

“CLASSIFICATION OF AN URBAN CENTERS AND URBAN TEHSIL PLACES INTO DIFFERENT HIERARCHICAL ORDERS IN THE AHMEDNAGAR DISTRICT OF MAHARASHTRA (India)”.

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ABSTRACT: An attempt has been made to classify an urban center and urban tehsil places into different hierarchical order on the basis of composite centrality score in the Ahmednagar district. Therefore, all the urban centers and urban tehsil places have been ranked in order of their composite centrality scores and ranks are plotted on a log-log scale. The plotting of urban centers (fig.-1) and urban tehsil places (fig.-2) on a graph clearly indicates different slopes grouping urban centers and urban tehsil places of a different order, having different levels of functional specialization. Bifurcation ratio method which is used by geomorphologists is adopted here for the calculation of K value for urban centers and urban tehsil places (Deshmukh-1979). In the study area, the urban centers and their hierarchical class orders are not governed by ‘K’ values of 1.19 and 1.1 for urban centres and urban tehsil places respectively. Both calculated values are not fit to the Christaller’s marketing principle of K-3, transport principle of K4 and administrative principle of K-7. Hence K value of Ahmednagar district for urban centres and urban tehsil places both shows noticeable difference from the Christaller’s theoretical number.

Key Words: Urban centers, Urban Hierarchy, Centrality, Bifurcation ratio, K value.

INTRODUCTION: In geography, the hierarchy of urban centers determines on the basis of population size, level of development, centrality index, and economic and political influence. In the present paper, the hierarchy of urban centers in Ahmednagar district defined by population size and composite centrality score. Composite centrality score is obtained from

summation of centrality index which is worked out from ‘mean population threshold method’, Sinha’s modified method and Davis modified method. Rank orders by population size compared with the centrality index of urban settlements in study area.

The term centrality is based on concept of central place of Christaller. Centrality is a measure of the functional capacity to serve the need of the peoples in surrounding area. The central place provides the exchange of central goods and services for surrounding area. The urban centers are different of each other. The rank and hierarchy of urban centers is different. Hierarchy denotes the arrangement of urban centers in a series of these populations and providing of goods and services to the outside of the city. Hierarchy has denoted by using centrality index. Hierarchy will be arranged by descending or ascending orders. For determine the hierarchy of urban centers are used population size, central function or centrality values and size of their tributary areas are mostly used.

OBJECTIVES:

Following are the main objectives are kept in mind to achieve the main aim of present paper.

1. To analyze the spatial distribution of population and socio-economic facilities,
2. To make a hierarchical arrangement of urban centers and urban tahsil places.
3. Calculate ‘K’ value for urban centers and urban tahsil places.

DATA BASE AND METHODOLOGY:

Require data for the present research paper collected from: (1) Census of India, Census reports of Ahmednagar District from 1951 to 2011. (2) District Socio-economic review of Ahmednagar district (3) District gazetteer of Ahmednagar district.

In the present study, centrality scores are obtained for all urban centers in the study area with the help of selection of (i) ‘mean population threshold method’ (ii) Sinha’s modified method and (iii) Davis modified method. For classifying urban places into different orders of hierarchy, the centrality scores obtained by the ‘composite value’ are used.

HIERARCHIC ORDER AND NUMBER OF URBAN CENTERS: With the help of a ‘composite index method’, centrality determines the class orders of the urban centers and tahsil places and given in table-1 and table-2 respectively. Ahmednagar city (M Corp) a primate city

with district headquarters which attains highest centrality scores and it stands first hierarchical order in the study area. Followed by assigned the second order urban centres are Shrirampur (M Cl), Jamkhed (CT), Kopargaon (M Cl) and Sangamner (M Cl) which all are headquarters of tahsil and big urban centres in terms of population size as well as composite centrality score. Five centers are included in third order. They are Pathardi, Rahuri, and Shrigonda, which are attained moderate population size and provided limited services to its countryside. First three urban centers are tahsil headquarters and Shirdi is one of the famous tourist destinations and Deolali Pravara is suburban centre of Rahuri tahsil.

Table-1: Hierarchic Order and Number of Urban Centres in Ahmednagar District - 2011.

Sr. No.	Urban Centres	Composite Centrality	Number of urban Centres	Criteria used for Classification of urban centres in Hierarchic orders	Hierarchic Orders of Urban Centres
1	A. Nagar (MCorp.)	169.01	1	$> Q3+Q2 > 79.63$	1 st
2	Shrirampur (M Cl)	77.08	4	Q3 to Q3+Q2 53.54 to 79.63	2 nd
3	Jamkhed (CT)	70.17			
4	Kopargaon (M Cl)	65.06			
5	Sangamner (M Cl)	53.43			
6	Pathardi (CT)	42.41	5	Q2 to Q3 26.09 to 53.54	3 rd
7	Rahuri MCl)	37.18			
8	Shrigonda (M Cl)	31.58			
9	Shirdi (NP)	29.87			
10	DeolaliPravara(MCl)	26.09			
11	Ghulewadi (CT)	20.48	5	Q1 to Q2 11.92 to 26.09	4 th
12	Karjat (CT)	18.46			
13	Rahata (CT)	14.68			
14	Rajur (CT)	13.11			
15	A. Nagar (CB)	11.92			
16	Nagardeole (CT)	5.68	4	$< Q1$ < 11.92	5 th
17	Darewadi (CT)	5.48			
18	Nagapur (CT)	4.94			
19	Burhanagar (CT)	2.1			

Source: Computed by Author.

Fourth order hierarchies of urban centers are Ghulewadi, Karjat, Rahata, Rajur and Ahmednagar (CB). Nagardeole, Darewadi, Nagapur and Burhanagar are the urban centers

which have been assigned in 5th order of hierarchy. In this order all the urban centers are small and have suburban centers of respective towns.

Table -2: Hierarchic Orders and Number of Urban Tahsils in Ahmednagar District- 2011

Sr. No.	Urban Tahsil Places	Composite Centrality	Number of Tahsil urban places	Criteria used for Classification of urban centres in orders	Hierarchic Orders of Urban Centres
1	A. Nagar	185.73	1	$> Q3+Q2 > 100.43$	1 st
2	Shrirampur	75.53	2	Q3 to $\sigma+Q2$ 71.51 to 100.43	2 nd
3	Sangamner	71.51			
4	Jamkhed	69.05	3	Q2 to Q3 61.33 to 71.51	3 rd
5	Kopargaon	63.61			
6	Rahuri	61.33			
7	Rahata	43.25	3	Q1 to Q2 31.05 to 61.33	4 th
8	Pathardi	41.96			
9	Shrigonda	31.05			
10	Karjat	18.19	2	$< Q1$ < 31.05	5 th
11	Akole	12.92			

Source: Computed by Author

Fig.-1 : Rank Order & Centrality of Urban Centres, 2011

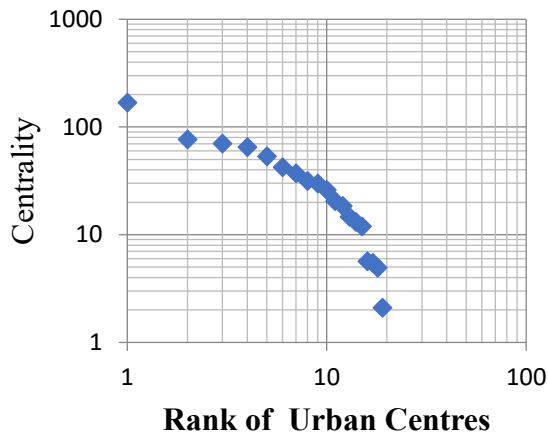
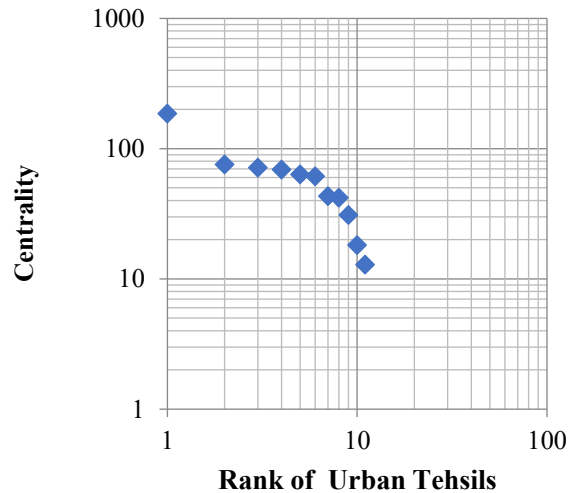


Fig. -2 : Rank Order & Centrality of Urban Tehsils, 2011



Fourth order hierarchies of urban centers are Ghulewadi, Karjat, Rahata, Rajur and Ahmednagar (CB). Nagardeole, Darewadi, Nagapur and Burhanagar are the urban centers which have been assigned in 5th order of hierarchy. In this order all the urban centers are small and have suburban centers of respective towns.

Considering, tahsil headquarters as an urban places table-1 clearly indicates that Ahmednagar assigned 1st rank order of hierarchy both in population size and centrality. Two urban tahsil places viz., Shrirampur and Sangamner are big towns and have headquarters of tahsil and big urban centers in terms of population size as well as composite centrality score. Jamkhed, Kopargaon and Rahuri are placed in third order of urban tahsil places. Rahta, Pathardi and Shrigonda fall in fourth order of hierarchy. Karjat and Akole both are bottom tahsils which are placed in fifth hierarchic order.

Bifurcation ratio method which is used by geomorphologists is adopted here for the calculation of K value for urban centers and urban tahsil places (Deshmukh-1979).

$$K = \frac{K_1 + K_2 + K_3 + \dots + K_n}{n}$$

Here K stands for composite value for all orders of central places.

$$\text{Therefore: (i) K value for urban centres} = K = \frac{1}{1} + \frac{4}{1} + \frac{5}{4} + \frac{5}{5} + \frac{4}{5} = \frac{19}{16} = 1.19$$

$$\text{(ii) K value for urban tahsils} = K = \frac{1}{1} + \frac{2}{1} + \frac{3}{2} + \frac{3}{3} + \frac{2}{3} = \frac{11}{10} = 1.1$$

RESULT AND DISCUSSION: The result of above both equations clearly indicates that in the study area the urban centers and their hierarchical class orders are not governed by 'K' value of 1.19 which is not fit to the Christaller's marketing principle hierarchical K-3, Transport principle of K-4 and administrative principle of K-7. Hence it shows noticeable difference from the theoretical number. Other calculated 'K' value of urban tahsil places is 1.1 which do not fit to the any Christaller's K value. Thus, result clearly proves that differences are observed between Christaller's K values given in above and calculated 'K' values. Hence K value of Ahmednagar district for urban centres and urban tahsils shows noticeable difference from the Christaller's theoretical number.

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