Chapter 25. Capacity Utilization and Outsourcing

4.3 Capacity utilisation and outsourcing

4.3.1 Significance and measurement of capacity utilisation

- the measurement of capacity utilisation
- the impact of operating under or over maximum capacity on a business
- methods of improving capacity utilisation

4.3.2 Outsourcing

- the impact of outsourcing on a business

Capacity Utilization – measuring over and under capacity

Measurement and significance of capacity utilisation

- Capacity utilisation is a major factor in determining the operational efficiency of a business.
- Maximum capacity means the total possible level of sustained output a business can achieve in a given time period.
  - If a business is working at full capacity, it is achieving 100% capacity utilisation. There is no spare capacity.
  - Capacity utilisation rates are used by analysts to compare how one business or factory is performing compared to the average, or how capacity utilisation differs from previous periods.

Capacity utilisation is calculated by the formula:

$$\text{rate of capacity utilisation} = \frac{\text{current output level}}{\text{maximum output level}} \times 100$$

GLOSSARY TERMS

Capacity measures the maximum amount of output a firm can produce at a given moment with its existing resources.

Factors of production are inputs into the transformational process of business, such as land, labour, capital and enterprise.

Capacity utilisation measures the existing output relative to the maximum possible output.

STUDY TIP

Remember that the capacity of a business will affect the sales it is trying to achieve and, therefore, its human resource planning and financial position. There is little point generating more demand if there is not the capacity, unless the business is willing to let others produce for it and/or have queues and waiting lists.

Capacity Utilization – measuring over and under capacity

- When capacity utilisation is at a high rate, the fixed costs of rent and machinery depreciation are spread over a large number of units. Average or unit fixed costs will be relatively low.
- When capacity utilisation is low, fixed costs will have to be borne by fewer units and average fixed costs will rise.

100-bed hotel	All bedrooms occupied (100% of capacity)	50 bedrooms occupied (50% of capacity)
Hotel fixed costs per day, e.g. rent and salaries	$2,500	$2,500
Average fixed costs per room per day	$25	$50

Table 25.1 How unit fixed costs vary with capacity utilisation

ACTIVITY 25.1

[12 marks, 20 minutes]

1. Explain with a numerical example how unit (average) fixed costs decline as output rises. [4]
2. If a business currently has an annual production capacity of 50,000 units, what will be its rate of capacity utilisation if its annual production is:
   - 20,000 units
   - 30,000 units
   - 45,000 units
   - 50,000 units. [8]

Capacity utilization – Is full capacity always good?

- A business with low capacity utilisation not only wastes resources but has high unit costs. This will reduce profit margins if the price stays the same.
- If the firm tries to increase the price to cover the higher unit costs, it may find that sales fall and the situation becomes even worse.

Capacity utilization – Is full capacity always good?

YES for short time, NO for long time:

- Staff may feel under pressure, no mistakes allowed
- Regular customers may not recieve their order, waiting time too long, may switch to competitor
- No down time/ maintenance time for machinery

- Firms attempt to keep very high utilization, but keep some space capacity for unforeseen circumstances

- Maximum capacity means the total possible level of **SUSTAINED** output a business can achieve in a given time period.

Capacity utilization – EXCESS capacity /under utilised/

EXCESS capacity – what to do?

Try to reduce the excess capacity, or else the unit fixed cost will be getting higher

TIP

If you are asked to make decisions about how to deal with excess capacity, you should consider both the length of time that the excess capacity might last and the causes of the problem.

1. **Is it short-term?**

- Maintain high output level, but add to stock – will you be able to sell it all though?
- Adopt more flexible production system /need flexible resources – machinery staff/
- Offer only flexible employment contracts

KEY TERM

Excess capacity: exists when the current levels of demand are less than the full capacity output of a business – also known as spare capacity.

Capacity utilization – EXCESS capacity

EXCESS capacity – what to do?

1. **Is it short-term?**
   - Do nothing
   - Seek marketing solutions
   - Adjust pricing
   - Enter foreign markets
   - Increase sales

ACTIVITY 25.2

Hotels' excess capacity

The following data apply to the hotel industry. Capacity utilisation in the hotel industry is often referred to as 'room occupancy rates'.

	2012	2013
London hotels – capacity utilisation	85%	75%
Average room price	$135	$145
Istanbul hotels – capacity utilisation	70%	80%
Average room price	$90	$95

	SHORT-TERM PROBLEM – e.g. seasonal downturn	
	Advantages	**Disadvantages**
Option 1: Maintain output and produce for stocks	■ no part-time working for staff ■ job security for staff ■ no need to change production schedules or orders from suppliers ■ stocks may be sold at times of rising demand	■ unsuitable for perishable stocks or those that go out-of-date quickly ■ stock-holding costs can be very substantial ■ demand may not increase as expected – the goods may have to be sold at a substantial discount
Option 2: Introduce greater flexibility into the production process: ■ part-time or temporary labour contracts ■ flexible equipment that can be switched to making other products ■ short-term working, e.g. all staff on three-day week	■ production can be reduced during slack periods and increased when demand is high ■ other products can be produced that may follow a different demand pattern ■ avoids stock build-up	■ staff may be demotivated by not having full-time, permanent contracts ■ fully flexible and adaptable equipment can be expensive ■ staff may need to be trained in more than one product – may add to costs

Table 25.2 Dealing with short-term excess capacity

Capacity utilization – EXCESS capacity

EXCESS capacity – what to do?

1. **Is it long-term?**
   - Might be due to fashion shift, technology change – demand will not be increasing again?
   - Rationalize! – reduce the level of capacity. What if the market will pick up again?
   - Subcontracting with other firms.
   - Research and Develop new product.

KEY TERM

Rationalisation: reducing capacity by cutting overheads to increase efficiency of operations, such as closing a factory or office department, often involving redundancies.

	LONG-TERM PROBLEM – e.g. economic recession or technological changes	
	Advantages	**Disadvantages**
Option 1: Rationalise existing operations and cut capacity, e.g. by closing factory/offices	■ reduces overheads ■ higher capacity utilisation	■ redundancy costs for staff payments ■ staff uncertainty over job security ■ possible threats of industrial action ■ capacity may be needed later if economy picks up or if firm develops new products ■ business may be criticised for not fulfilling social responsibilities
Option 2: Research and development into new products	■ will replace existing products and make business more competitive ■ if introduced quickly enough, might prevent rationalisation and the problems associated with this	■ may prove to be expensive ■ may take too long to prevent cutbacks in capacity and rationalisation ■ requires long-term planning as new products introduced in haste, without a clear market strategy, may be unsuccessful

Table 25.3 Dealing with long-term excess capacity

Capacity utilization – capacity SHORTAGE

What is the reason for capacity SHORTAGE?

- Not able to meet the demand because:
  - Falling out a machinery due to maintenance?
  - Consistent increase of demand
  - Do we require to expand?

What to do?

- increase its scale of operation by acquiring more production resources?
- keep existing capacity but outsource or subcontract more work to other businesses?
- keep working at full capacity and not expand, perhaps because of the danger that demand might fall back in the near future?

KEY TERM

Capacity shortage: when the demand for a business's products exceeds production capacity.

	LONG-TERM CAPACITY SHORTAGE	
	Advantages	**Disadvantages**
Option 1: Use subcontractors or outsourcing of supplies, components or even finished goods	■ no major capital investment is required ■ should be quite quick to arrange ■ offers much greater flexibility than expansion of facilities – if demand falls back, then the contracts with other firms can be ended	■ less control over quality of output ■ may add to administration and transport costs ■ may be uncertainty over delivery times and reliability of delivery ■ unit cost may be higher than 'in-house' production due to the supplier's profit margin
Option 2: Capital investment in expansion of production facilities	■ long-term increase in capacity ■ firm is in control of quality and final delivery times ■ new facilities should be able to use latest equipment and methods ■ other economies of scale should be possible too	■ capital cost may be high ■ problems with raising capital ■ increases total capacity, but problems could occur if demand should fall for a long period ■ takes time to build and equip a new facility – customers may not wait

Table 25.4 How to overcome long-term capacity shortage problems

ACTIVITY 25.3

GSK increases capacity in Africa

GSK has announced new investments in sub-Saharan Africa. This will increase the company's pharmaceutical drug production capacity. Increasing demand for important medicines has put pressure on the big pharmaceutical companies' manufacturing capacity.

Aluminium production capacity to be reduced

Two of the world's biggest producers of aluminium have announced cuts to production capacity. Alcoa has had 13% of its capacity unused. It is planning to reduce total annual capacity by 460 000 tons or 11%. It could do this by closing its least efficient and highest cost plants in the USA. The Russian aluminium producer, United Co. Rusal, plans to cut 7% of its capacity permanently. Both companies expect to make substantial redundancies. These decisions are in response to falling global prices for aluminium. Cutting excess capacity will reduce costs for both companies and improve cash flow. Workers' representatives and local government authorities both oppose these decisions.

Figure 25.1: An aluminium production plant

1 a With reference to the two texts, explain what is meant by the terms 'to increase production capacity' and 'cuts to production capacity'.

b Using the data provided, calculate Alcoa's current production capacity.

2 Evaluate the decision by Alcoa and United Co. Rusal to cut capacity permanently rather than to maintain excess production capacity.

REFLECTION

In preparing your answer to Q2 in Activity 25.3, how did you evaluate these decisions to close plants and cut jobs? How did you assess the impact of these decisions? Did you prioritise the benefits over the potential limitations, such as the impact on corporate social responsibility?

Discuss your conclusions with another learner. Did your partner reach different conclusions? How would you defend your own conclusion? Or can you now criticise your own conclusion?

Capacity utilization – capacity SHORTAGE - OUTSOURCING

Benefits of outsourcing:

- Reduction and control of operating costs /offshoring/
- Increased flexibility
- Improved company focus
- Access to quality service or resources
- Freed-up internal resources

Drawbacks of outsourcing:

- Loss of job within the business
- Quality issues
- Customer resistance – movie cut out: outsourced training – YouTube
- Security

Capacity utilization – outsourcing

The most frequently outsourced services by companies:

- Accounting + tax preparation
- Web design
- Computer programming
- Manufacturing
- Data entry
- Research and development
- Legal services
- Creative services – logo design
- Healthcare services – medical billing, coding

МОНГОЛ ӨМГӨӨЛӨГЧ ХУУЛЬ ЗҮЙН ФИРМ

БИДНИЙ ТУХАЙ ҮЙЛ АЖИЛЛАГАА ХУУЛЬЧИД МЭДЛЭГИЙН САН БҮТЭЭЛ ХОЛБОО БАРИХ

Хуульчид

Нүүр хуудас / Хуульчид

ҮЙЛ АЖИЛЛАГАА

- ХУУЛЬ ЗҮЙН ЗӨВЛӨГӨӨ
- ТӨЛӨӨЛӨЛ
- ӨМГӨӨЛӨЛ
- ХУУЛЬ ЗҮЙН СУРГАЛТ, СУДАЛГАА

Хуульчид


З.СҮХБААТАР


Б.МӨНХБАТ


Л.ДАНЗАННОРОВ


М.БАДРАЛ


П.ОЮУНДЭЛГЭР


Н.БОЛОРЧИМЭГ


Э.БИЛГҮҮН


Х.ЖАРГАЛСАЙХАН

Capacity utilization – outsourcing

Work in teams:

	Recommend a capacity solution:	Which services are these businesses most likely to outsource?
1	Restaurant which has limited demand during the week and too much at the weekends	KFC
2	Hotel which is overbooked in the summer but not in the winter	Accountancy firm
3	Bus service which is too crowded at peak times	Supermarket
4	Pumpkin farmer who only has one harvest each year	Firm of Architect