)

Sr.No.	Order of Service Centers	No. of Service Centers	Mean Spacing	Dispersion N.N. Index	Patterns
1.	First order	32	4.00	1.30	Approaching uniform
2.	Second order	6	9.23	2.86	Random pattern
3.	Third order	2	15.98	4.95	Random pattern

Source– Computed by author on the basis of 2011 census

The analysis reveals that in the study area 32 first order, 6 second order and 2 third order service centers serve different socio-economic functions to the habitants. According to the above table the first order service centers are located at the mean distance of 4.0 km, while nearest neighbour analysis (N.N. Index) with Rn value 1.30 reveal their approaching uniform pattern of distribution in the block. The same table reveals that the second order service centers are distributed at 9.23 km apart from each other and they are randomly distributed, as Rn value is 2.86. The third order service centers are distributed at 15.98 km apart from each other and they are randomly distributed, as Rn value is 4.95. According to the above table there are absent of higher order service centers due to lack of higher order functions and existence of lower order functions.

Conclusion

The service center is the most important aspect of the rural development. It is the center of region which provides one or more services to an area larger than itself. The services may be extensive or limited, but the service function is common to all service centers. A service center provides their services for the population living around. The concept of rural development concerned with the service

centers and the development of the service centers depends on their influence area and served population. A multifunctional service centers have high centrality score, high influenced area and high served population. Not only a large service centers provides high standard social economic facilities to the people but also served a large number of people and a large scale area.

The rural services centers are prime important today as they function at the lower level of the central place hierarchy enjoying the location advantage of being in the midst of rural society and thus may serve as agent of modernization in the present content of development policy and programmes. These service centers help to in integrated rural development and prepared a platform of rural development.

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