ISSN 2349-638X

REVIEWED INTERNATIONAL JOURNAL

AAYUSHI INTERNATIONAL INTERDISCIPLINARY RESEARCH JOURNAL (AIIRJ)

MONTHLY PUBLISH JOURNAL

VOL-II ISSUE-IX SEPT. 2015

Address
- Vikram Nagar, Boudhi Chouk, Latur.
- Tq. Latur, Dis. Latur 413512
- (+91) 9922455749, (+91) 9158387437

Email
- editor@aiirjournal.com
- aiirjpramod@gmail.com

Website
- www.aiirjournal.com

CHIEF EDITOR:– PRAMOD PRAKASHRAO TANDALE

Spatial Pattern of Central Place Distribution in Parbhani District: Using by Hamond and Mcullahgh Formula

Dr. Sanjivkumar B. Ashture
Research Guide & Head,
Department of Geography,
Shri.Kumarswami Mahavidyalaya,
Ausa, Dist. Latur (M.S.)- 413512.

Dr. Sangmeshwar R. Dharashive
Department of Geography,
Mahatma Basweshwar Mahavidyalaya,
Latur. (M.S.)- 413512.

Abstract:

During last four decades more emphasis is given on quantitative studies on central place theory. Berry and Garrison (1958) are the first to attempt a quantitative explanation of central place theory. A lucid explanation of hierarchy of central places is given in their article, "The Functional Bases of Central Place Hierarchy." The Hierarchy classes of central places are arranged in such a manner that places having high order and complex functions and places having low order and less complex functions are arranged in different order classes. The empirical study of retail location by Berry, Barnum, and Tennant (1962), indicates that the method, enquiry and type of information collected can give us both continuous systems of central places. The method being adopted for the distribution of central places is the 'Nearest Neighbor Analysis' which involves the comparison between the mean distances in an area of a point from its nearest neighbor and the mean distance which could be expected in a random distribution pattern in the same area. The plant ecologist Clark and Evens (1954) was the first to develop this technique and it has been used to measure the patterns of incidence of different species of plants. In recent times many Geographers has been employing to the study of the spatial distribution pattern of settlement.

Key Words: *Spatial Distribution, Settlement, Nearest Neighbor Analysis, Central Places*

Introduction:

Central places have central locations where the social gatherings take place. They are an outlet for various social functions. They are also centers of communication, diffusion, innovations. Central place theory provides ground for governmental, private and specialized agencies to establish the new ideas, notion, and policies, for the development.

The distribution of central places is to be studied in terms of the frequency of their occurrence, their physical spacing and regularity in their locational pattern. On isotropic surface

central places, following distribution of other rural settlements should have a regular pattern with uniform spacing. In the real world, however, isotropic surface is rarely found. The topography of the area is rarely uniform and resources are not uniformly distributed. As a result, the distribution of population and settlements becomes uneven.

Study Area:

Parbhani district is situated in the central of Maharashtra and lies between 18^0 45'North to $20^0$01' North latitudes and 76^0 13'East to $77^0$26' East Longitudes. The boundaries attached to the neighboring districts on north by Buldhana and Akola, on east by Hingoli and Nanded, on south Latur and Beed and on west Jalna district. The river Purna runs on the boundaries of Hingoli and Parbhani district and work as attach these two regions. The other River Godavari which runs on the boundaries of Beed and Parbhani forms a part of study region. It runs through Pathri, Sonpeth, Manwat, Gangakhed, Palam and Purna tahsils.

Objectives of the Study:

The present paper aims to deal and analyses various aspects of central places in Parbhani district.

1) To study the spatial distribution of central places and analyze spatial distribution of central places.
2) To analyze comparison between the mean distances in an area of a point from its nearest neighbor and the mean distance this could be expected in a random distribution.
3) To know the role of central places in regional development.

Data Base:

The data collected and used comes from primary and secondary sources. The basic data regarding the central places is collected through district census handbooks, socio-Economic abstracts, Maharashtra census tables and Gazetteers. The preliminary inspection is available in district census hand-book. The information collected about settlements, regarding their population and certain functional establishments was helpful in determining the tentative size of central places. The field checks and general observations were helpful in determining the approximate threshold population required for the establishment of certain lower order functions.

It was observed that a settlement of 2000 population is capable of acquiring certain central functions.

Methodology:

The method being adopted for the distribution of central places is the 'Nearest Neighbor Analysis' which involves the comparison between the mean distances in an area of a point from its nearest neighbor and the mean distance which could be expected in a random distribution pattern in the same area. The plant ecologist Clark and Evens (1954) was the first to develop this technique and it has been used to measure the patterns of incidence of different species of plants. In recent times many Geographers has been employing to the study of the spatial distribution pattern of settlement.

For the present research following formula developed by Hamond and Mcullahgh (1974) has been employed.

$$\text{Rn} = \frac{\bar{D}obs}{\bar{D}ran}$$

Where,

$\bar{D}obs$ = is the measured mean distance between the nearest neighbor point observed in a given area.

$\bar{D}ran$ = is the expected mean distance for a similar number of points distributed in the same area.

Rn= is the nearest neighbor index.

$$\bar{D}ran = \frac{1}{2\sqrt{\frac{N}{A}}}$$

Where,

N = is the number of market centres in the study region.

A = is area of study region / spatial unit below

Hence,

$$Rn = \frac{\bar{D}obs}{1 \div (2\sqrt{\frac{N}{A}})}$$

It can be expressed in a simplified form as below:

$$Rn = 2\bar{D}obs\sqrt{\frac{N}{A}}\ \mathbf{OR} Rn = 2\bar{d}\sqrt{\frac{N}{A}}$$

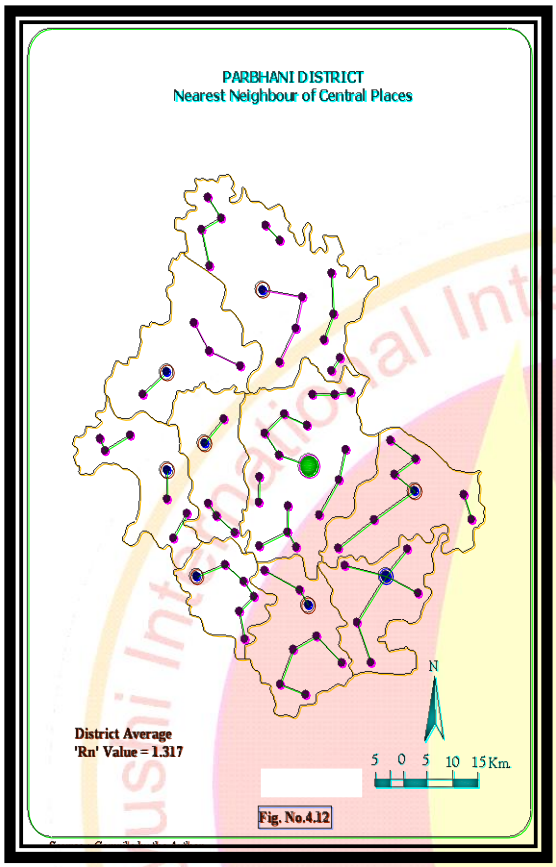

Fig. No.4.12

Spatial Pattern of Central Place Distribution:

In the spatial distribution of central place there is a difference from tahsil to tahsil due to spatial variation in the area under cultivation, population and unbalanced transport network. It is noteworthy to study the existing pattern of spatial distribution of central places in Parbhani district. Parbhani, Sonpeth, Pathri, Manwat, Purna and Gangakhed tahsil being the most fertile tract, are developed in irrigation and transport network. These tahsils have a large number (51) of central places of varying sizes. While due to undulating topography, lack of transportation, Jintur, Sailu and Palam tahsils include few number of central place i, e. 23.

The value of the Rn will fall 0.0000 to 2.1491. The value of 0.0 showing to clustering at the point and the value of 2.1491 is showing a highly uniform pattern. Every hexagonal distribution can be shown with the help of scale also when the value is one the pattern is completely random. (Dacey 1960, 1962 King 1962) (Fig. No.1.1).Since the study area presents a visible contrast in the density pattern and spacing of central places, the Rn values at tahsil level are also calculated. In such situation different Rn values for different tahsil are obtained in order to find out the association of the central places with each other Rn value for the study region has been calculated. And its result has been shown in the

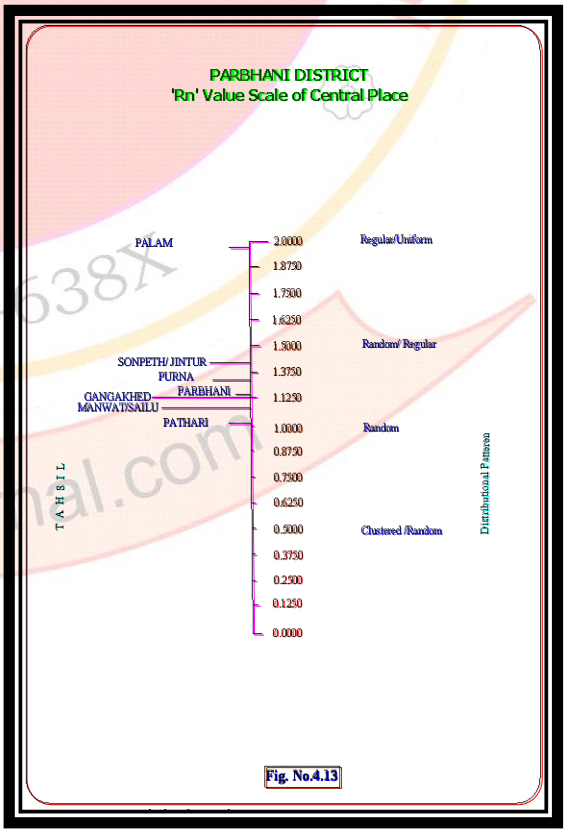

Fig. No.4.13

Table No. 1.1 and position of various tahsils has been marked on the Rn value scale (Fig.No.1.2).

Table No. 1.1: Parbhani District: Nearest Neighbor Statistics of Central Places

Tahsil	–Dobs km.	–Dran km.	'Rn' Values
Parbhani	5.13	4.04	1.26
Gangakhed	5.59	4.45	1.25
Palam	9.54	4.83	1.97
Sonpeth	6.15	4.37	1.40
Purna	6.53	4.77	1.36
Pathri	4.75	4.59	1.03
Manwat	5.40	4.93	1.09
Sailu	6.70	6.13	1.09
Jintur	6.41	4.57	1.40
Total	**6.243**	**4.74**	**1.317**

Source: *- Compiled by the Researcher.*

The analysis reveals that the central places are of regular pattern random manner where the degree of regularness is 1.317. Most of the central places in the study region are in the regular pattern random manner, having the range 1.00 to 1.50. The central places Parbhani, Gangakhed, Sonpeth, Purna, Pathri, Sailu and Jintur tahsil are in the regular pattern random manner. The central places in Palam tahsil are having Rn value above regular uniform pattern. But the central places in Palam tahsil are near to regular pattern.

Conclusions:

The spacing of central places is uneven because of lack of transportation facilities for the movements of people and goods are also unevenly distributed. The northern hilly part of the region has inadequate facilities which prevent the farmer's range of marketing their production, whereas central eastern and western part of the region has adequate facilities of

transport and developed agriculture which is directly responsible for developing more central places having near about uniform distribution.

References:

1. *Clark, P. J. and Evans. (1958): 'Distance to the nearest neighbor as a measure of a spatial relationship in population', Ecology, pp. 445-450.*
2. *Lokhande, T. N. and Pawar, C.T. (1934) : 'Periodicity and Distributional Pattern of Market Centers in Kolhapur District, Maharashtra Journal of the Shivaji University, Vol. 36, pp. 65-72.*
3. *The Encyclopedic District Gazetteers of India, (1998) : Western Zone vol. 7, Gyan Publication, New Delhi, pp. 515-520.*
4. *Socio-Economic Review and Statistical Abstracts of Parbhani District, (2003-04 to 2009-10).*

Aayushi International Interdisciplinary Research Journal
ISSN 2349-638X
www aiirjournal.com