Cambridge

AS - Level

Business studies

CODE: (9609)

Unit 04- Chapter 22

The nature of operations

Introduction

'Operations' or 'operations management' is concerned with the use of resources called inputs – land, labour and capital – to provide outputs in the form of goods and services. In doing this, operations managers must be concerned with:

■ efficiency of production − keeping costs as low as possible will help to give competitive advantage

■ quality − the good or service must be suitable for the purpose intended

■ flexibility and innovation − the need to develop and adapt to new processes and new products is increasingly important in today's dynamic business environment.

The production – or transformation – process

In all businesses at all stages of production, the production process is basically the same. 'Inputs' are converted or transformed into 'outputs' and this is sometimes called the 'transformation' process. Th is can be simply illustrated (see Figure 22.1)

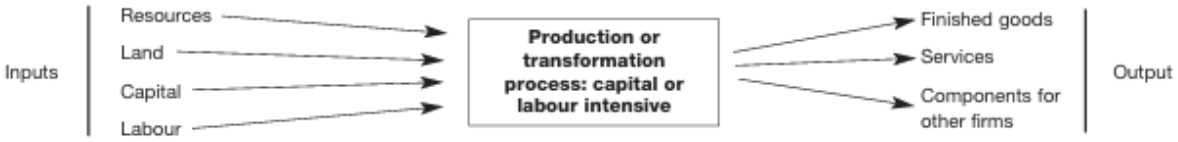

Figure 22.1 The transformation process

The aim in all cases is to **add value to** the inputs that are bought in by the business so that the resulting output can be sold at a profit. This concept was covered in Chapter 1 but it is important to revisit it here.

KEY TERM

Added value: the difference between the cost of purchasing raw materials and the price the finished goods are sold for – this is the same as creating value.

T h e degree of value created and added to the inputs will depend on a number of factors – not all of them operations management issues:

■ The design of the product: Does this allow for economic manufacture, while appearing to have quality features that will enable a high price to be charged? The Furnware case study on page 331 suggested that customers were prepared to pay higher prices for products that offered a better quality than cheaper substitutes.

■ The efficiency with which the input resources are combined and managed: For example, by reducing waste, the operations management department will increase the value added by the production process. Increasing productivity will reduce costs per unit and this will increase added value if the customer prices remain unchanged. So efficient operations processes and operations decisions are closely linked to value added.

■ Being able to convince consumers to pay more for the product than the cost of the inputs: A good example is the market for luxury ice creams, where the marketing campaigns increase the willingness of consumers to pay far in excess of input costs for the product.

The operations process can involve many stages before physically selling the good or service. Th ese include:

■ converting a consumer need into a product that can be produced efficiently

■ organising operations so that production is carried out efficiently – for example, ordering stocks to arrive on time

■ deciding on suitable production methods

■ setting quality standards and checking they are maintained.

Resources

All business operations require resources – these are the production inputs.

■ Land: All businesses need somewhere to operate from, even if it is the bedroom of a sole trader operating an internet-based website design service. Some businesses, of course, require large sites for the extraction of minerals or the manufacture of finished products.

■ Labour: All business activity requires some labour input. This can be the manual labour of a gardener or the mental skills of a research scientist. The quality of the labour input will have a significant impact on the operational success of a business.

■ Capital: This refers to the tools, machinery, computers and other equipment that businesses use to produce the goods and services they sell. **Intellectual capital** is becoming increasingly important too in knowledge-based economies.

KEY TERM

Added value: the difference between the cost of purchasing raw materials and the price the finished goods are sold for – this is the same as creating value.

KEY TERM

Intellectual capital: intangible capital of a business that includes human capital (well trained and knowledgeable employees), structural capital (databases and information systems) and relational captial (good links with supplier and customers).

Production and productivity

Productivity is not the same as the **level of production** and the two should not be confused. Production is an absolute measure of the quantity of output that a fi rm produces in a given period of time.

$$\text{labour productivity (number of units per worker)} = \frac{\text{total output in a given time period}}{\text{total workers employed}}$$

$$\text{capital productivity} = \frac{\text{output}}{\text{capital employed}}$$

KEY TERMS

Production: converting inputs into outputs.

Level of production: the number of units produced during a time period.

Productivity: the ratio of outputs to inputs during production, e.g. output per worker per time period.

Raising productivity levels

T h ere are four main ways in which productivity levels could be increased:

1 Improve the training of staff to raise skill levels: Staff with higher and more flexible skill levels should be more productive. As well as being able to perform tasks more efficiently, they could become more interested in work due to their ability to do different jobs.

2 Improve worker motivation: Many different views on the most appropriate ways to do this exist. Increasing pay, as identified by Herzberg, is unlikely to have a permanent impact on productivity

3 Purchase more technologically advanced equipment: Modern machinery – from off ice computers to robot-controlled production machines – should allow increased output with fewer staff . Such expensive investment will only be worthwhile,

4 More efficient management: There are many ways in which ineffective management can reduce the overall productivity of a business. Failure to purchase the correct materials, poor maintenance schedules for machines or heavy-handed management of staff are just some of these. More efficient operations and people management could go a long way to improve productivity levels

Is raising productivity always the answer?

■ Increasing productivity does not guarantee business success. If the product is unpopular with consumers, it may not sell profitably no matter how efficiently it is made.

■ Greater eff ort and contributions from workers to increase productivity could lead to much higher wage demands. If these actually lead to increasing unit costs, then the productivity gains have not achieved their goal.

■ Finally, workers and their unions are becoming fearful of dramatic improvements in labour productivity. If a firm manages to raise labour productivity by 20% but sales remain at the same level, 20% of the workforce may find themselves without a job.

■ In the end, as with most business decisions, it is the quality of the management that will determine the overall success of a policy that aims to increase productivity. If the culture of management is to involve the workforce at every step of the strategy, to seek their views and welcome their contributions, then the productivity improvements are likely to be more significant and accepted by all staff .

■ There is a difference between efficiency – as measured by productivity – and effectiveness

Efficiency and effectiveness

KEY TERMS

Efficiency: producing output at the highest ratio of output to input.

Effectiveness: meeting the objectives of the enterprise by using inputs productively to meet customers' needs.

Efficiency and effectiveness are closely related, with efficiency measured by productivity. Effectiveness is achieved when customer needs are met, not just in operations. For a business to be effective, it must meet customers' needs professionally, not just at the lowest possible unit cost. Effectiveness is not about wasting inputs, but putting them to productive use to achieve business objectives.

Labour intensity and capital intensity

KEY TERMS

Labour intensive: involving a high level of labour input compared with capital equipment.

Capital intensive: involving a high quantity of capital equipment compared with labour input.

Operations managers must decide what combination of factors of production they will use. Th ere are two main approaches. Firms can be described as either being **labour intensive or capital intensive.**

Labour-intensive methods of production are suitable for businesses that specialize in hand-made furniture, such as furniture companies. However, capital-intensive industries, such as electricity generation and aluminum smelting, require large, expensive plants. Some businesses choose to be capital-intensive even though labour-intensive

production is still possible, such as bread baking. Large-scale capital utilization offers significant opportunities for scale economies and unit-cost reductions. However, capital intensity comes with high fixed costs, high maintenance costs, and the need for skilled engineers and computer programmers. Technological change can render the latest production equipment obsolete. Despite these drawbacks, the trend towards capital-intensive production is likely to continue in most industries, but labour-intensive methods may remain popular for some firms.

Hand-carved furniture – an example of labour-intensive production

In conclusion, which approach is chosen depends on:

■ the nature of the product and the product image that the firm wishes to establish

■ the relative prices of the two inputs – if labour costs are high and rising, then using more capital equipment might be justifiable

■ the size of the firm and its ability to afford expensive capital equipment

Revision questions

Q1 Case Study 116. You is phones (YP) 9609/22/O/N/16/Q1 (a) (i)
Define the term 'capital intensive'. [2]

Q2 Case Study 1: The Furniture Maker (TFM) 9707/02/M/J/03/Q1 (d)
Define productivity. [3]

Q3 Case Study 42: (Newtown University) 9707/23/O/N/10/Q2 (c)
Explain the following terms: operational efficiency. [3]

Q4 Case Study 46: McCurry (MQ) 9707/21/M/J/11/Q2 (d)
Explain the following term: add value. [3]

Q5 Case Study 98: Cooper Manufacturing (CM) 9707/21/O/N/15/Q2 (a) (i)
Explain the following terms labour intensive (line 5). [3]

Q6 Case Study 145: Jim's Farm (JF) 9609/22/F/M/19/Q1 (a) (ii)
Briefly explain the term: 'value added' (line 7). [3]

Q7 Case Study 112: Software Creation (SC) 9609/21/O/N/16/Q1 (a) (ii)
Explain how the testing team add value to the software created by SC. [4]

Q8 Case Study 79: Super View (SV) 9707/21/M/J/14/Q1 (a) (i)
(i) Using table 1, calculate labor productivity for 2013. [2]

(ii) For 2012, labor productivity was 83 flat screens per worker and annual capital productivity was 166 flats screens per production line. Using your answer to (i) and other information, comment on changes in productivity at SV. [4]

Q9 Case Study 108: Mackintosh Shoes (MS) 9609/22/M/J/16/Q2 (b) (ii)
Analyze the disadvantage to MS of using a labor intensive production process. [8]