Cambridge

AS - Level

Business studies

CODE: (9609)

Unit 04- Chapter 23

Operations planning

Introduction

Production decisions cannot be made independently of the rest of the business. If an operations manager announced one day that his department would 'increase output by 50% over the next six months', without coordinating this with other departments, these are some of the problems that would probably occur:

■ not enough capital to pay for stocks, machines and labour – because no one had told the finance department

■ too few workers – the HR department had not been asked to add this output increase into the workforce plan

■ not enough customers – what is the point in increasing output unless there is good evidence from the marketing department that the extra products can be sold profitably?

Operations decisions

The decisions taken by operations managers can have a significant impact on the success of businesses. These decisions are often influenced by:

■ marketing factors ■ availability of resources ■ technology.

KEY TERM

Operations planning: preparing input resources to supply products to meet expected demand.

1 The link with marketing

Perhaps the key information needed by an operations manager when planning future production levels is the estimated or forecast market demand. This is a crucial link – trying to match supply to potential demand. This process is called sales and **operations planning.**

If the sales forecasts are reasonably accurate, then operations managers should be able to:

■ match output closely to the demand levels – this may require the holding of inventories

■ keep inventory levelst o a minimum efficient level

■ reduce wastage of production, e.g. by perishable products being rejected due to being too old

■ employ and keep busy a stable, appropriate number of staff

■ produce the right product mix, i.e. the range of products that are forecast to be demanded

2 The availability of resources

The production of all goods and services requires resources – land, raw materials, labour, capital equipment. The availability of these resources – or a lack of them – can influence a number of important operations decisions. Some examples include:

■ Location: A business might locate in a country or a region that has an abundant supply of necessary raw materials.

■ Nature of production method: If the supply of suitable employees is good and wage costs are low then a business might decide to operate a labour- intensive production method.

■ Automation: If the cost of automated/robotic computer controlled equipment is falling then a business could decide to change production methods in favour of IT-based systems.

KEY TERMS

CAD – computer aided design: the use of computer programs to create two- or three-dimensional (2D or 3D) graphical representations of physical objects.

CAM – computer aided manufacturing: the use of computer software to control machine tools and related machinery in the manufacturing of components or complete products.

3 Technology

Production methods in both service provision and goods manufacturing have changed dramatically in recent decades as cheap digital technology has made possible the application of IT throughout a typical operations department. Perhaps the two most important technological innovations have been CAD and CAM.

This allows an engineer to both interactively and automatically analyse design variations, to find the best design for manufacturing while minimizing the use of costly physical versions of the product. Th e benefits of CAD include:

■ lower product development costs ■ increased productivity ■ improved product quality

■ faster time-t o-market ■ good visualization of the final product and its constituent parts
■ great accuracy, so errors are reduced ■ easy re-use of design data for other product applications.

T h e limitations of CAD include:

■ complexity of the programs ■ need for extensive employee training
■ large amounts of amount of computer processing power required and this is can be expensive.

Th e benefits of CAM include:

■ precise manufacturing and reduced quality problems – compared to production methods controlled by people

■ faster production and increased labour productivity

■ more flexible production allowing quick changeover from one product to another

■ integrating with CAD, CAM allows more design variants of a product to be produced, which means that niche products can be produced as well as mainstream mass market products. This increased customisation increases the competitiveness of businesses in both small and large market segments.

T h e limitations of CAM include:

■ cost of hardware, programs and employee training – these costs may mean that smaller businesses cannot access the benefits of CAM – although technology is becoming cheaper

■ hardware failure – breakdowns can and do occur and they can be complex and time-consuming to solve

■ quality assurance is still needed – errors in programs can produce faults that have to be spotted and rectified before being passed on to the next stage of production.

The need for flexibility and innovation

Future demand patterns are not easy to predict accurately. If actual demand turns out to be either higher or lower than forecast, there is a great need for 'operational flexibility'

KEY TERM

Operational flexibility: the ability of a business to vary both the level of production and the range of products following changes in customer demand.

Computer screen showing 3D CAD modelling

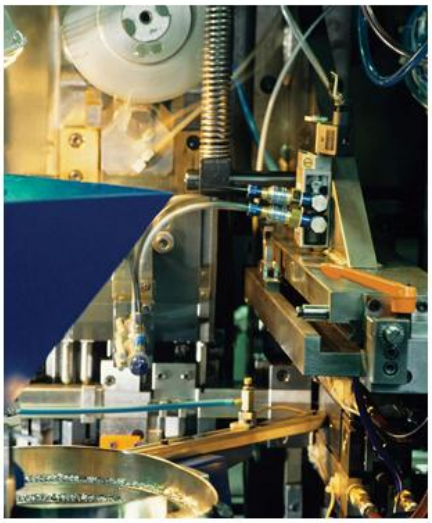
This flexibility can be achieved in a number of ways. Th ese will be analysed in more detail in other chapters. A brief outline of these methods is to:

■ increase capacity by extending buildings and buying more equipment – this is an expensive option

■ hold high stocks – but these can be damaged and there is an opportunity cost to the capital tied up

■ have a flexible and adaptable labour force – using temporary, part-time contracts reduces fixed salary costs but may reduce worker motivation

■ have flexible flow-line production equipment – see mass customisation below.



Computer-controlled machines

Process innovation

Some recent examples will help to show the extent and importance of some of these new methods:

■ Robots in manufacturing.

■ Faster machines to manufacture microchips for computers.

■ Computer tracking of inventories, e.g. by using bar codes and scanners, to reduce the chances of customers finding businesses out of stock.

■ Using the Internet to track the exact location of parcels being delivered worldwide and improve the speed of delivery

KEY TERM

Process innovation: the use of a new or much improved production method or service delivery method.

Pilkington's process innovation contributed to the company's international success

Production methods T h ere are several different ways in which goods and services can be produced. They are usually classified into:

■ job production ■ batch production ■ flow production ■ mass customisation.

Job production

Job production is a method of producing unique, one-off products, such as wedding rings or suits. It requires each product to be completed before the next, often being labor-intensive and costly. This method is often used by new, small firms before they can expand and invest in advanced equipment. However, it can be slow and rewarding for workers, as seen in the Aston Martin car, which is individually produced for each customer.

KEY TERMS

Job production: producing a one-off item specially designed for the customer.

Batch production: producing a limited number of identical products – each item in the batch passes through one stage of production before passing on to the next stage.

Flow production: producing items in a continually moving process.

Mass customisation: the use of flexible computer-aided production systems to produce items to meet individual customers' requirements at mass-production cost levels.

Batch production

Batch production is a method where products are produced in separate groups, each going through a specific stage before moving on to the next. This process allows for division of labor and economies of scale, making it ideal for industries with high demand for identical products. However, it can lead to high levels of work-in-progress stocks, demotivation for workers, and high unit costs. Batch production should not be confused with flow production, which involves resetting the line and producing another batch of the same product. It is essential to note that individual items in batch production must be flow-controlled, as they can move through the process without waiting for others.

Batch production of identical bread rolls, Germany

Flow production at the Coca-Cola plant in Ho Chi Minh City, Vietnam

Flow production

Flow production is a method of producing standardized cans of soft drinks, such as Coke, Sprite, and Schweppes Soda Water, on a single production line. This system allows for changes to the contents and labeling without altering the production system. However, it requires careful planning to avoid disruptions. Flow production offers advantages such as low labour costs, simple input planning, and high quality. However, its main disadvantage is the high initial set-up cost and monotonous work. An example is the Coca-Cola production plant in Ho Chi Minh City, Vietnam.

Mass customisation

T h is process combines the latest technology with multiskilled labour forces to use production lines to make a range of varied products. This allows the business to move away from the mass-marketing approach with high output of identical products. Instead, focused or differentiated marketing can be used, which allows for higher added value – an essential objective of all operations managers.

Recent innovations in production methods

T h e search for production methods that could combine the advantages of job production – flexibility and worker satisfaction – with the gains from flow production – low unit costs – have led to some important recent developments. CAD and CAM have allowed much quicker developments of new products, designs that feature many common components and robotic machinery that can be switched to making a range of parts – not just one.

Production methods – making the choice

T h e following factors will influence whether a business adopts one of these four production methods:

■ Size of the market: If the market is very small, such as for designer clothes, then job production is likely to be used. Flow production is most efficiently adopted when the market for similar or identical products is very large and consistent throughout the year.

■ The amount of capital available: A purpose-built flow production line is diff icult and expensive to construct. Small firms are unlikely to be able to afford this type of investment and are more likely to use job or batch production.

■ Availability of other resources: Large-scale flow production often requires a supply of relatively unskilled workers and a large, flat land area. Job production needs skilled craft speople. If any of these resources are unavailable, or very limited in supply, then the production method may have to be adapted to suit available resources, given the market constraint referred to above.

■ Market demand exists for products adapted to specific customer requirements: If firms want the cost advantages of high volumes combined with the ability to make slightly different products for different markets, then mass customisation would be most appropriate.

	Job	Batch	Flow	Mass customisation
Main feature	■ single one-off items	■ group of identical products pass through each stage together	■ mass production of standardised products	■ flow production of products with many standardised components but customised differences too
Essential requirements	■ highly skilled workforce	■ labour and machines must be flexible to switch to making batches of other designs	■ specialised, often expensive, capital equipment – but can be very efficient ■ high steady demand for standardised products	■ many common components ■ flexible and multiskilled workers ■ flexible equipment – often computer-controlled to allow for variations in the product
Main advantages	■ able to undertake specialist projects or jobs, often with high value added ■ high levels of worker motivation	■ some economies of scale ■ faster production with lower unit costs than job production ■ some flexibility in design of product in each batch	■ low unit costs due to constant working of machines, high labour productivity and economies of scale	■ combines low unit costs with flexibility to meet customers' individual requirements
Main disadvantages	■ high unit production costs ■ time-consuming ■ wide range of tools and equipment needed	■ high levels of stocks at each production stage ■ unit costs likely to be higher than with flow production	■ inflexible – often very difficult and time-consuming to switch from one type of product to another ■ expensive to set up flow-line machinery	■ expensive product redesign may be needed to allow key components to be switched to allow variety ■ expensive flexible capital equipment needed

(continued)

Table 23.1 Summary of main production methods

Problems of changing production methods Job to batch:

■ Cost of equipment needed to handle large numbers in each batch.

■ Additional working capital needed to finance stocks and work in progress.

■ Staff demotivation – less emphasis placed on an individual's craft skills.

Job or batch to flow:

■ Cost of capital equipment needed for flow production.

■ Staff training to be flexible and multiskilled – if this approach is not adopted, then workers may end up on one boring repetitive task, which could be demotivating.

■ Accurate estimates of future demand to ensure that output matches demand

Final evaluation

Traditional production methods are becoming less apparent, as complex products like computers and engines can be adapted to meet different consumer needs. Technology's flexibility may threaten small firms' survival in niche markets, but wealthy consumers will still demand original, specialist products.

The benefits of an optimal location

Location decisions for existing firms – choosing new sites for expansion or relocation of the business – are some of the most important decisions made by management teams.

Location decisions have three key characteristics. They are:

■ strategic in nature – as they are long-term and have an impact on the whole business

■ difficult to reverse if an error of judgement is made – due to the costs of relocation

■ taken at the highest management levels – they are not delegated to subordinates

An **optimal location** decision is one that selects the best site for expansion of the business or for its relocation, given current information.

an optimal location is likely to be a compromise that:

■ balances high fixed costs of the site and buildings with convenience for customers and potential sales revenue

■ balances the low costs of a remote site with limited supply of suitably qualified labour

■ balances quantitative factors with qualitative ones (see below)

■ balances the opportunities of receiving government grants in areas of high unemployment with the risks of low sales as average incomes in the area may be low

So an optimal location is likely to be a compromise that:

■ balances high fixed costs of the site and buildings with convenience for customers and potential sales revenue

■ balances the low costs of a remote site with limited supply of suitably qualified labour

■ balances quantitative factors with qualitative ones (see below)

■ balances the opportunities of receiving government grants in areas of high unemployment with the risks of low sales as average incomes in the area may be low.

KEY TERM

Optimal location: a business location that gives the best combination of quantitative and qualitative factors.

KEY TERM

Optimal location: a business location that gives the best combination of quantitative and qualitative factors.

A high-street location will have high rents – but many potential shoppers too

Factors influencing location decisions: quantitative factors

Site and other capital costs such as building or shop-fitting costs

Th ese vary greatly from region to region within a country and between countries too. Th e best office and retail sites may be so expensive that the cost of them is beyond the resources of all but the largest companies. T h e cost of building on a 'greenfield' site – one that has never previously been developed – must be compared with the costs of adapting existing buildings on a developed site.

Problem	Disadvantages to business
High fixed site costs	■ high break-even level of production ■ low profits – or even losses ■ if operating at low capacity utilisation, unit fixed costs will be high
High variable costs, e.g. labour	■ low contribution per unit produced or sold ■ low profits – or even losses ■ high unit variable costs reduce competitiveness
Low unemployment rate	■ problems with recruiting suitable staff ■ staff turnover likely to be a problem ■ pay levels may have to be raised to attract and retain staff
High unemployment rate	■ average consumer disposable incomes may be low – leading to relatively low demand for income-elastic products
Poor transport infrastructure	■ raises transport costs for both materials and finished products ■ relatively inaccessible to customers ■ difficult to operate a JIT stock-management system due to unreliable deliveries

Table 23.2 Disadvantages to a business of non-optimal location decisions

KEY TERM

Quantitative factors: these are measurable in financial terms and will have a direct impact on either the costs of a site or the revenues from it and its profitability.

Labour costs

T h e relative importance of these as a locational factor depends on whether the business is capital or labour intensive. An insurance company call centre will need many staff , but the labour costs of a nuclear power station will be a very small proportion of its total costs.

Transport costs

Businesses that use heavy and bulky raw materials – such as steel-making – will incur high transport costs if suppliers are at a great distance from the steel plant. Goods that increase in bulk during production will, traditionally, reduce transport costs by locating close to the market. Service industries, such as hotels and retailing, need to be conveniently located for customers, and transport costs will be of less significance.

Sales revenue potential

T h e level of sales made by a business can depend directly on location. Confectionery shops and convenience stores have to be just that – convenient to potential customers. In addition to this, certain locations can add status and image to a business and this may allow value to be added to the product in the eyes of the consumers.

Government grants

Governments across the world are very keen to attract new businesses to locate in their country. Grants may be offered to act as an incentive. Existing businesses operating in a country can also be provided with financial assistance to retain existing jobs or attract new employment to deprived areas of high unemployment

Once these quantitative factors have been identified and costs and revenues estimated, the following techniques can be used to assist in the location decision.

1 Profit estimates

By comparing the estimated revenues and costs of each location, the site with the highest annual potential profi t may be identified.

Limitation: Annual profit forecasts alone are of limited use – they need to be compared with the capital cost of buying and developing the site. A site offering 10% higher annual profi ts than an alternative location is unlikely to be chosen if the capital cost is 50% higher.

2 Investment appraisal

Location decisions often involve a substantial capital investment. Investment appraisal methods can be used to identify locations with the highest potential returns over a number of years. Th e simplest of these, the payback method, can be used to estimate the location most likely to return the original investment quickest.

Limitation: Th ese methods require estimates of costs and revenues for several years for each potential location.

3 Break-even analysis

Chapter 29 explains a method for comparing locations by calculating the production level required for revenue to equal total costs. Lower output levels are better, especially for businesses with high fixed costs and lower overheads.

Limitations: Break-even analysis should be used with caution and the normal limitations of this technique apply when using it to help make location decisions.

Qualitative factors

Clearly potential profit is a major consideration when choosing an optimal location but there are other important factors that cannot be measured in financial terms. Th ese are called qualitative factors.

Safety

To avoid potential risk to the public and damage to the company's reputation as a consequence of an accident that risks public safety, some industrial plants will be located in remote areas, even though this may increase transport and other costs.

Room for further expansion

It is expensive to relocate if a site proves to be too small to accommodate an expanding business. If a location has room for further expansion of the business, then this might be an important long-term consideration. Managers' preferences

Ethical considerations

A business deciding to relocate from the UK is likely to make workers redundant. This will cause bad publicity and could also be contrary to the ethical code of the business and may be viewed by stakeholders as being immoral. In addition, if the relocation is to a country with much weaker controls over worker welfare and the environment, there could be further claims that the business is acting unethically.

Environmental concerns

A business might be reluctant to set up in an area that is particularly sensitive from an environmental viewpoint, as this could lead to poor public relations and action from pressure groups.

Infrastructure

T h e quality of the local infrastructure, especially transport and communication links, will influence the choice of location. Singapore's huge port facilities have encouraged many of the world's largest shipping fi rms to set up bases there

Other locational issues

The pull of the market

This is less important with the development of transport and communication industries and with the world becoming a single market for so many goods. Th e Internet can achieve a massive amount in terms of making location of a retailing business less important, but the market is still very important for the service industries, and the power of the car has taken many of these out of the convenient centres of towns and on to the ring roads

Planning restrictions

Local authorities have a duty to serve the interests of their populations. On the one hand, they want business and industry because they provide employment. On the other hand, they want to protect the environment of the towns and villages. In some areas, large development corporations have been set up to develop a town or city into a much more successful combination of dwellings and industrial activity.

External economies of scale

These are cost reductions that can benefit a business as the industry grows in one region. It is common for fi rms in the same industry to be clustered in the same region – Silicon Valley in the USA and Bangalore in India have a very high concentration of IT-focused businesses

Advantages and disadvantages of multi-site locations

Most relatively large businesses operate on more than one site. This is clearly true of the major retailing companies that expand mainly by opening new sites in new locations. It would be pointless trying to serve the whole of a country from one shop – unless of course the business sold only over the Interne

KEY TERM

Multi-site location: a business that operates from more than one location.

Advantages of multi-site locations	Disadvantages of multi-site locations
■ greater convenience for consumers, e.g. McDonald's restaurants in every town ■ lower transport costs, e.g. breweries can supply large cities from regional breweries rather than transport from one national brewery ■ production-based companies reduce the risk of supply disruption if there are technical or industrial-relations problems in one factory ■ opportunities for delegation of authority to regional managers from head office – helps to develop staff skills and improves motivation ■ cost advantages of multi-sites in different countries	■ coordination problems between the locations – excellent two-way communication systems will be essential ■ potential lack of control and direction from senior management based at head office ■ different cultural standards and legal systems in different countries – the business must adapt to these differences ■ if sites are too close to each other, there may be a danger of 'cannibalism' where one restaurant or store takes sales away from another owned by the same business

Table 23.3 Advantages and disadvantages of multi-site locations

International location decisions

One of the main features of globalisation is the growing trend for businesses to relocate completely to another country or to set up new operating bases abroad. Th is process is often referred to as '**off shoring'**. Th e world's largest corporations are now virtually all **multinationals**.

Reasons for international location decisions

1 To reduce costs

Th is is undoubtedly the major reason explaining most company moves abroad. With labour-wage rates in India, Malaysia, China and Eastern Europe being a fraction of those in Western Europe and the USA, it is not surprising that businesses that wish to remain competitive have to seriously consider relocation to low-wage economies. Examples include:

■ Panasonic TV production → Czech Republic
■ Hornby Toy Trains → China
■ Dyson vacuum cleaners → Malaysia

Country	Average hourly pay in euro [2013]	Compared with United Kingdom (=100)
India	0.83	4
China	1.73	8
Bulgaria	3.7	17
Hungary	7.8	35
Sweden	39	180

Table 23.4 Average hourly wage rates in different countries compared with UK

2 To access global (world) markets

Rapid economic growth in less-developed countries has created significant market potential for consumer products, often achieved through direct operations in the countries. Some Western European markets have reached saturation points, and some businesses have reached their internal limits due to government regulatory threats. Tesco and Carrefour have expanded internationally to compensate for slow growth in their home countries.

3 To avoid protectionist trade barriers

Barriers to free international trade are rapidly being reduced, but some still exist – notably between the large trading blocs, such as the EU, North American Free Trade Association (NAFTA) and Association of South East Asian Nations (ASEAN). To avoid tariff barriers on imported goods into most countries or trading blocs, it is necessary to set up operations within the country or trading bloc concerned.

4 Other reasons

T h ese include substantial government financial support to relocating businesses, good educational standards (as in India and China) and highly qualified staff and avoidance of problems resulting from exchange rate fluctuations. This last point makes pricing decisions very difficult with products that are not made within the country, but are imported, when its currency fluctuates considerably. One way around this problem is to locate production in this country

Issues and potential problems with international location

International locations have potential for success but they also add to the number of drawbacks that might result from an inappropriate location decision. Here are some of the major additional issues that need to be weighed up carefully before going off shore.

1 Language and other communication barriers Distance is often a problem for effective communication

2 Cultural differences

T h ese are important for the marketing department if products are being sold in the country concerned – consumer tastes and religious factors will play a significant role in determining what goods should be stocked. Cultural differences also exist in the workplace.

3 Level-of-service concerns

T h is applies particularly to the off shoring of call centres, technical support centres and functions such as accounting. Some consumer groups argue that off shoring of these services has led to inferior customer service due to time-difference problems, time delays in phone messages, language barriers and different practices and conventions,

4 Supply-chain concerns

T h ere may be some loss of control over quality and reliability of delivery with overseas manufacturing plants. Th is reason is always cited by Zara, the clothing company, for their decision not to off shore clothing production to cheaper countries, as ‘fast fashion’ requires very close contact with suppliers

5 Ethical considerations

Ethical considerations include job loss, potential consumer boycotts, and potential negative publicity from high-street retailers sourcing supplies from Asian factories using child labor and low-wage labor. These factors should be considered at the highest management level when making location decisions, as they may impact the company's competitive advantage.

Scale of operation

T h ere is a huge difference between the scale of operations of a small business – perhaps operated by just one person – and the largest companies in the world. Some of the latter have total annual sales exceeding the GDP of small countries

KEY TERM

Scale of operation: the maximum output that can be achieved using the available inputs (resources) – this scale can only be increased in the long term by employing more of all inputs.

Factors that influence the scale of operation of a business include:

■ owners' objectives – they may wish to keep the business small and easy to manage

KEY TERM

Economies of scale: reductions in a firm's unit (average) costs of production that result from an increase in the scale of operations.

■ capital available – if this is limited, growth will be less likely

■ size of the market the firm operates in – a very small market will not require large-scale production

■ number of competitors – the market share of each firm may be small if there are many rivals

■ scope for scale economies – if these are substantial, as in water supply, each business is likely to operate on a large scale

Increasing the scale of operations

T h e decision to expand the scale of operations of a business cannot be taken lightly. Firms expand to increase capacity to avoid turning business away but they also benefi t from the advantages of large-scale production – these are called **economies of scale**

Economies of scale

T h ese cost benefits can be so substantial in some industries that smaller fi rms will be unlikely to survive due to lack of competitiveness, such as in oil refining or soft drink production. Th e cost benefits arise for five main reasons

1 Purchasing economies

Bulk-buying economies offer substantial discounts for large orders due to cost savings and customer satisfaction. Big firms employ specialist buyers to strike the best deals. B2B trading, which involves buying supplies over the internet, has seen a growing trend of firms offering cheaper deals for larger orders.

2 Technical economies

Technical economies are primarily driven by large firms that can justify the cost of low production lines, offering lower unit costs. Advanced equipment, like computer systems, is expensive and only justified when output is high and fixed costs are spread thinly. Small firms may not be able to afford these equipment, as it is often indivisible.

3 Financial economies

Large organisations have cost advantages when raising finance. Banks prefer big businesses with a proven track record and diverse products, offering lower interest rates. Going public or further public issues of shares are expensive, but professional advisers' fees, prospectus publishing costs, and advertising charges remain consistent, making the average cost lower for larger firms.

4 Marketing economies

Marketing costs obviously rise with the size of a business, but not at the same rate. Even small fi rms will need a sales force to cover the whole of the sales area. They may employ an advertising agency to design adverts and arrange a promotional campaign. These costs can be spread over a higher level of sales for a big fi rm and this offers a substantial economy of scale.

5 Managerial economies

Small fi rms often employ general managers who have a range of management functions to perform. As a fi rm expands, it should be able to afford to attract specialist functional managers who should operate more effi ciently than general managers.

Diseconomies of scale – big can be inefficient too

Diseconomies of scale are factors that increase unit costs as a firm's scale of operation increases beyond a certain size. These management problems are related to controlling and directing an organization with thousands of workers, in many separate divisions, often operating in several different countries. The benefits of large-scale production make it increasingly difficult for smaller firms to operate profitably.

KEY TERM

Diseconomies of scale: factors that cause average costs of production to rise when the scale of operation is increased.

1 Communication problems

Large-scale operations will often lead to poor feedback to workers, excessive use of non-personal communication media, communication overload with the sheer volume of messages being sent, and distortion of messages caused by the long chain of command.

2 Alienation of the workforce

T h e bigger the organisation, the more difficult it becomes to directly involve every worker and to give them a sense of purpose and achievement in their work. They may feel so insignificant to the overall business plan that they become demotivated and fail to give of their best.

3 Poor coordination

Business expansion often involves increasing departments, divisions, and products, and the number of countries a firm operates in. Senior management faces challenges in coordinating and controlling these operations, as divisions must adopt similar ethical standards and produce consistent goods. Poor coordination can lead to poor publicity and wasteful duplication of research, resulting in higher production costs compared to smaller businesses.

Large-scale production – unit costs of production

Figure 23.1 illustrates the combined effect of economies of scale and diseconomies of scale on unit production costs. There is no specific point where economies of scale cease and diseconomies begin, making it difficult to measure. Many managers may continue expanding without realizing the growing forces causing diseconomies.

Are diseconomies avoidable?

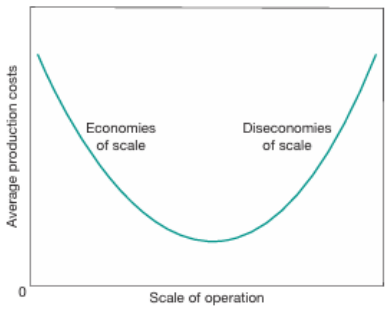


Figure 23.1 The impact of economies and diseconomies of scale on average costs

Nearly all managers recognise the problems inherent in operating large-scale operations. Can these problems be reduced and diseconomies avoided? Th ree approaches could be used to overcome the impact of potential diseconomies:

1 Management by objectives: This will assist in avoiding coordination problems by giving each division and department agreed objectives to work towards that are components of the long-term aims of the whole business.

2 Decentralisation: This gives divisions a considerable degree of autonomy and independence. They will now be operated more like smaller business units, as control will be exercised by managers 'closer to the action'. Only really significant strategic issues might need to be communicated to the centre, and such issues might be the only ones requiring decisions from the centre.

3 Reduce diversification: The recent movement towards less-diversified businesses that concentrate on 'core' activities may help to reduce coordination problems and some communication problems

Enterprise resource planning (ERP) [A Level only]

Economies of scale: supertankers hold much more oil than smaller tankers for a lower unit cost per tonne

Enterprise resource planning did not exist 25 years ago – it has only become possible with increased computerisation and the use of a single database program in all departments of business. By using this database program, it is possible to coordinate and link together all of the support systems of a business – stock control and ordering, invoicing to customers, human resource planning, production planning and so on.

Supply chain management (SCM) is becoming an increasingly signifi cant application of ERP soft ware. Operations managers can use SCM programs to improve customer service and gain competitive advantage

T h e five main stages of SCM for one customer's large order can all be made more eff ective by using ERP:

1 Plan: Deciding which resources – workers and machines – are needed for this order and how many.

2 Suppliers: Choosing the best and most cost-effective suppliers of the components needed and order them to arrive just in time.

3 Costs: At each stage costs can be recorded and the appropriate price to the customer calculated

4 Manufacture: Check the quality and monitor the rate of progress of the customer's order

5 Deliver: Pick transport systems that can deliver goods on time, safely and cost-eff ectively.

6 Returns: If there is a problem with the product, it will have to be taken back from customers and other items made or the cost reimbursed.

T h e following benefits can be gained from ERP soft ware:

■ Supply only according to demand – lean production that avoids waste and helps move the business towards achieving sustainability in its operations.

■ Just-in-time ordering of inventories – see Chapter 24.

■ Reduces costs at all stages of the supply chain – materials and products are electronically tracked at all stages.

■ Improved delivery times and better customer service.

■ Departments linked more closely together by the single database − this results in better coordination between them and less waste.

■ Management information increased – data from all stages of the production process and all of the supporting departments will be available

KEY TERM

Sustainability: production systems that prevent waste by using the minimum of non-renewable resources so that levels of production can be sustained in the future.

T h ere are potential limitations too:

■ The costs of the database and computer systems have to be considered − although these costs are falling with technological advances in computing power.

■ The multiple ways of operating in different departments now have to be reduced to one common system – this may cause resentment as departments are forced to give up tried-and-tested ways of operating.

■ It is estimated that in most businesses the full implementation of ERP can take one to three years and a lot can happen in business during this time − technological advances could make the chosen soft ware obsolete, management could change and increased competition might force the company to change course

Figure 23.2 Enterprise resource planning uses a company-wide computer software system to manage resources

Final evaluation

ERP software is a cost-effective and competitive management tool, used by large and smaller companies worldwide. It's crucial for conducting online B2B and B2C operations since the late 1990s, despite potential limitations.

Revision questions

Q1 Case Study 104: Fruit Fusions (FF) 9609/22/F/M/16/Q2 (b)
Define the term 'batch production' (line 2). [2]

Q2 Case Study 6: (Lasting Memories) 9707/02M/J/04/Q2 (d)
Explain the following terms: job production. [3]

Q3 Case Study 5: (Candy Shows Ltd) 9707/02/M/J/04/Q1 (d)
Explain the following terms: economies of scale. [3]

Q4 Case Study 5: (Candy Shows Ltd) 9707/02/M/J/04/Q1 (d)
Explain the following terms: Multinational. [3]

Q5 Case Study 28: (Joe's world) 9707/21/O/N/09/Q2 (d)
Explain the following terms: export market. [3]

Q6 Case Study 35: (Classy Clocks) 9707/23/M/J/10/Q1 (c)
Explain the following terms: flow production. [3]

Q7 Case Study 47: Quality Coaches (QC) 9707/23/M/J/11/Q1 (c)
Explain the following terms: internal economies of scale. [3]

Q8 Case Study 43: Loader Lorries (LL) 9707/21/M/J/11/Q1 (a) (i)
Explain the following terms: Diseconomies of scale. [3]

Q9 Case Study 61: Tiger Skateboards (TS) 9707/21/O/N/12/Q1 (a) (ii)
Explain the following terms: mass customization. [3]

Q10 Case Study 64: King Kites (KK) 9707/22/O/N/12/Q2 (b)
Explain the following terms: CAD (computer aided design). [3]

Q11 Case Study 1: The Furniture Maker (TFM) 9707/02/M/J/03/Q1 (d)
Explain two possible reasons why the government has encourage foreign business to locate in its country. [4]

Q12 Case Study 103: Lovell's Jeweler (LJ) 9609/21/F/M/16/Q1 (b)
Explain how LJ might have benefitted from one economy of scale. [4]

Q13 Case Study 1: The Furniture Maker (TFM) 9707/02/M/J/03/Q1 (d)
Analyze the factors that the multi-national business might have considered when deciding to locate near to the Furniture Maker. [8]

Q14 Case Study 6: (Lasting Memories) 9707/02M/J/04/Q2 (d)
Discuss whether lasting memories should change from job to batch production. [8]

Q15 Case Study 31: (Taylor's Tables) 9707/21/M/J/10/Q (a) (i)
Analyze the possible impact on training at TT of a change from job to batch production. [8]

Q16 Case Study 33: (Sassy Suits) 9707/22/M/J/10/Q1 (c)
Analyze the possible impact on training at SS's of a change from job to batch production. [8]

Q17 Case Study 49: (Newtown Arts Center) 9707/21/O/N/11/Q1 (a) (ii)
Analyze the factors that might influence Now's decision as to whether to open a shop in the new shopping centre. [8]

Q18 Case Study 53: Suave (Case Study: 123) 9707/23/O/N/11/Q1 (b)
Using table 2 and other information provided, analyze the factors Suave should consider when deciding whether or not to relocate its factory. [8]

Q19 Case Study 62: Best move partnership (BM) 9707/21/O/N/12/Q2 (a) (i)
Analyze the extent to which process the innovation (improving information flows) could help BM. [8]

Q20 Case Study 81: Let's Make Music (LMM) 9707/22/M/J/14/Q1 (a) (ii)
Analyze the likely impact on LMM's stakeholders of a change from batch production to mass customization. [8]

Q21 Case Study 84: Enterprise Energy (EE) 9707/23/M/J/14/Q2 (a)
Analyze the factors that EE needs to consider when deciding whether to relocate the call centre back to country. [8]

Q22 Case Study 87: Best Bakery (BB) 9707/22/O/N/14/Q1 (d)
Analyze the advantages and disadvantages to BB of using batch production. [8]

Q23 Case Study 100: (Kitchen Quality Appliances KQA) 9707/22/O/N/15/Q2 (a) (i)
Analyze the economies of scale that KQA could benefit from as it grows. [8]

Q24 Case Study 106: Prestige Jeweler (PJ) 9609/21/M/J/16/Q2 (a) (ii)
Analyze the advantages to PJ of using job production. [8]

Q25 Case Study 116. You is phones (YP) 9609/22/O/N/16/Q1 (a) (i)
Analyze two economies of scale from which YP may benefit. [8]

Q26 Case Study 117: Gourmet Ices (GI) 9609/22/F/M/17/Q1 ©
Analyze two possible disadvantages to GI of introducing CAM to produce ice cream. [8]

Q27 Case Study 129: Jones Sticky Labels (JS) 9609/23/O/N/17/Q1 (a) (i)
Analyze two advantages to JS of using computer Aided Design. [8]

Q28 Case Study 140: Katie's Cakes (KC) 9609/21/O/N/18/Q2 (a) (i)
Analyze one advantage and one disadvantage to KC of using job production. [8]

Q29 Case Study 147: Wood's Logs (WL) 9609/21/M/J/19/Q1 (d)
Analyze two factors which may have affected the location of WL. [8]

Q30 Case Study 149: Job Shop (JS) 9609/22/M/J/19/Q1 (a) (i)
Analyze one economy of scale and one diseconomy of scale that may affect JS. [8]

Q31 Case Study 17: (Bee's Meals) 9707/02/M/J/07/Q2 (d)
Discus the impact on BM and its workers of a change from batch to flow production. [10]

Q32 Case Study 27: (Medlqulp) 9707/21/O/N/09/Q1 (c)
Recommend which site (south wood or Westfield) would be the best for the relocation of MQ. Justify your choice. [10]

Q33 Case Study 31: (Taylor's Tables) 9707/21/M/J/10/Q (a) (i)
Apart from the need for training, discuss the difficulties that TT should consider if it decided to produce furniture for schools. [10]

Q34 Case Study 51: (Kids) 9707/22/O/N/11/Q1 (b)
Using table 2 and other information, recommend the best site for the third shop. Justify your answer. [10]

Q35 Case Study 62: Best move partnership (BM) 9707/21/O/N/12/Q2 (a) (i)
Evaluate the factors that john needs to consider before opening the BM office in your country. [10]

Q36 Case Study 65: Fast ship (FS) 9707/23/M/J/12/Q1 (c)
Discuss the likely impact on FS of using new technology. [10]

Q37 Case Study 68: Bright Glass (BG) 9707/21/M/J/13/Q2 (c)
Recommend to BG the best location for the new factory. Use table 1 and other information.
Justify your answer. [10]

Q38 Case Study 71: Coffee Paradise (CP) 9707/23/M/J/13/Q1 (b)
Using table 2, recommend to Anna best site for the new coffee shop. Justify your answer. [10]

Q39 Case Study 73: Clare's Clothes (CC) 9707/21/O/N/13/Q1 (a) (i)
Using table 1 and other appropriate information, recommend the most suitable location for CC's new shop. [10]

Q40 Case Study 75: Fizzy Drinks (FD) 9707/22/O/N/13/Q1 (a)
Discuss whether FD should change to flow production method. [10]

Q41 Case Study 97: Pet Care (PC) 9707/21/O/N/15/Q1 (a) (ii)
Discuss the benefits to PC of investing in process innovation. [10]

Q42 Case Study 101: Classic Cushions (CC) 9707/23/O/N/15/Q1 (d)
Discuss the advantages and disadvantages to CC of using batch production. [10]

Q43 Case Study 103: Lovell's Jeweler (LJ) 9609/21/F/M/16/Q1 (b)
Using table 2 and any other relevant information, recommend which location Sara should choose for the new shop. Justify your choice. [10]

Q44 Case Study 110: Car Components (CC) 9609/23/M/J/16/Q2 (d)
Discuss the advantages and disadvantages to CC from introducing and using CAM. [11]

Q45 Case Study 103: Lovell's Jeweler (LJ) 9609/21/F/M/16/Q1 (b)
Using table 2 and any other relevant information, recommend which location Sara should choose for the new shop. Justify your answer. [11]

Q46 Case Study 116. You is phones (YP) 9609/22/O/N/16/Q1 (a) (i)
Discuss the advantages and the disadvantages to YP of selling phones to the retailer in country A. [11]

Q47 Case Study 146: Sadiq's Social Restaurant (SSR) 9609/22/F/M/19/Q2 (b)
Recommend which location SSR should choose for its second restaurant. Justify your recommendation.