

Quadrant – Transcript and Related Materials

Programme: Bachelor of Science (Second Year)

Subject: Geography

Paper Code: SGC 104

Paper Title: Geography of Secondary and Tertiary Economic Activities.

Unit: III

Module Name: Central Place Theory

Module No: 41

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Notes

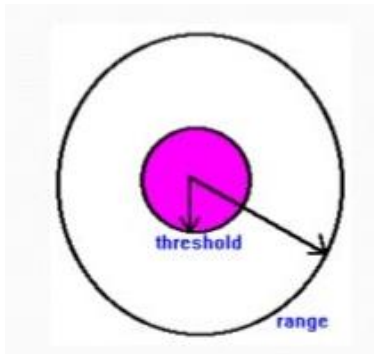
Introduction

The theory was published by a German Geographer Walter Christaller in 1933. He studied the settlement patterns in southern Germany. He used a model pattern of settlement locations in a geometric shape. Central Place Theory explains the spatial arrangement, size, and number of settlements.

Assumptions of a theory

- a. An isotropic (flat) surface.
- b. An evenly distributed population.
- c. An evenly distributed resource.
- d. Similar purchasing power of all consumers and consumers will visit the nearest market
- e. Transportation costs equal in all directions and proportional to distance
- f. No excess profits.

Basic concepts of theory



A. Threshold population

- The minimum population required to start the business with certain goods or services.

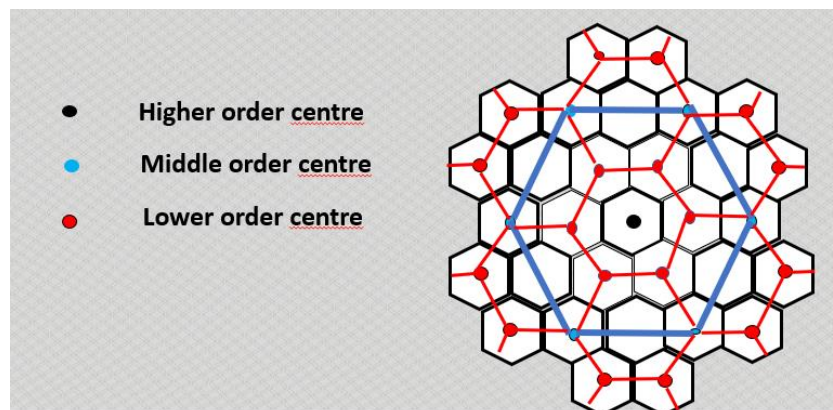
B. Range of goods or services

- The average maximum distance people will travel to purchase goods and services.

Three principles of central place theory

- Christaller put forth three different arrangements of central places according to the following principles:
 1. The marketing principle (K=3 system).
 2. The transportation principle (K=4 system).
 3. The administrative principle (K=7 system).

The marketing principle (K=3 system).



1. First order service center provides services to first order.

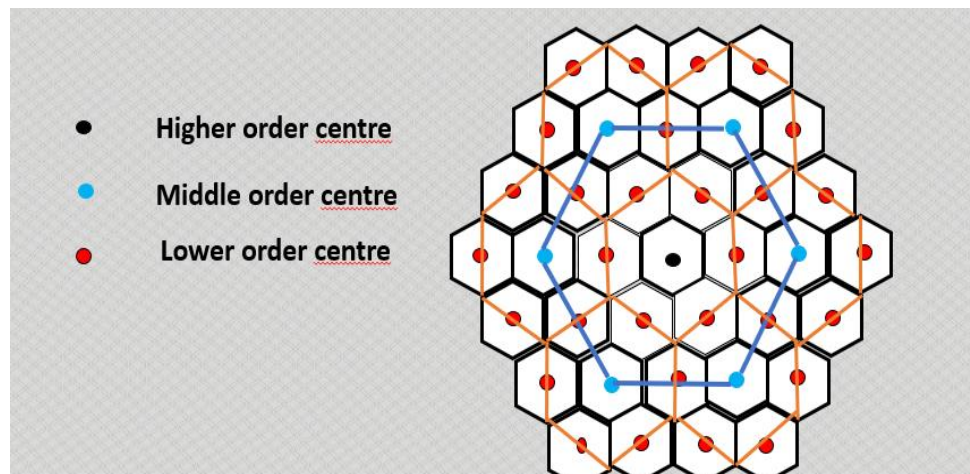
2. Second order service center provide services to second order.
3. Third order service center provide services to third order.

- Every order settlement is surrounded by six other settlements of the lower order.
- The low order centers found at the boundaries of market areas.
- People at lower order center will have a choice between three higher order centers since all three are equidistant.
- Each higher order center then receives one third of the customer of six lower order centers.

Calculation of k=3 system

- $K=3$ system serves $1/3$ of the population of 6 lower centers.
- 6 = lower center population.
- 1 = it's own population.
- $K = 6 \times \frac{1}{3} = 2 + 1(\text{Own pop}) = 3$
- 1st order settlement serves 3 of second grade
- 2nd order settlement serves 9 of third grade
- 3rd order settlement serves 27 of fourth grade and so on.

2. The transportation principle (K=4 system).



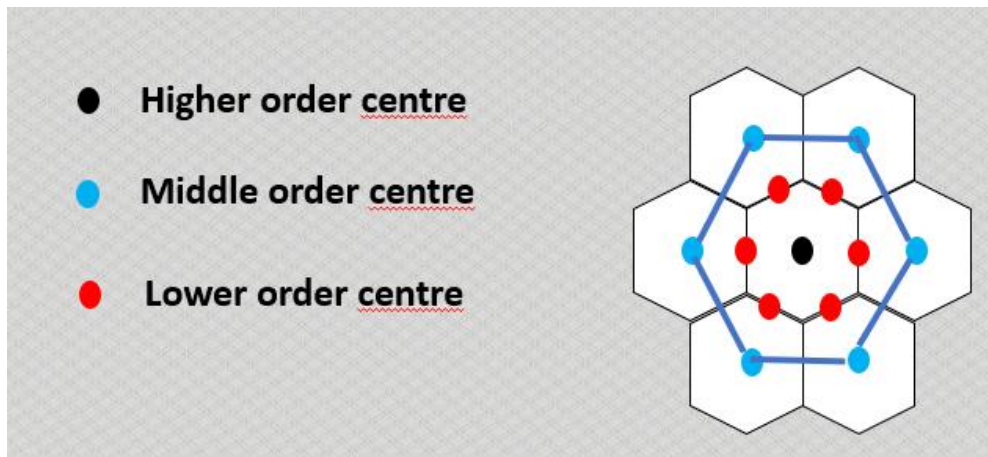
- In $K=4$ system, lower order centers are located at the midpoint of each side of the hexagon.
- lower order center is equidistant from two other order centers.

Calculation of K=4 System

- $K=4$ system serves $1/2$ of the population of 6 lower center.
- 6 = lower order population.

- 1= its own population
- $k = 6 \times \frac{1}{2} = 3 \times 1(\text{own pop}) = 4$
- The number of settlements serving as central places at each decreasing hierarchy would be 1, 4, 16, 64, 256 and so on.

3. The administrative principle (K=7 system).



- In K=7 system, the higher order centers include the higher market area of each of the six neighboring lower order centers.

Calculation of K=4 System

- K=7 system serves 6 neighboring lower order centers including 1 higher order of its own.
- In the administrative principle, numerical progression would be:
 - 1st order= 1
 - 2nd order 7,
 - 3rd order 49,
 - 4th order 343 and so on.