Chapter 25
Productivity

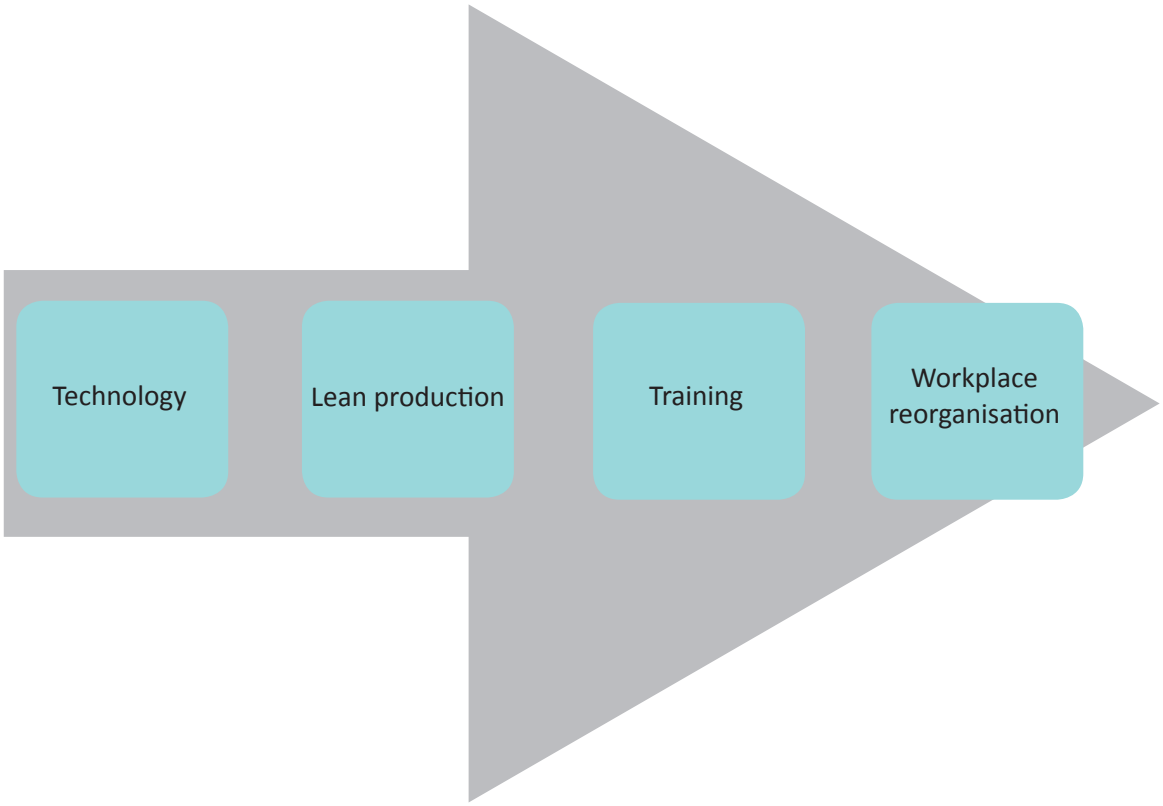
Productivity is a measurement of the efficiency with which a business turns production inputs into output. Labour productivity (output per worker) is the most common measure of productivity.

$$\text{Labour productivity} = \frac{\text{Output (per period)}}{\text{Number of employees (per period)}}$$

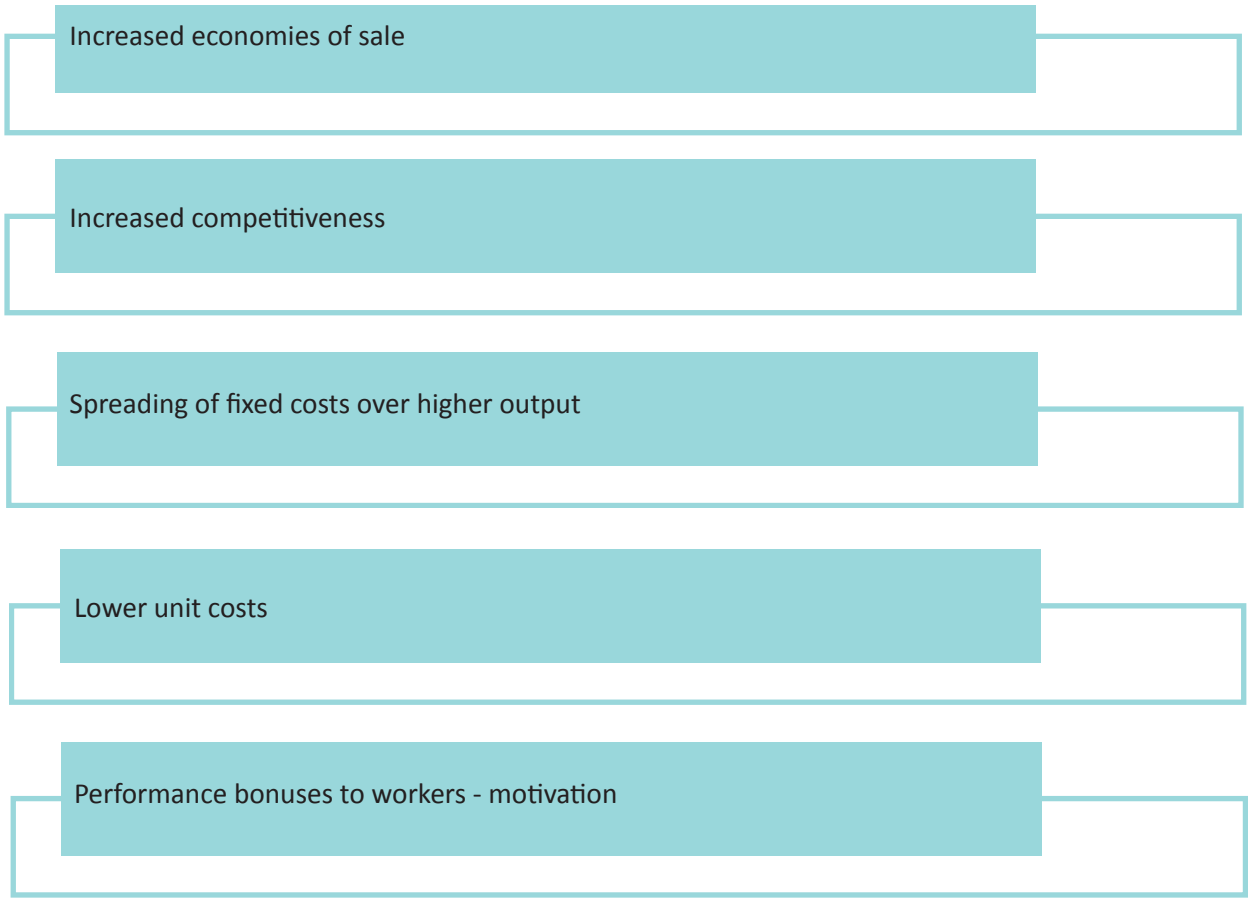
$$\text{Capital productivity} = \frac{\text{Output}}{\text{Capital employed}}$$

If a factory produces 1000 bicycles a day and employs 100 workers, then productivity is 1000 bicycles/100 workers = 10 bicycles per worker per day. The fixed measure of input does not have to be labour – it could be a value of capital (output per £1000 of capital invested), or of machines used (200 pairs of shoes per machine per day). Productivity in retailing can be measured through sales per square foot. If a department store has sales of £3 000 000 in a week, and the square footage of the shop is 20 000, then sales per square foot are £150. The higher the productivity, the more efficient production or sales generation is.

How to improve productivity in manufacturing



Advantages of high productivity



Capacity utilisation

It is normally only when the economy is booming and demand is buoyant that businesses are able to operate at full or near full capacity. Full capacity means that all employed factors of production are being used to their optimum level of efficiency – producing the maximum level of output, given the business's current investment levels. At most other times in the economic or business cycle businesses will be operating below full capacity. This means that they have the capability to produce greater levels of output than they are actually producing – therefore spare capacity exists.

To measure spare capacity we look at output as a % of total capacity. If a factory is capable of producing 2000 car exhausts per day and is only producing 1700, then spare capacity is 300. This represents 15% of maximum capacity and the business is therefore operating at 85% of full capacity. In this case resources are underused, or underutilised.

Problems of spare capacity

If the level of spare capacity is significant (i.e. large enough to be of concern), then this underutilisation of factors of production can have major effects on businesses.
These effects include:

- **Demotivation of staff.** Overtime is probably not available, bonuses will be limited and there may be a threat of redundancy.
- **Increased costs to the business.** Businesses may be forced to make workers redundant and redundancy payments will have to be made. Also management time will need to be spent on reorganisation.

- **Reduced profits.** This will limit capital for investment and research and development, causing a reduction in long-term competitiveness.
- **Lack of return on investment capital.** Producer goods will continue to depreciate, even though they are not being used to full capacity. Technology will move on, putting pressure on businesses to replace fixed assets that otherwise have plenty of productive potential.

Resolving the problems of capacity underutilisation – spare capacity

Businesses have several options open to them. These include:

Subcontracting of production

If there is low utilisation then it might make sense to subcontract to another business. This means getting someone else to produce the goods for you. By using subcontractors there is a reduction in risk to the business. This risk reduction is achieved through a reduction in capital investment required. If the business is not making the goods it does not have to buy the machines to make the goods, lease the factory space or employ and train the workers.

However, subcontacting can bring problems of its own. Firstly, there is a lack of control – especially with regard to quality. Secondly, if there are a limited number of potential subcontractors then prices of the goods can become prohibitively high – reducing profitability. In addition, there can be delays in delivery, leading to customer dissatisfaction.

Rationalisation

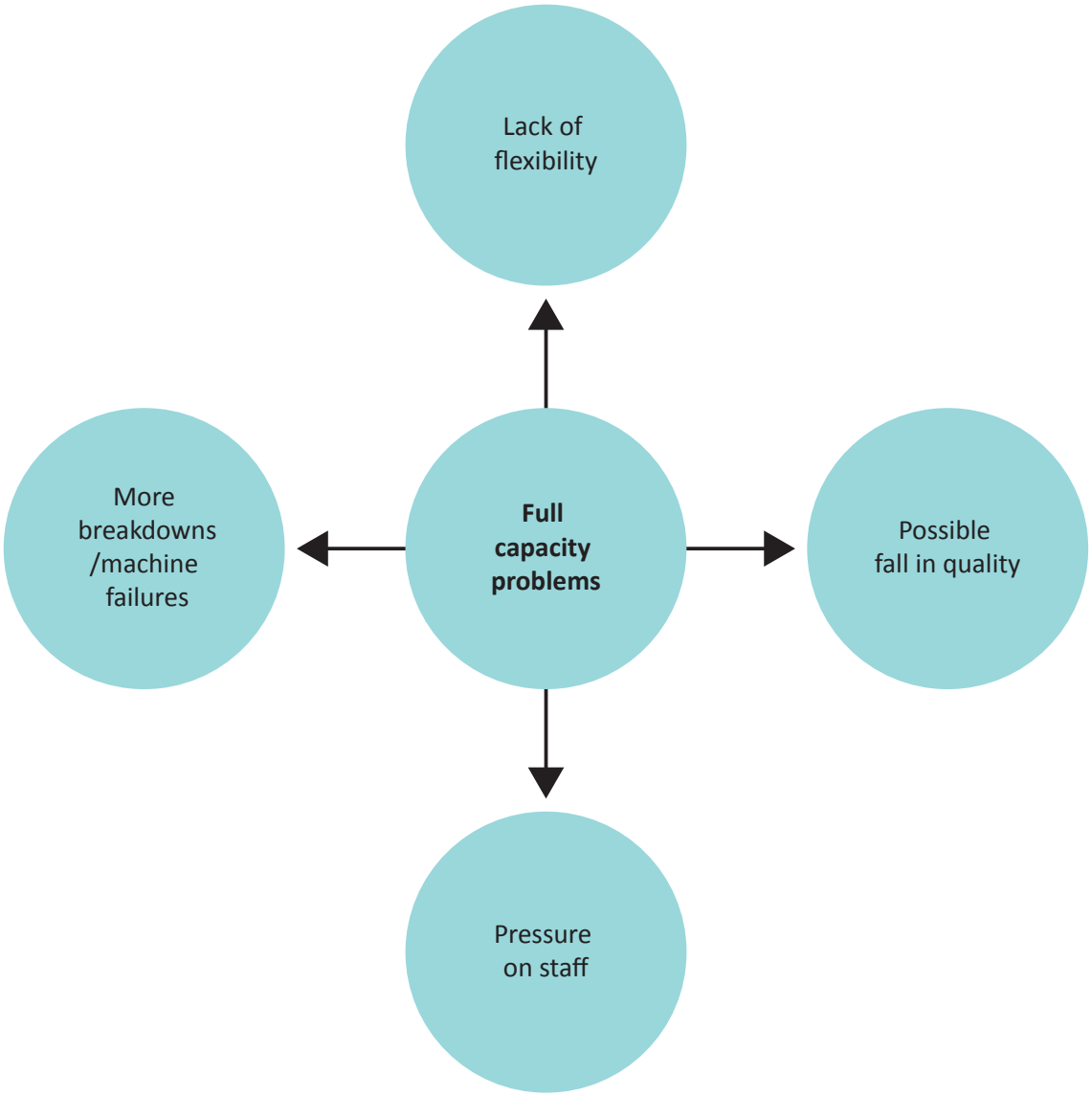
This means concentrating on core products or services and disposing of those products or services that are not seen as profitable or necessary to the business's long-term success. There can be costs to rationalisation, such as writing down (reducing) the book value of assets, but it does allow management to concentrate and focus upon the business strengths. There is a risk, however, that customers will be lost. Some customers, especially business customers, who bought into the business's whole package of products, may be less loyal when 'one-stop shopping' is not now available. Rationalisation also implies redundancy costs.

Increasing the use of assets

This is potentially the most attractive option as it removes many of the costs associated with the other methods of rationalisation. Retailers can sublet some of their shop floor space – for example, supermarkets could include hairdressers or chemists. Manufacturing businesses can expand their ranges by looking for new markets or market niches (although development and marketing investment costs must be considered). They could possibly act as subcontractors for other producers. This increased use of investment goods is often referred to as 'making your assets sweat'.

Because of the short-term expense of solving problems of spare capacity, businesses often try to ride out this type of situation in the expectation that the market in which they operate will recover and demand will increase.

Problems with working at full capacity



Discussion themes
What is meant by productivity?
How is productivity measured?
Explain the concept of capacity utilisation.
Operating a full capacity for an extended period can bring problems. Describe the problems that can arise.
Describe how subcontracting production can resolve spare capacity.
Make the best use of spare capacity: http://research.nus.biz/Documents/Insights%20and%20Commentaries/BT_Factiva7.htm Explain how spare capacity can be reduced by creating new demand.