Location Models
Location theory

Attempts to predict where business will or should be located.

Must be based on 3 assumptions:

1. That business owners want to maximize their advantages over competitors;
2. That they also want to maximize their profits; and
3. That they will take into account variable costs such as energy supply, transport costs, labor costs, etc.
Friction of distance: A key issue in maximizing advantages. Do you remember what it means?

– The increase in time and cost that accompanies an increase in distance.
Don’t forget **distance decay**: the impact of a function or activity declines as you move away from the point of origin.

In manufacturing, it means plants are more concerned with near markets than far ones.
Fixed or variable costs

- Spatially **fixed** costs—do not change wherever a company is. They are NOT important in determining its location.

- Spatially **varied** costs differ from place to place. A company's goal is to minimize these costs.
Weber’s Least Cost Theory

- Developed to choose a location for manufacturing plants
- Assumes the owner has 3 categories of costs:
  - Transportation
  - Labor
  - Agglomeration
Transportation

- The site should include the lowest possible cost of
  - Moving raw materials to the factory;
  - Getting finished products to consumers.
Bulk-reducing industries

- Weight or bulk-reducing industries:
  - Copper and iron
  - Paper, pulp, sawmills are near forests
  - Canning of fruits and veggies
  - Meatpacking

- This leads to a **material orientation**: when material costs are high, the factory locates near the inputs.
Bulk-gaining industries

- These are ones in which weight is gained during processing.
  - Soft drinks: supplies are easy to ship, only water needs to be added.

- They cause a market orientation: when costs of getting products to market are high, businesses locate near the market.
Weber’s triangle
It might be better to move the factory away from resources if cheap labor can make up for transportation costs.
Agglomeration

- The clustering of a large number of similar enterprises in the same area.
- They can assist each other in share talents, services, facilities, communication, equipment, etc. → infrastructure.
- This makes big cities somewhat more attractive.
- Example: Nashville, Silicon Valley.
However...

- Too much agglomeration can cause problems, such as high rents and wages, or too much traffic.
- This can lead to **deglomeration**: plants or businesses leave the crowded megalopolis and move to less crowded areas.
Another way to determine plant location, according to Weber.

The weights represent the ‘pull’ of raw material and market locations.
Locational interdependence

- Hotelling’s Model
- In trying to maximize sales, competitors will seek to limit each other’s territory, and therefore will end up close to one another in the middle of their customer base.
Hotelling Model

Figure 9.12 Competitive locations in a linear market (Hotelling model). The initial socially optimal locations (a) that minimize total distribution costs will be vacated in the search for market advantage (b), eventually resulting in competitive equilibrium at the center of the market (c). Spatial dispersion will again occur if two or more competitors either encounter elasticity of demand or subdivide the market by agreement (d).
Location Models

**Weber’s Model**
Manufacturing plants will locate where costs are the least (least cost theory)

**Theory:**
Least Cost Theory

**Costs:** Transportation, Labor, Agglomeration

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**Hotelling’s Model**
Location of an industry cannot be understood without reference to other industries of the same kind.

**Theory:**
Locational interdependence

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**Losch’s Model**
Manufacturing plants choose locations where they can maximize profit.

**Theory:**
Zone of Profitability
Losch’s Model

Zone of Profitability
Substitution principle

- Recognizes that in many industrial processes it is possible to replace a declining amount of one input (such as labor) with an increase in another (such as capital for automated equipment) or to increase transportation costs but decrease land rent.
Spatial margin of profitability

- The set of points delineating the areas within which a firm’s profitable operation is possible.
- Location anywhere within the margins insures some profit.
- It’s okay to have less than perfect knowledge of the area.
- Personal considerations are allowed.
- Such acceptable sites are called satisficing locations.
Other aspects of Substitution

- Optimal site
- Taxation or labor costs
- Changes in consumer demand
- Infrastructure
- Energy supply
  - Example: aluminum needs enormous amounts of electricity
- Why would Dell come to Winston?
Fordist – dominant mode of mass production during the twentieth century, production of consumer goods at a single site.
Post-Fordist

- Current mode of production with a more flexible set of production practices in which goods are **not** mass produced.
- Production is accelerated and dispersed around the globe by multinational companies that shift production, outsourcing it around the world.
Time-Space Compression

Through improvements in transportation and communications technologies, many places in the world are more connected than ever before.
Time-Space Compression

- **Just-in-time delivery**
  Rather than keeping a large inventory of components or products, companies keep just what they need for short-term production and new parts are shipped quickly when needed.

- **Global division of labor**
  Corporations can draw from labor around the globe for different components of production.
New Influences on the Geography of Manufacturing

- Transportation on industrial location
- Regional and global trade agreements
- Energy in industrial location