Location Selection

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Industrial Location Selection

- The location decision for a production facility is one of the most important decisions that a management faces.
- The purpose of a location study is to determine the area and the site at which the projected operation and investment can be carried out under optimal conditions, with the best monetary return, and with least number of problems.

Location, Location, Location:
*A Plant Location and Site Selection Guide*
Marcel De Meirleir
TIPS Technical Publishing, 2006
Industrial Location Selection

Industrial location decision making is a highly complex process with multifaceted characteristics including tangible and intangible elements that are very difficult to measure and evaluate.

The Dynamics of Industrial Location:
*The Factory, the Firm and the Production System*

Roger Hayter

John Wiley and Sons, 1997
Related Literature
Literature on Location Selection

- Location-Production Models
  - Weber’s & Moses models
  - OLI (Ownership, Location, Internalization) framework

- Agglomeration Economies
  - Economies of scale and network effects
  - Clusters
  - SEZs

- Investment Climate

- Location Consultants
Location-Production Models

- Weber’s and Moses models.
- These models analyze the production behaviour of an individual firm in relation to the local labour, land, transportation, and telecommunication costs.
- The objective is to choose a location where the weighted sum of Euclidean distances from the plant to the markets where the plant purchases its inputs and sells its outputs.
Ownership, Location & Internalization (OLI) Framework

- A firm prefers FDI to trade & become a MNC if
  - The firm possesses ownership advantages not available to other firms in terms of superior technology, firm size, brand name, etc.
  - The entering market offers location specific advantages like market size, cheap resources, and infrastructure.
  - There are internalization advantages of eliminating the transaction and coordination costs associated with market interaction

- Widely accepted model for location choice at the national level
Clusters: Choice Locations
Ecosystem Aware
Global Supply Chain Management

Agglomeration Economies

- Economies of agglomeration describe the benefits that firms obtain when locating near each other.
- Clustering of related firms create economies of scale and network effects which in turn lower the production cost and increase the market reach.
- The production costs are lower due to availability of specialized resources, such as competing suppliers, skilled labour, and infrastructure.
- On the demand side, the informational externalities from other firms and the reduction in consumer search costs are beneficial for total market demand.
Clusters

- Clusters are geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions (universities, training) in a particular vertical.
- The proximity of companies and institutions in one location fosters better coordination and trust, lowering the transaction costs, minimizing the inventory, importing costs and delays.
- Clusters allow companies to operate more productively in sourcing inputs; accessing information, technology and human resources.
California is now a significant player in the wine industry challenging Italy, France and other European countries. UC Davis has helped with such new techniques as mechanical harvesting, drip irrigation, and field grafting.
Indian automotive industry has grown in clusters, Manesar in North, Pune in West, Chennai in South, Jamshedpur-Kolkata in East and Indore in Central India.

Location advantages such as infrastructure, access to pool of educated workforce and supportive state government policies are some of the factors that play a role in attracting auto investments.
Special Economic Zones (SEZs)

- SEZ is a geographical region that has economic laws different from the rest of the country.
- The goal of SEZs is to attract foreign investments.
- SEZs have been established in many countries – China, India, Jordan, Poland, Philippines, Russia, and, North Korea.
- Indian SEZs are not as effective as those in China probably because they are not as focused
Investment Climate and Other Indices

- The Global Competitiveness Report
  - Rankings depend on elements of the macroeconomic environment, the quality of public institutions, and the level of technological readiness and innovation.

- Global Information Technology Report
  - The Networked Readiness Index (NRI), is a measure of the degree of preparation of a nation to participate in and benefit from ICT developments

- Investment Climate
  - Macroeconomic, fiscal, monetary, and exchange rate policies and political stability
  - Regulatory framework: entry and exit, labor relations, finance and taxation
  - Physical and financial infrastructure: power, transport, telecommunications, and banking and finance

Empirical and Data Driven
Location Consultants

- Location consultants support the whole location selection process, starting from the initial search of locations till the negotiations on investment subsidies and agreements on land and/or buildings.
- Multi-attribute evaluation of locations is usually done by assigning weights directly – multi-attribute value function – linear additive technique
- Popular location consultants in Europe and US:
  - IBM Plant Location International
  - Buck Consultants International
  - Deal Tek
  - PWC, etc
Location Choice: National vs. Sub-national
An MNC faces two kinds of location choice problems in FDI.

The first is the choice of a country for investment. This complex decision subsumes with it decisions on mode of entry and industry of entry.

The second one is the choice of a city/town within the chosen country to build and operate the subsidiary. This decision process involves evaluation of the alternate cities with respect to various location factors and negotiation with the host governments.
Location Decisions: Mode of Entry

- **Mode of entry**: Greenfield investment or Acquisition or Joint Venture
- **Industry of entry**: In the main line of business of MNE or a diversification from the current business
Location Decisions: Types of Firms

- **Single-plant firm**: The problem is to find a single location from a given set of potential locations.

- **Vertical multi-plant firm**: A firm with a multi-plant production process and plans to locate each plant in a different location. Here the location choice problem is to choose the location for each plant simultaneously.

- **Horizontal multi-plant firm**: A firm with decentralized plant locations across the country, each catering to local demands from the nearby plant. The location choice problem in this case is similar to the classical facility location problem.
An MNC is interested in locating a drugs and pharmaceutical plant in one of the four locations Ahmadabad, Mumbai, Delhi, and Hyderabad.

The location decision process has the following steps:

- Evaluate and rank the four locations with respect to various attributes and the MNC’s firm-level characteristics and objectives.
- Choose top two cities and negotiate with the respective state governments for possible incentives.
- Iterate till the final selection is made
The locations decision problem has two components: Evaluation of the locations and negotiation with the state governments.

Simultaneous negotiation of the MNC with all the state Governments is also possible.
### Factors Influencing Location Decisions

<table>
<thead>
<tr>
<th>Category</th>
<th>Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry Inputs</td>
<td>Industrial electricity charge; industrial water charge; availability of land; land cost; labour wage; overstaffing rate; number of white-collar workers; number of blue-collar workers; educational &amp; training institutes; collaboration with local universities;</td>
</tr>
<tr>
<td>Agglomeration &amp; Network Economies</td>
<td>Localization economies measure; economic diversity: Chinitz-Jacobs diversity measure and Herfindhal measure; location quotient;</td>
</tr>
<tr>
<td>Communication Technologies</td>
<td>Number of days to get connections for various technologies: telephone, wireless, internet; bandwidth; network readiness index; mail &amp; postal;</td>
</tr>
<tr>
<td>Transport</td>
<td>Distance to nearby sea port, airport, railway station; transportation costs for various modes; domestic and international connectivity;</td>
</tr>
<tr>
<td>Laws &amp; Regulations</td>
<td>Difficulty of interface with various government departments: labour, customs and excise, income tax, pollution control, electricity board, water board; corruption level; amount of time spend with government officials; frequency of government official visits;</td>
</tr>
<tr>
<td>Economic &amp; Financial</td>
<td>Corporate income tax; imports tax; exports tax; financial incentives; availability of funds and loans; GDP; growth rate; buying power;</td>
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<tr>
<td>Risks</td>
<td>Political stability; intellectual property protection; friendliness of the government; conflicts with the neighboring governments; communal disputes;</td>
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<td>Living Conditions</td>
<td>Consumer price index; crime rate; real estate prices; number of hospitals;</td>
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<tr>
<td>Third Party Services</td>
<td>Legal; advertisement; logistics;</td>
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Industrial Location Selection Process

1. Identify the basic requirements and the critical factors of the location project.
2. Shortlist $N$ alternate locations that satisfy the mandatory critical factors.
3. Identify the $M$ location factors to evaluate the $N$ locations.
4. Obtain information about the $N$ locations for the $M$ factors (recurring costs, non-recurring costs, market growth, return of investment, government efficiencies, political climate, etc).
5. Rank the $N$ locations with respect to the $M$ location factors.
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Fig. 8.1 Dynamics of the location decision process