2 Production, costs and revenue

Case studies

Case study 2.1

1 **Entrepreneurial function:** the function of decision making and financial risk taking within a business.

Transaction costs: the costs incurred when buying or selling a good or service, other than the money price involved.

Bargaining costs: a type of transaction cost associated with the costs incurred when reaching a bargain.

Enforcement costs: the costs of ensuring that the other party to a transaction sticks to the agreed terms of the deal.

Case study 2.2

1 **Advantage:** Profit sharing and co-ownership increase motivation. Workers should work harder and in line with the organisation's business objectives if they know they will share in the business's profits.

Disadvantage: Profit sharing and co-ownership may lead to disputes among those taking part in the scheme — for example, about whether short-run or long-run profits should be shared.

Case study 2.3

1 In January 2013, the secretary of state for health set the challenge for the NHS to 'go "paperless" by 2018, to save billions, improve services and help meet the challenges of an ageing population'. In fact the first time this was promised on record is as far back as 1992. Between then and now, we've seen successive governments and ministers promise to make the NHS paperless. There has been notable progress in that time — NHS numbers and electronic health records have been widely adopted, for example. However, paper processes are still rife in the health service.

To read further, access www.computerworlduk.com/galleries/data/six-times-ministers-have-promised-nhs-will-go-paperless-since-1992-3625935/#10

2 In 1983, control software went haywire and produced intense pressure in the Trans-Siberian gas pipeline, resulting in the largest man-made non-nuclear explosion in earth's history. It was allegedly caused by the American Central Intelligence Agency (CIA) inserting a bug in a Canadian computer system purchased by the Soviets to control their gas pipelines in the Soviet public sector. The purchase was part of a strategic Soviet plan to steal or covertly obtain sensitive US technology. When the CIA discovered the purchase, it sabotaged the software so that it would pass Soviet inspection but fail in operation.

Case study 2.4

1 Kodak now has 8,000 employees worldwide compared to 145,000 at its peak. Since emerging from bankruptcy, the company has mostly served niche film markets and provides equipment for printing newspapers, on packaging and the like. Much of its revenue comes from legacy businesses related to the thousands of patents Kodak still possesses.

2 By 2015, sales of digital cameras in the USA and the UK had halved compared to their peak in 2007 before the marketing of smartphones.

Case study 2.5

1 In 1942, the American-Austrian economist Joseph Schumpeter wrote: 'The opening up of new markets, foreign or domestic, and the organizational development from the craft shop to such concerns as US Steel illustrate the same process of industrial mutation — if I may use that biological term — that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism.'

2 In 2007, the Finnish company Nokia totally dominated the mobile phone market. Many people thought that Nokia's lead was more or less insurmountable. But what has happened since is a reminder of just how quickly and completely a 'dominant' tech firm can almost disappear off the face of the earth.

Nokia established its dominance in the global market for 'feature phones', which, until 2013 at least, still formed a large part of Nokia's global market share. (A feature phone is a lower-end mobile phone, with more computing abilities than the previous generation of 'dumb' mobile phones, but it is less feature-packed than a modern smartphone.)

However, following the introduction of Apple's iPhone in 2007, the previous market leaders Nokia and Blackberry began a rapid decline. ICT analysts Innovation have described Nokia's decline in the following way:

Then, along came the iPhone. And then the Android. The world changed. Nokia clearly wasn't ready for it, didn't recognise where the world was heading and was unable to respond in timely fashion. It tried to adapt much later in the game, but it was way, way, way too late. Nokia's earlier success was part of the problem. Nokia had heavily invested in an out-of-date operating system, which it was committed to keep. This is something that's not uncommon with dominant players, who are often the victims of being there first. When a disruptive innovation comes along, they can't shift, and the innovations effectively leapfrog right over them. Yes, you can ride out cash cows for a long time — and Nokia has done so, but eventually the music stops.

A similar decline has hit the Blackberry. Until 2013 Blackberry was the brand name of the Canadian company RIM. To try to stave off possible bankruptcy the company name was changed to Blackberry in January 2013. However, this did not work. In September 2013 a takeover was attempted to rescue the bankrupt company but the acquisition fell through, the vultures began to swoop, ready to acquire the company at a knock-down price. Under a headline 'Once-cool Blackberry fails to keep price with rivals', China's *Morning Post* described how Blackberry, an early mover in the high-end mobile phone market, lost market share mainly to Apple's iPhone and to smartphones powered by Google's Android operating system. While Blackberry was considered perhaps the hippest if not the largest mobile phone maker several years ago, the company quickly lost momentum as it failed to keep pace with innovations from rivals.

Gerry Purdy, an analyst at Compass Intelligence, said that 'The one gigantic issue facing Blackberry was the delay in years to get to the smartphone market. And that was three years after the iPhone was released. So that's six years. The market was moving too fast.' Blackberry was too complacent, having become 'blinded' to competitive threats. According to Roger Kay at Endpoint Technologies Associates: "Blackberry hung its hat on the physical keyboard; they believed that for people who do a lot of typing, they need a keyboard. By the time it got a touchscreen it was too late. In this industry, if you miss a couple of product cycles you're pretty much toast."

Then in December 2013, following the failed takeover bid for the company, Blackberry announced a partnership with the Taiwanese company, Foxconn. Under the deal, Blackberry will no longer manufacture smartphones, focusing instead on providing business software and services to its corporate client base.

Both Nokia's and Blackberry's smartphone sales were in decline at the time of Steve Job's death in 2011. By the end of Quarter 2, 2015, the worldwide market share of Nokia, which was now part of Microsoft, had fallen to 2.6%, while that of Blackberry had reached a low of 0.3%.

Test yourself

Test yourself 2.1

Economies of scale are falling long-run average costs of production. The main types of **technical economy of scale** are:

- **Indivisibilities.** Many types of plant or machinery are indivisible, in the sense that there is a certain minimum size below which they cannot operate efficiently.
- **The spreading of research and development costs.** With large firms, R&D costs can be spread over a much longer production run, reducing unit costs in the long run.
- **Volume economies.** With many types of capital equipment (for example, metal smelters, transport containers, storage tanks and warehouses), costs increase less rapidly than capacity.
- **Economies of massed resources.** The operation of a number of identical machines in a large plant means that proportionately fewer spare parts need be kept than when fewer machines are involved.
- **Economies of vertically linked processes.** Much manufacturing activity involves a large number of vertically related tasks and processes, from the initial purchase of raw materials, components and energy, through to the completion and sale of the finished product. Within a single firm, these processes may be integrated through the links between the various plants owned by the firm. The output of one plant will provide an input or source of component-supply for another plant further along the route to the finished product.

By contrast, **managerial economies of scale** are achieved either by increasing the size of an individual plant or, at the level of the firm, by grouping a large number of establishments under one management. Both methods of expansion allow for increased managerial specialisation and the division of labour. This involves the delegation of detail to junior managers and supervisors and the employment of specialist managers — for example, in the fields of human resources and marketing.
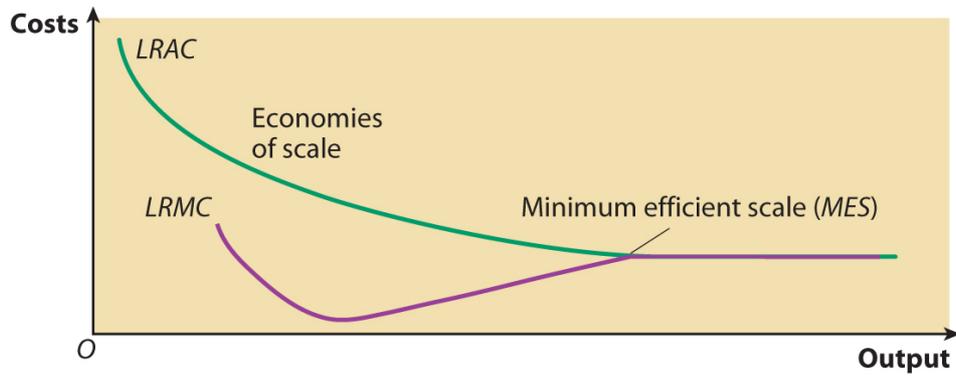
Test yourself 2.2

The rules are:

- when $M < A$, A falls;
- when $M > A$, A rises;
- when $M = A$, A is constant.
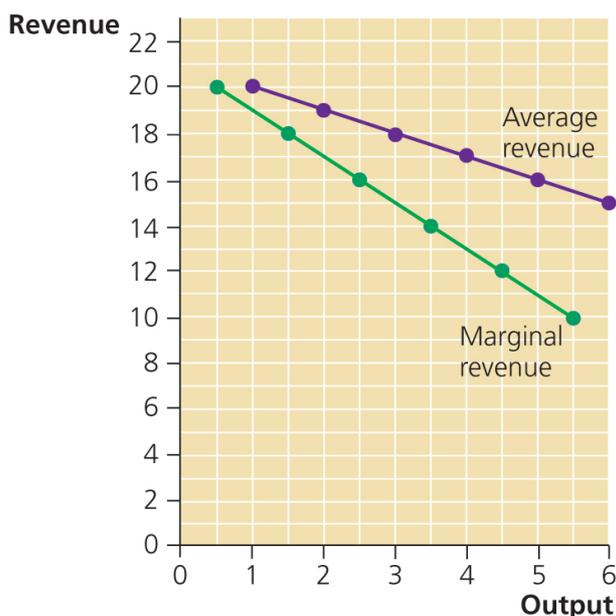
Applying these rules to Figure 2.5, we get:
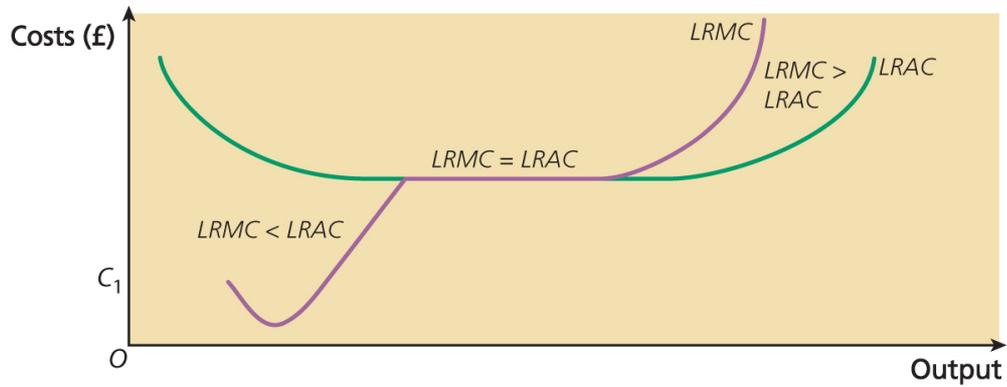
Applying these rules to Figure 2.6, we get:

Applying these rules to Figure 2.7, we get:

Test yourself 2.3

Questions

1 The law of diminishing returns is a short-run law whereas decreasing returns to scale occur only in the economic long run. The law of diminishing returns states that as a variable factor of production is added to a fixed factor of production, eventually both the marginal and average returns to the variable factor will begin to fall. It is also known as the law of diminishing marginal (and average productivity).

When the scale of *all* the factors of production employed increases, decreasing returns to scale occur if output increases at a slower rate than the increase in the scale of the factors of production. For example, a doubling of all the inputs might lead to a less than doubling of output.

2 Returns to scale refer to the technical relationship in production between inputs and outputs measured in physical units. There is no mention of money costs of production in the definition of returns to scale. Returns to scale are part of long-run *production theory*, but economies and diseconomies of scale are part of long-run *cost theory*. Diseconomies of scale occur when *LRAC* rises as output increases.

3 The nature of a firm's revenue curves depends on the competitiveness of the market structure in which the firm sells its output. Since it is only a tiny part of a market, a perfectly competitive firm faces a perfectly elastic demand curve for its product. This occurs at the ruling market price facing all firms in the market, which is determined at the intersection of the market demand and supply curves. The assumption that a perfectly competitive firm can sell whatever quantity it wishes at the ruling market price, but that it cannot influence the ruling market price by its own action, means that all firms in perfectly competitive markets are passive price-takers. The horizontal price line facing a perfectly competitive firm is also the firm's average revenue (*AR*) curve and its marginal revenue (*MR*) curve. Suppose, for example, that the firm sells 100 units of a good, with each unit of the good priced at £1. Whatever the level of the firm's sales, its average revenue is always the same as the price of all the units sold, namely £1. At all levels of output, this is also the marginal revenue obtained from selling an additional unit of output, since an extra unit will also be sold for £1.

The monopolist's average revenue curve is the same as the industry demand curve, which slopes downward to the right. This means that average revenue falls as the monopolist's output increases. However, as the answer to the next question states, when the average value of a variable falls, the marginal value of the variable is less than the variable's average value. Hence, in monopoly, $MR < AR$.

4 We explained this relationship in our earlier answer to Test yourself 2.2. To recap:
   • when the marginal is less than the average, the average falls in value;
   • when the marginal is greater than the average, the average increases in value;
   • when the marginal equals the average, the average value is constant, neither falling nor rising.

5 This view is incorrect. Because a monopoly faces a downward-sloping demand curve (or AR curve) for its product, it can be either a price setter or a quantity setter, but not both at the same time. If the monopoly sets the price, the downward-sloping AR curve determines the maximum quantity the firm can sell at its chosen price. Likewise, if the monopoly chooses a particular quantity to sell, the downward-sloping AR curve determines the maximum price it can charge and successfully sell its chosen output.

6 Invention involves making something entirely new; something that did not exist before at all. By contrast, innovation improves on or makes a significant contribution to something that has already been invented, thereby turning the results of invention into a product.

The difference between invention and innovation is illustrated by the difference between steam power and steam locomotives used to transport goods and people from one place to another. Early in the first century AD, Hero of Alexandria, a Greek inventor, designed the world's first primitive steam turbine. The movement of steam through the device caused a sphere to revolve, demonstrating the potential for using steam as a means of propulsion. A steam locomotive is a railway locomotive that produces its pulling power through the use of a steam engine. The development of steam engines provides an example of innovation. The first full-scale working railway steam locomotive was built by Richard Trevithick in the UK, and on 21 February 1804 the world's first railway journey took place as Trevithick's locomotive hauled a train along a tramway in South Wales.

The development of the internal combustion engine and its use to power automobiles provides a similar example of the difference between invention and innovation. The first internal-combustion engine was developed by the Dutch physicist Christian Huygens, in about 1680. In 1807, François Isaac de Rivaz designed the first car powered by an internal combustion engine fuelled by hydrogen. Although automobiles had been developed earlier, the first practical petrol-powered automobile was developed in 1886 by Karl Benz in Germany.