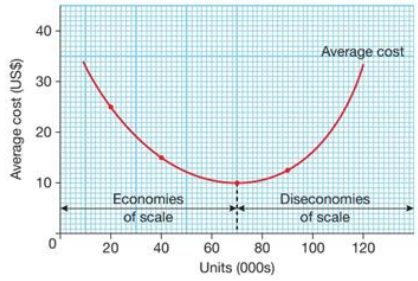
Unit 05 – Business operations

5.40 – Economics and dis economics of scale

Economic of scale

As a firm increases its size, average costs start to fall. This is because of **economies of scale**, as is shown in Figure 40.1. For example, if the firm increases its size and produces 90000 units, average costs will now rise to US$12.50 per unit. This is owing to **diseconomies of scale**, which occur because of inefficiency.

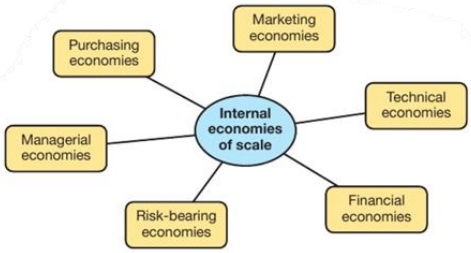
▶ Figure 40.1 Economies and diseconomies of scale



Internal economies of scale

Internal economies of scale are the cost benefits that an individual firm can enjoy when it grows. The reasons why costs fall are summarised in Figure 40.2.

▶ Figure 40.2 Sources of internal economies of scale



PURCHASING ECONOMIES

Large firms that buy lots of resources get cheaper rates. Suppliers offer discounts to firms that buy raw materials and components in bulk. This is similar to consumers buying multi-packs in supermarkets - they are better value for money. Bulk buying is a purchasing economy.

MARKETING ECONOMIES

A number of marketing economies exist. For a large firm, with lots of deliveries to make, this would be cheaper than paying a distributor. Marketing economies can occur because some marketing costs, such as producing a television advert, are fixed.

TECHNICAL ECONOMIES

Technical economies occur because larger plants are often more efficient than smaller ones. There can be more specialisation and more investment in machinery. One example of a technical economy is the way a large firm will make better use of an essential resource than a smaller firm.

FINANCIAL ECONOMIES

Large firms can get cheaper money. They also have a wider variety of sources to choose from. For example, a large limited company can raise money by selling shares. This option is not available to a sole trader. Large firms can put pressure on banks when negotiating the price of loans.

MANAGERIAL ECONOMIES

As firms expand they can afford specialist managers. A small business may employ a general manager responsible for finance, human resources, marketing and production. The manager may find this role demanding and may be weak in some areas of the job.

RISK-BEARING ECONOMIES

Larger firms are more likely to have wider product ranges and sell into a wider variety of markets. This reduces the risk in business.

External economics of scale

Sometimes all firms in an industry can enjoy falling average costs as the whole industry grows. This is called external economies of scale. External economies are more likely to occur if an industry is concentrated in a particular region.

SKILLED LABOUR

If an industry is concentrated in one area, there may be a build-up of labour with the skills and work experience required by that industry. As a result, training costs will be lower when workers are recruited. It is also likely that local schools and colleges will provide vocational courses that are required by local industry.

INFRASTRUCTURE

If a particular industry dominates a region, the roads, railways, ports, buildings and other facilities will be shaped to suit that industry's needs.

ANCILLARY AND COMMERCIAL SERVICES

An established industry in a region will encourage ancillary suppliers in that industry to set up close by. Specialist marketing, cleaning, banking, waste disposal, distribution, maintenance and components suppliers are likely to be attracted to the area.

COOPERATION

When firms in the same industry are located close to each other they are likely to cooperate with each other so that they can all gain.

Diseconomies of scale

BUREAUCRACY

Larger business rely more on bureaucracy. If a business becomes too bureaucratic, it means that too many resources are used in administration. Too much time may be spent filling in forms or writing reports. Also, decision making may be too slow and communication channels too long.

LABOUR RELATIONS

If a firm becomes too big, relations between workers and managers may deteriorate. Management may fail to understand workers and they may become demotivated. As a result, conflicts may occur and resources may be wasted resolving them.

CONTROL AND COORDINATION

A very large business may be difficult to control and coordinate. Thousands of employees, billions of pounds and dozens of plants all over the world can make running a large organisation demanding. There may be a need for more supervision, which will raise costs.

Other limits of growth

Diseconomies of scale are likely to discourage businesses from growing too big. However, there are a number of other barriers that might prevent a business from growing in size.

LACK OF FINANCE

Some businesses would like to grow but are not able to raise the finance needed to expand. Growth usually requires investment in new resources, such as property extensions, new machinery, equipment and more labour.

NATURE OF THE MARKET

Some markets are too small to sustain very large companies.

LACK OF MANAGERIAL SKILLS

Some businesses may be prevented from growing because the owners do not have the managerial skills required to run a large business operation.

LACK OF MOTIVATION

Some business owners do not want to grow their businesses. They may be happy running a small business.

5.41 – Production and productivity

Job production

Job production is suitable when demand is relatively low. However, when demand grows and orders for multiple units are placed, a business might switch to batch production. This is where a business makes a number (a batch) of products to the same design or specification and then changes production to another product with different specifications.

Batch production

Production involves converting resources into goods or services. These goods and services are provided to satisfy the needs and wants of people.

▸ Table 41.1 Batch production stages

OPERATION	DESCRIPTION
Laser cutting	The correct shape is cut from the metal sheet
Part marking	The armrest is marked with a number for identification
Punching	Holes are made in the armrest to make it lighter
Folding	The armrest is folded into the correct shape
Assembly	Components and fasteners are put together
Plating	The armrest is coated in zinc plating
Packaging	The armrests are packed into cases to be transported

Flow production

Flow production may be used when a business can sell huge quantities of output into a mass market. Flow production results in lower unit costs

Products move from one operation to the next, often on a conveyer belt. The main features of flow production are:

■ large quantities are produced

■ a standardised product is produced

■ a semi-skilled workforce, specialising in one operation only is employed large amounts of machinery and equipment are used.

Process production is a form of flow production that is used in the oil or chemical industry.

Labour intensive and capital-intensive production

Some businesses use labour-intensive production. This means that they use relatively more labour than capital. **Labour-intensive production** is common in Far Eastern countries, such as China where labour is cheap.

In contrast, some businesses use **capital-intensive production methods**. This means that production relies more on the use of plant and machinery.

The impact of using different types of production

JOB PRODUCTION

The quality of output from job production is usually very high. This is because skilled craft workers often carry out work. Workers are likely to be motivated because the work is varied.

BATCH PRODUCTION

Unit costs are likely to be lower when batch production is adopted. This is because output is higher, workers can be more specialised and more use is made of machinery. Production is also flexible because orders with different measurements, styles or specifications can still be met.

FLOW PRODUCTION

Flow production can reduce unit costs significantly. Output can be produced very quickly and the speed of production can usually be varied to deal with changes in demand.

Productivity

Businesses will want to use their resources as efficiently as possible. Output can be increased if **productivity** is raised.

$$\text{Labour productivity} = \frac{\text{Total output}}{\text{Number of workers}}$$

For example, a business may measure **labour productivity**, that is, output per worker. It can be calculated by:

Increasing labour productivity

Labour productivity can be improved in the following ways.

■ The government invests more in education by providing more equipment for schools and improving the quality of teaching, for example. Also, businesses can provide more training and improve the quality of existing methods.

■ People are better motivated at work. This might be achieved by using financial incentives such as piece rates, performance-related pay and profit sharing.

■ Labour is organised and managed more effectively.

■ Labour is more flexible. One approach is to train workers to do different jobs so they can switch at short notice. Some firms use flexitime, where workers can choose their hours of work (within limits).

Increasing capital productivity

Capital productivity usually increases when new technology is introduced. This is because new technology is more efficient. Productivity is also likely to increase if production becomes more capital intensive.

DOWNSIZING

Some firms have tried to improve efficiency by downsizing. This involves reducing capacity, that is, laying off workers and closing unprofitable divisions.

RELOCATION

Businesses often relocate their operations to improve efficiency. By relocating, firms can take advantage of cheaper resources, such as lower rent, lower wages or lower transport costs.

OUTSOURCING

It may be possible to improve efficiency by outsourcing specific business activities. This means that work currently done by a business is given to specialists who can do the same work at a lower cost.

LEAN PRODUCTION

Another modern approach to improving productivity in a business involves reducing the amount of resources used. This is called lean production

The impact of business productivity improvements.

FINANCIAL IMPACT

If a business is able to improve productivity, there should be a positive financial impact on the business.

COMPETITIVENESS

If a business can improve productivity it will be more efficient. This will help the business to secure a competitive edge. As a result, the business might increase its market share and enjoy a higher profile in the market. It might start to attract new customers - from overseas perhaps.

WORKFORCE

If a business introduces measures to improve labour productivity, clearly the workers are likely to be affected. However, the nature of the impact will depend on the particular measure introduced.

CUSTOMERS

Customers are likely to benefit if a business tries to improve productivity. This is because lower costs could result in lower prices. Also, some measures designed to improve productivity might result in a better product or service for customers.

5.42 – Lean production

What is lean production?

Lean production is an approach to production developed by Toyota, the Japanese car manufacturer. Its aim is to use fewer resources in production. Lean producers use less of everything. This includes factory space, materials, stocks, suppliers, labour, capital and time.

Just in time production

If a business holds stock, money is tied up and therefore wasted. The money is unproductive. To overcome this problem, many businesses have adopted just-in-time (JIT) production. This means that a business does not:

- hold any stock of raw materials or components - suppliers have to deliver resources straight to the production line at regular intervals (this might be several times a day)
- produce any goods unless they have been ordered - this avoids the need to hold stock of finished goods.

The advantages and disadvantages of JIT are shown in the Table 42.1

The advantages and disadvantages of JIT are shown in the Table 42.1.

▶ Table 42.1 Advantages and disadvantages of just-in-time production

ADVANTAGES	DISADVANTAGES
Cash flow is improved	Higher ordering and administration costs
No waste, out-of-date or damaged stock	Relies hugely on suppliers' reliability
Space is released	Advantages of bulk-buying may be lost
No stock holding costs	Hard to cope with changes in demand
Stronger links with suppliers	Vulnerable to a break in supply
Fewer suppliers	

Kaizen

The elimination of waste in business is an important part of kaizen. Firms that adopt kaizen train workers to continually search for waste and suggest how it might be avoided. This is why kaizen has a strong link with lean production.

GENERAL VOCABULARY

sustain to manage to make something continue to exist over a long period of time empowerment when workers in a company are given more responsibility by being allowed to organise their own work and make decisions without asking their managers

LEAN PRODUCTION

One of the key drivers in kaizen is 'good housekeeping'. A clean and well- organised working environment is needed for continuous improvement to flourish. The Japanese use a method called 5S to ensure that this is achieved. What does 5S stand for?

■Sort - get rid of the clutter in the workplace. Only necessary items such as tools should be stored at a workstation. All other items such as excess inventory should be removed.

■Set in order - organise the work area, so that it is easy to find what is needed.

■Shine - ensure work area and equipment are clean. Make them 'shine'.

■Standardise - once the most effective working practices have been identified everyone in the workplace should adopt them.

■Sustain - adopt systems to lock the other 4Ss into the way people work at all times on a permanent basis.

STANDARDISATION

Standardisation means carrying out every business activity according to established formulae. These formulae may be printed out and hung in the workplace for all to see. They develop into standards for the best, most efficient and safest way to complete a job.

TEAMWORKING

This involves dividing the workforce into small groups. Each team will focus on a particular area of production and team members will have the same common aims. Both the business and workers might benefit from teamwork.

■Workers should develop a 'team spirit'. This may improve motivation and productivity.

■For example, team members might be more willing to cover for an absent colleague.

■Teams might plan their own work schedules, share out tasks and solve their own problems. This should lead to quicker decision making and more ideas.

■Communication and labour relations might also improve.

EMPOWERMENT

Empowerment gives employees more control over their own work. In the past, most workers have followed the instructions given to them by managers. They were rarely required to think for themselves.

SUGGESTION SCHEMES

Suggestion schemes encourage workers to suggest ideas to improve production or reduce costs.

QUALITY CIRCLES

Quality control circles or quality circles are small groups of workers in the same area of production who meet on a regular basis to solve production problems. Quality circles give employees an opportunity to make improvements in their jobs and therefore support kaizen.

MULTI-SKILLING

If workers are trained in a variety of skills, they are said to be multi-skilled. Multi-skilled workers are more useful to a business because they provide more flexibility.

FINANCIAL BENEFITS

Clearly, if fewer resources are used, business costs will be lower.

IMPROVED COMPETITIVENESS

Lean producers will have a competitive edge in the market. Businesses that use their resources effectively will be able to lower prices.

POSITIVE ENVIRONMENTAL EFFECTS

If a business makes more effective use of resources, it will be making a positive contribution to the protection of the environment.

IMPROVED CUSTOMER SERVICE

Customers are likely to benefit if a business makes more effective use of resources.

5. 43 Technology in production

The impact of new technology in the primary sector

Advances in technology have significantly impacted various sectors, including agriculture, where tractors, mechanical harvesters, grain-drying machines, and automatic feeding systems have increased productivity. Chemicals and pesticides have also increased crop quantities, and biological research has developed plants less susceptible to diseases. Genetically modified (GM) crops aim to increase plant nutritional value, benefiting consumers through higher iron and vitamin content, healthier oils, and allergen-free nuts. Drones are used for water and disease management, planting strategies, and crop progress information. In the mining industry, new cutting machinery has improved productivity and worker health.

The impact of new technology in the secondary sector

ROBOTS

Robots feature largely in assembly and on production lines. They usually have a mechanical arm that moves according to instructions given by a computer. Robots in manufacturing can be divided into three categories.

■ Material handling robots are usually employed in the transport of goods, parts or stock from one place to another, most often within the same factory or plant. Automated warehouses are an example of this.

■ Processing operations robots generally perform a specific task, such as spot welding or spray painting. These robots are fitted with a specialised tool to perform the programmed task.

■ Assembly line robots usually perform a single task on assembly lines such as fitting a cap on a bottle. Inspection robots are used to check a finished part or product for faults. They may use a range of tools, such as lenses and scanners.

COMPUTER AIDED DESIGN

Before products are manufactured they have to be designed. The whole design process has been improved by the introduction of computer aided design (CAD).

COMPUTER NUMERICALLY CONTROLLED MACHINES

Computer numerically controlled machines (CNCs) machines can be programmed by computer to carry tasks such as cutting, milling, drilling, welding, sewing and printing. They can produce both uniform and irregular shapes, and cut quickly and accurately.

COMPUTER AIDED MANUFACTURING

If computers are used in both design and production, the two processes can be linked. If this approach is used the whole of production can become automated. This is called computer aided manufacturing (CAM).

COMPUTER INTEGRATED MANUFACTURING

Computer integrated manufacturing (CIM) involves using computers for the entire production process. In a CIM system, functional areas such as design, planning, purchasing, cost accounting, stock control and distribution are linked through the computer with factory floor functions such as materials management providing direct control and monitoring of all processes.

The impact of new technology in the tertiary sector

In the past, the provision of services has been mainly labour intensive. However, new technologies are being rapidly adapted for use in the tertiary sector. Some examples are outlined below.

- Online transactions in financial services like banking, ATMs, and EFTPOS reduce the need for cash, allowing for 24/7 cash withdrawals, international transfers, and the use of smartphones for international transactions.
- In marketing, the use of information technology (IT) has made market research easier. The gathering, processing and presentation of market research data are cheaper using IT. Data can also be gathered online. This is more convenient for consumers and therefore more data is likely to be gathered.
- In advertising, television adverts use the latest film technology and special effects to make adverts more exciting and entertaining. The Internet is used to promote products. Many businesses have their own websites where information about products is posted and updated regularly - this is discussed in more detail below.
- EFTPOS is a retail technology that records the sale of goods or services at the point of purchase, saving time, reducing checkout queues, improving stock control, and automatically ordering new stock.
- In the leisure industry, technology allows people to travel without a ticket.
- The use of IT has helped to reduce administration and communication costs in business.
- E-commerce involves using electronic systems to buy and sell products, with most occurring online. There are two main types: B2C (business to consumers) and B2B (business to business). B2C involves selling goods and services to consumers, while B2B involves selling to other businesses online.

THE COSTS AND BENEFITS OF NEW TECHNOLOGY

Table 43.1 provides a summary of the main benefits and costs of introducing new technology in business.

▶ Table 43.1 Benefits and costs of new technology

BENEFITS	COSTS
New products provide more choice	High set-up and purchase costs
Higher productivity and lower costs	Technology breakdowns can be expensive
Less waste of resources	Job losses may cause conflict and distress
Improved health and safety	Existing staff may need to be retrained
Tasks are easier for workers	Reduced motivation for machine workers
Improved communications	Loss of flexibility

Balancing the cost productivity, quality and flexibility of technology

Introducing new technology into production can be a challenging decision for businesses due to the high financial costs, human costs, and potential disruptions. Senior management must ensure the cost is lower than the productivity gains, which may require large quantities of output. Additionally, the impact on product quality and flexibility is crucial, as mass-produced products may be perceived as lower quality. Automation can reduce customer choice, but sophisticated technology can still provide flexibility in the motor industry. Therefore, investing in new technology is risky and businesses must evaluate costs, productivity gains, quality impact, and potential loss of flexibility.

5. 44 Factors of production

Four factors of production

Production involves transforming resources into goods or services, satisfying people's needs. Robert Oloya's banana farm utilizes four factors of production, including land, workers, and tools. They are summarised in Figure 44.1.

LAND

Businesses will need a 'plot of land' to locate their premises.

LABOUR

The workforce in the economy is the labour. Manual workers, skilled workers and managers are all part of a nation's workforce. The quality of individual workers will vary considerably.

CAPITAL

Capital is often said to be an artificial resource because it is made by labour. There are two types of capital.

■Working capital or circulating capital refers to stocks of raw materials and components that will be used up in production. It also includes stocks of finished goods that are waiting to be sold.

■Fixed capital refers to the factories, offices, shops, machines, tools, equipment and furniture used in production. Fixed capital is used in production to convert working capital into goods and services.

ENTERPRISE

An entrepreneur is responsible for setting up and running businesses. Without them production would not take place. What is the role of entrepreneurs?

■They come up with a business idea. This might involve the production of a completely new product. However, this is unusual. Most new businesses supply goods or services that are currently produced by others.

■They are business owners. They usually provide some money to help set up a business and are responsible for its direction.

■Entrepreneurs are risk takers.

■Entrepreneurs are responsible for organising resources. They have to buy and hire resources, such as raw materials, tools, equipment and labour.

Specialization and the division of labour

Workers will also specialise in certain tasks and skills. This is called the division of labour. It allows people to concentrate on a limited range of tasks.

Labour intensive and capital intensive production

Businesses have to manage resources effectively. They have to choose a suitable combination of materials, tools, equipment, machinery and labour for production.

Production in the West tends to be more capital intensive. The best resource mix between labour and capital depends on the following factors.

THE TYPE OF PRODUCT

Mass produced fast-moving consumer goods are likely to be produced in huge plants using large amounts of machinery. However, in many Western economies, most production is focused on providing services that are often very labour intensive. For example, the provision of financial services uses large amounts of labour relative to capital.

THE RELATIVE PRICES OF THE TWO FACTORS

If labour costs are rising, a business may be encouraged to employ more capital. In countries like China and India, where labour is relatively cheap, labour-intensive production methods are likely to be preferred. However, in much of Western Europe and the USA, where labour is more expensive, a great deal of manufacturing is capital intensive.

The advantages and disadvantages of labour and capital intensive approaches to production are summarised in Table 44.1.

▼ Table 44.1 Advantages and disadvantages capital- and labour-intensive production

The advantages and disadvantages of labour and capital intensive approaches to production are summarised in Table 44.1.

CAPITAL-INTENSIVE PRODUCTION		LABOUR-INTENSIVE PRODUCTION	
ADVANTAGES	**DISADVANTAGES**	**ADVANTAGES**	**DISADVANTAGES**
Generally more cost effective if large quantities are produced	Huge set-up costs	Generally more flexible than capital – can be retrained, for example	People are more difficult to manage – they have feelings and reactions
Machinery is often more precise and consistent	Long delays may occur when there is a breakdown	Cheaper for small-scale production	People can be unreliable – they may be sick or leave suddenly
Machinery can operate 24/7	May be inflexible – a lot of machinery is highly specialised	Cheaper for large-scale production when labour is cheap	People need breaks and holidays
Machinery is easier to manage than people	May leave the workforce facing redundancy and effect morale	People are creative and can solve problems and make improvements	People sometimes need to be motivated to improve performance

The changing relationships between enterprise, capital and labour

Production is evolving due to technological advancements, leading to more capital-intensive methods and a greater division of labor. Large-scale production, particularly in China, is becoming more capital-intensive due to the country's economic development and specialized manufacturing. Western companies are attracting investors to build factories in China, using capital-intensive production techniques, such as Jaguar Land Rover's £1000 million Changshu plant in 2014.

5. 45 Quality

When consumers are shopping, they may consider quality when choosing products. Quality could be described as those features of a product or service that allow it to satisfy customers' wants.

The importance of quality

Quality is more important than ever. Consumers are more aware, they get information through the media and the Internet, and as a result they have higher expectations than ever before.

■Increased competition has forced firms to improve quality. Consumers do not need to buy products from businesses that fail to deliver quality.

■Government legislation designed to protect consumers has forced firms to improve quality.

■Faulty products are costly for a business. Machinery that breaks down or constantly needs to be repaired will also be expensive.

Traditional quality control

Traditionally, production departments were responsible for ensuring quality. Their objectives might have been to make sure that products:

■ satisfy consumers' needs

■ operate in the way they should can be produced cost effectively

■ can be repaired easily

■ meet safety standards set down by legislation and independent bodies.

Quality control in the past often involved quality controllers or quality inspectors checking other people's work and the product itself after production had taken place.

Quality assurance

Today inspection is carried out during the production process. This means that poor quality production can be prevented before production is complete. Such a preventive approach has been used by Japanese businesses and is known as **total quality management (TQM**). **Quality assurance** is a commitment by a business to maintain quality throughout the organisation.

Total quality management

TQM is designed to prevent errors, such as poor quality products, from ever happening. What are the features of TQM?

■Quality chains: Every worker in a business acts as a link in a chain, serving as both a customer and supplier, ensuring faulty products are avoided and including customers and suppliers outside the business.

■Everyone is involved: TQM is a top-down approach to quality management, involving quality audits using statistical data to monitor standards and reduce variation in products, delivery times, materials, and worker performance, thereby preventing most quality problems.

■Teamwork: TQM stresses that teamwork is the most effective way of solving problems. This is because teams have more skills, knowledge and experience than a single person.

■Customer focused: Firms using TQM are committed to their customers. They respond to changes in people's needs and expectations.

■Zero defects: Many quality systems have a zero defect policy. This aims to ensure that every product that is manufactured is free from defects.

Quality standards

Businesses can establish a reputation for quality by adhering to a code of practice or obtaining quality awards, such as ISO 9000, from the British Standards Institution (BSI), which sets internationally recognized standards, and can carry a kitemark to indicate consistent achievement.

Quality and competitive advantage

Businesses that produce high-quality products may gain a competitive edge in the market. Some businesses have a reputation for producing high-quality products all over the world. For example, it might be argued that the following businesses are recognised for the quality of their products globally.

■ Prada - an Italian luxury fashion house specialising in leather handbags, travel accessories, shoes, eyewear and perfumes.

■Versace - an Italian fashion company making and selling a wide range of clothing and fashion accessories for men and women.

■Rolls Royce - a manufacturer of jet engines but possibly more famous for its Rolls Royce luxury cars.

■Rolex - famous for its high-quality luxury wristwatches.

■Lego - a global supplier of toys made famous by its large plastic building bricks.

Quality can be important to both large and small businesses. If any business can develop and produce high quality products, this could serve as a **unique selling point (USP).**