

7.4: Facility Location and Layout

pace: “Chapter 8: Location Planning and Analysis”

which should help you to understand the financial aspects of choosing a location. In addition consider the factors that influences the poor choice can make it very difficult to meet demand and manage costs effectively.

'sis

. There are many options for location planning. Corporations choose from expanding an existing location, shutting down one tions while retaining existing facilities, or doing nothing. There are a variety of methods used to decide the best location or identifying the country, general region, small number of community alternatives, and site alternatives.

lude the location of raw materials, proximity to the market, climate, and culture. Models for evaluating whether a location is best for tions, the center of gravity model, the transportation model, and factor rating.

ty by considering costs and benefits. If you are planning on moving or acquiring a new facility, there are many factors to consider: the and others. After a location or locations have been chosen a cost-profit-volume analysis is done.

regional factors, community considerations, and site-related factors. Community factors consist of quality of life, services, attitudes, pment support.

age 385)

ble to aid in evaluating location alternatives:

e represented either mathematically or graphically. It involves three steps: 1) For each location alternative, determine the fixed and l-cost lines on the same graph, and 3) Use the lines to determine which alternatives will have the highest and lowest total costs for re four assumptions one must keep in mind when using this method:

mated.

Number of Units (Also shown below but not in the same format)

ive inputs, and evaluates alternatives based on comparison after establishing a composite value for each alternative. Factor Rating

ghts totaling 1.00.

ually 0 to 100.

: weight by score factor); add up scores for each alternative.

nsidered the best option.

articular standard, though this is not necessary.

ion of a facility which will either reduce travel time or lower shipping costs. Distribution cost is seen as a linear function of the ravity Method involves the use of a visual map and a coordinate system; the coordinate points being treated as the set of numerical ties shipped to each location are *equal* , the center of gravity is found by taking the averages of the x and y coordinates; if the t , a weighted average must be applied (the weights being the quantities shipped).

relocating. Some of the reasons include expanding the market and diminishing resources. For an existing company to relocate, they

elsewhere. They can expand their existing facility, add new ones and keep their existing facilities open, move to another location and they are and not do anything. Globalization has led many companies to set up operations in other countries. Two factors that make trade agreements. By going global, companies will expand their markets and be able to cut costs in labor, transportation, and taxes. vices.

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organization will narrow down alternatives to a specific geographic region. These factors that influence location selection are often manufacturing or service firm. When deciding on a location, managers must take into account the culture shock employees might face after a new employees which might affect workers productivity, so it is important that managers look at this.

risks as well as the probabilities of them occurring

ons
nt reasons for a firm to locate in a particular region includes *raw materials, perishability, and transportation cost*. This often depends

ite near markets that they want to serve as part of their competitive strategy. A *Geographic information system(GIS)* is a computer displaying demographic data on maps.

or availability, wage rates, productivity, attitudes towards work, and the impact unions may have.

use bad weather can disrupt operations. Taxes are also an important factor due to the fact that taxes affect the bottom line in some

the community in which move a business. They include facilities for education, shopping, recreation and transportation among many of the utilities, taxes, and environmental regulation.

, transportation, zoning and many others. When identifying a site it is important to consider to see if the company plans on growing or not location is suitable for expansion. There are many decisions that go into choosing exactly where a firm will establish its manufacturing factors that will influence which areas are suitable locations. After these factors have been determined, the company will identify the best establishing operations in these countries. After looking at pro and cons of the different countries and deciding on a country, then the country. When identifying a region, decision makers must take the four major factors explained above into consideration. The last two would be a site.

signment.

ful in evaluating location alternatives, such as locational cost-profit-volume analysis, factor rating, and the center of gravity method. 1. Analysis.

The procedure for locational cost-profit-volume analysis involves these steps:

with each location alternative.

on the same graph.

l cost for the expected level of output. Alternatively, determine which location will have the highest profit.

output.

output.

ed.

Unit * Quantity or volume of output

Variable cost per unit) – Fixed cost

to be considered. We will now consider another kind of cost often considered in location decisions: transportation costs.

role in location decisions. The company can include the transportation costs in a locational cost-volume analysis by incorporating the variable cost per unit if a facility will be the sole source or destination of shipments. When there is a problem with shipment of goods into, and a new location is to be added to the system, the company should undertake a separate analysis of transportation. In this case, the model is helpful. The model is used to analyze each of the configurations considered, and it reveals the minimum costs each would provide. The model of location alternatives.

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There are several different ways for a company to organize their operations. These ways include: assigning different product lines to different plants, or assigning different processes to different plants. These strategies carry their own cost and managerial advantage. There are four different types of plant strategies:

Specialized plants, and each plant is usually responsible for supplying the entire domestic market. This is based on a narrow set of requirements that includes specialization of labor, materials, and equipment along product lines. This results in economies of scale and, compared to multipurpose plants, lower operating costs. Plants are placed relatively close to one another.

Geographic segment of a market.

Each plant produces all of the company's products and supply a limited geographical area.

Costs are higher than those of product plants, but savings on shipping costs for comparable products can be made.

Costs are high due to volume, weight, or other factors.

Short delivery and response times to local needs.

Ability to add or delete plants, or to expand or downsize current plants because of changing market conditions.

Effects of a process.

Production of numerous components; separating the production of components results in less confusion than if all the production were done in the

Flow of production throughout the system, and it requires a highly informed, centralized administration in order to be an effective

A key benefit is that individual plants are highly specialized and generate volumes that brings economies of scale.

Range of products

Flexibility to make product changes, but can be less productive than a more focused approach.

Learning opportunities that happens when similar operations are being done in different plants. Solutions to problems as well as sharing of knowledge with the other plants

Quality of life: the desirability of a community as a place for its workers and managers to live?

swer]

1 planning a location?

wer]

etail stores view locations as?
ions

!.

swer]

s?

swer]

that will minimize shipping cost and travel time to various destinations.
closest to the most number of consumers.
closest to the main supplier
in the middle-point of all suppliers.

er]

d quantitative factors are important in determining an ideal location when using:

swer]

actors including:

swer]

mation to determine costs:

swer]

Cost-Profit Volume Analysis?

swer]

If fixed costs are constant.*

which of the following is **NOT** a managerial choice?
g compared
gories to get a composite for a location

; where answers are found

swer]

swer]

location alternatives?

swer]

lude qualitative and quantitative inputs.

lude regional inputs.
of different products.

swer]

nizes the distribution costs.

ure and geographic culture.

swer]

ation decisions?

swer]

is **NOT** involved in the data?

swer]

swer]

re all examples of which primary reason for firms locating near or at the source of raw materials?

swer]

posite value for?

swer]

ing, storing, retrieving, and displaying demographic data on maps?

swer]

operate in a region?

swer]

ould to be absolutely clear on the benefits and risks and the likelihood of their occurrences when deciding upon identifying:

swer]

sion of a manufacturing firm is:

swer]

sion when identifying a site for operations?

swer]

re the two differing variables for equal and unequal quantities shipped, respectively?

swer]

ring the problem in economic terms?

swer]

threat of terrorism fall under which category?

swer]

ernative evaluation, which of the following could be considered relevant factors?

swer]

procedure for making location decisions?

)

swer]

There are many factors that come into play when choosing a suitable location. Usually it is one or a few factors that dominate the market supply and/or demand, perhaps even if inputs used by the business have run out. A business can suffer greatly if the right evaluate all their options very carefully before making a final conclusion.

regard to location planning. The first option would be to take the current facility and make it bigger. The second would be to keep the). The third would be to close down the current facility entirely and build a new one. The last option would be to keep things the way

rmat.

for collecting, storing, retrieving, and displaying demographic data on maps?

swer]

swer]

e best location.

wer]

d in location decision making?

swer]

idden-answer]

pter.

swer]

the General Agreement on Tariffs and Trade (GATT), and the U.S. – China Trade Relations Act

tions?

swer]

r, import restrictions, and criticisms.[/hidden-answer]

a weight of .20. There are three possible location choices. The first location has a score of 60/100. The second location has a score of
it are the weighted scores of each location possibility?

swer]

moving it's operation's globally?

swer]

dden-answer]

swer]

bution costs.[/hidden-answer]

vided below.

	x	y
	8	5

	6	2
	4	3
	3	5

swer]

1-answer]

wing information:

	y	Weekly Quantity
	6	700
	3	500
	6	800
	4	600
	2	200
	21	2,800

swer]

$$800 = 6.36$$

$$800 = 4.75[\text{hidden-answer}]$$

alysis to determine the B Superior range approximation.

	Fixed Costs per Year	Variable Costs per Unit
	\$250,000	\$20
	\$150,000	\$50
	\$350,000	\$25
	\$225,000	\$40

swer]

t-volume analysis to find the C Superior range approximation.

swer]

in January. They sold 2000 units in the month and the cost per unit was \$5. The price for the product is \$10 per unit.

swer]

swer]

swer]

nanagement would be indifferent in choosing between the two in terms of _.

swer]

per unit of in order to correspond to other variable costs if raw materials are involved.

swer]

tor when locating in a foreign region?

swer]

ening in your community. How would you decide where to locate that business? What would you be most concerned about in making

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