CAPACITY UTILISATION

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Capacity utilisation

What is meant by capacity utilisation?

All businesses have a limited capacity to produce. Businesses will want to be kept busy, in the sense of producing as close to the limits of their capacity as seems sensible. In other words, businesses seek high levels of capacity utilisation. The capacity of a hotel can be defined by the number of beds it has. The capacity of a bakery can be defined by the size of the ovens used. For example, it is easy enough to see that if the owners of a large hotel have invested millions in a huge building they would probably prefer the hotel to be as full as possible all of the time. In addition, if they have planned for a certain level of room occupancy and they find that the business is running at nowhere near that level, they will have labour and other costs that are not really needed.

Capacity utilisation can be measured in percentage terms. The formula for this is set out below.

\[
\text{Capacity utilisation (\%) = \frac{\text{Actual output per year}}{\text{Maximum possible output}} \times 100}
\]

For example, if a factory has the ability to make 1000 units per year and its actual output is 500 units per year, then its capacity utilisation is calculated like this:

\[
\frac{500}{1000} \times 100 = 50\%
\]

Why work at full capacity?

If we look at capacity utilisation in terms of unit costs, increasing capacity utilisation is desirable because fixed costs are spread over more units. A simple example can be used to illustrate this.

Suppose that X Ltd has sales of £15,000 per month. This represents the production of 1000 units at £15. The company actually has the capacity to make 2000 units per month. Fixed costs for X Ltd are £5000 per year. The variable cost per unit is £5. At this level of output, each unit made and sold has to provide £5 towards fixed costs (£5000/1000 units). This means that profit per unit is £5. (£15 – £5 variable cost – £5 fixed cost = £5).

If X Ltd can (say) double sales so that output rises to 2000 units per month (full capacity), the amount each unit has to contribute towards covering fixed costs will fall. Each unit only has to provide £2.50 towards fixed costs (£5000/2000 units). This means that profit per unit rises to £7.50. (£15 – £5 variable cost – £2.50 fixed cost = £7.50).
Running a restaurant at full capacity is more profitable but can create problems.

**Are there any drawbacks to working at full capacity?**

Producing at or close to maximum capacity may pose problems. In an efficient production process the advantages of full capacity will considerably outweigh these drawbacks, but in the long run one or more of the problems outlined below will arise.

Perhaps the biggest drawback is that unforeseen production problems will lead to a delay in meeting orders and dissatisfied customers. A breakdown or problems with sourcing components in a factory working at full capacity will mean that the business has no way of quickly making up on lost production. A business with spare capacity has less of a problem. If we return to the hotel example, a hotel with all of its rooms full has a problem if the heating is not working in one part of the building. A hotel working at 75% capacity has less of a problem. Management can probably move affected customers to different rooms.

This last illustration hints at a second possible problem with working at full capacity. Quality might suffer. Full capacity utilisation implies that there is little slack for checking quality and rectifying quality problems. Quality problems are probably more likely to occur when staff are always busy.

So 100% capacity utilisation is not always ideal. Most businesses, however concerned they are to increase capacity utilisation, will seek to avoid these sorts of problems by having some spare capacity.