

4.1: Introduction to Strategic Capacity Planning

This module examines how important strategic capacity planning is for products and services. The overall objective of strategic capacity planning is to reach an optimal level where production capabilities meet demand. Capacity needs include equipment, space, and employee skills. If production capabilities are not meeting demand, it will result in higher costs, strains on resources, and possible customer loss. It is important to note that capacity planning has many long-term concerns given the long-term commitment of resources.

Managers should recognize the broader effects capacity decisions have on the entire organization. Common strategies include **leading capacity**, where capacity is increased to meet expected demand, and **following capacity**, where companies wait for demand increases before expanding capabilities. A third approach is **tracking capacity**, which adds incremental capacity over time to meet demand.

Finally, the two most useful functions of capacity planning are design capacity and effective capacity. **Design capacity** refers to the maximum designed capacity or output rate, and the **effective capacity** is the design capacity minus personal and other allowances. These two functions of capacity can be used to find the efficiency and utilization. These are calculated by the formulas below:

$$\begin{aligned}\text{Efficiency} &= (\text{Actual Output} / \text{Effective Capacity}) \times 100\% \\ \text{Utilization} &= (\text{Actual Output} / \text{Design Capacity}) \times 100\% \\ \text{Effective Capacity} &= \text{Design Capacity} - \text{allowances}\end{aligned}\tag{4.1.1}$$

✓ Example 4.1.1

Actual production last week = 25,000 units

Effective capacity = 28,000 units

Design capacity = 230 units per hour

Factory operates 7 days/week, three 8-hour shifts

1. What is the design capacity for one week?
2. Calculate the efficiency and utilization rates.

Solution

(Using the formulas above)

1. Design capacity = $(7 \times 3 \times 8) \times (230) = 38,640$ units per week
2. Utilization = $25,000 / 38,640 = 64.7\%$
Efficiency = $25,000 / 28,000 = 89.3\%$

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