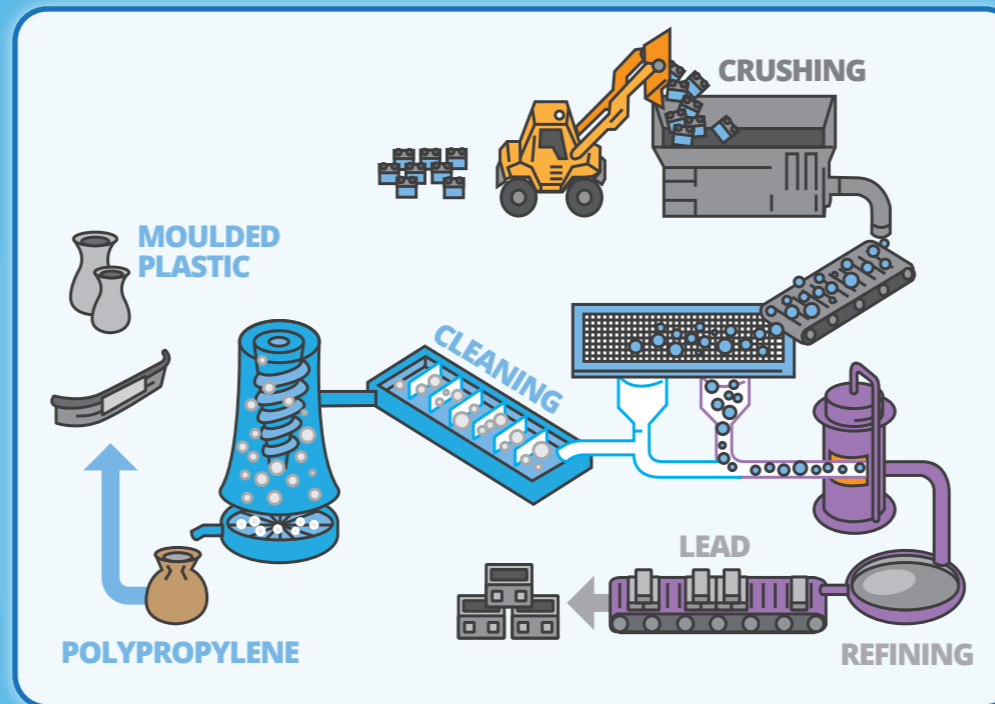


## Functions of Production Department

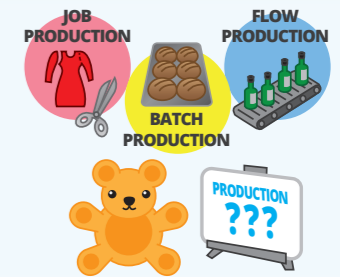
- Production planning and scheduling → making sure that the correct number of items are produced to fulfil order on time
- Deciding the best production methods to use
- Managing product quality (including process control and monitoring)



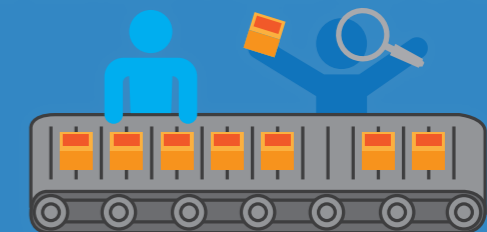
## Production

**Definition:** The process of changing inputs such as labour services into goods and services that can be sold.

## Methods of Production



Method of Production:	Job	Batch	Flow/Mass
<b>Definition</b>	<ul style="list-style-type: none"> <li>• Involves the manufacture of an individual good from start to finish.</li> <li>• Each product is different and offers a unique good for the consumer or meets specific consumer requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Found when a small number of identical products are made at once.</li> <li>• Each batch goes through one stage of the production process before moving onto next stage.</li> </ul>	<ul style="list-style-type: none"> <li>• Goods are produced continuously usually on a production line.</li> <li>• Partly finished goods move along the assembly line with parts being added through the process.</li> </ul>
<b>Examples</b>	Wedding dresses, Hairdresser	Clothing Manufacturer, Bakery	Golf balls
<b>Advantages</b>	<ul style="list-style-type: none"> <li>✓ <b>Unique</b> → bespoke → to customer specification.</li> <li>✓ <b>Higher quality</b> → product is made one at a time → everyone different.</li> </ul>	<ul style="list-style-type: none"> <li>✓ <b>More products can be produced</b> → allow for higher sales.</li> <li>✓ <b>Costs for producing each product (unit costs) are lower.</b></li> <li>✓ <b>Production is more efficient</b> → workers can specialize in performing specific tasks.</li> <li>✓ <b>Specialist machinery can be used</b> → speed up production.</li> </ul>	<ul style="list-style-type: none"> <li>✓ <b>Efficient use of labour and machines</b> → division of labour.</li> <li>✓ <b>Produces similar/identical goods</b> → production quicker.</li> <li>✓ <b>Reduce unit costs of production</b> → benefit from economies of scale.</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>✗ <b>Expensive</b> → workers tend to have higher skills and therefore higher wages.</li> <li>✗ <b>Time-consuming</b> → completion takes longer due to greater attention to detail and high quality.</li> <li>✗ <b>Replacements more difficult to find</b> → products were made for a specific purpose to a particular design.</li> </ul>	<ul style="list-style-type: none"> <li>✗ <b>Products no longer produced to a unique specification</b></li> <li>✗ <b>Quality is not as high compared to job production</b> → less time and care is taken on individual products</li> <li>✗ <b>High level of stock may be needed</b> → materials have to be stored and this is expensive.</li> <li>✗ <b>Machines have to be cleaned and reset before producing a different batch</b> → this takes time and adds to costs.</li> </ul>	<ul style="list-style-type: none"> <li>✗ <b>Machinery is expensive</b> → smaller businesses may not be able to afford it.</li> <li>✗ <b>Lack of flexibility</b> → flow production produces identical products → what if the customer wants a slight modification?</li> <li>✗ <b>Bored workers</b> → could lead to lower quality.</li> </ul>



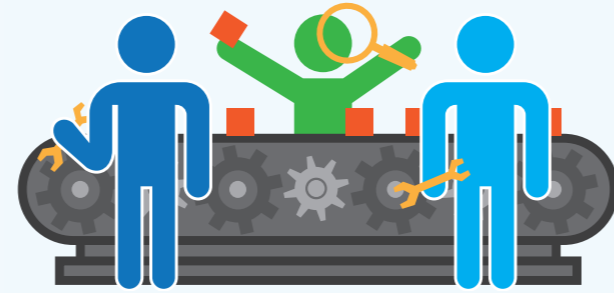
## Quality

### Quality

**Definition:** Involves meeting a standard for a good or service to meet consumer needs and expectations.

Businesses will try to achieve quality through:

- **Purchasing the right raw materials and components** → the quality of the materials will directly influence the quality of the end product
- **Having the best production processes** → ensure that each stage is completed to the required standard
- **Employing the right people** → making sure that they have the right skills and level of motivation to take pride in work
- **Training employees** → equipping them with the necessary skills to produce the product
- **Implementing quality assurance and quality control** → making sure that the end product is the best that it can be



## QUALITY CONTROL AT WORK

### Quality Control

**Definition:** Involves inspecting a sample of goods produced at the end of the production process to ensure that specifications have been met. Goods which do not meet the standards are scrapped or are sold as seconds.

#### Advantages:

- ✓ Inspection is carried out by a specialist
- ✓ Reduces the risk of a faulty product reaching the customer
- ✓ Problem areas can be identified and action taken

#### Disadvantages:

- ✗ Waste levels can be high as a fault will only be found at the end of the process
- ✗ Requires specialist personnel
- ✗ Operatives may feel demotivated as they are "being checked up on"

### Quality Assurance

**Definition:** A guarantee given by producers to consumers that certain standards have been met throughout the production process. Legal standards have been met and / or codes of practice have been followed.

Quality assurance involves:

- checking/inspecting quality at each stage of the production process
- quality is the responsibility of everyone throughout the process
- achieved through a system of total quality management
- making everyone in a business responsible for quality
- each employee treats the next person as if they are a customer and ensures what they pass on to them is of the correct quality

Quality assurance requires staff to consider:

- what suppliers they are using to make sure the supplies used do not create problems
- training staff so they can check their own work rather than waiting for it to be inspected
- providing the equipment and technology to allow employees to check their own work

#### Advantages:

- ✓ Motivated staff as everyone is given responsibility
- ✓ Focus on quality throughout the process
- ✓ Less waste from reworking or scrapping faulty goods
- ✓ Better reputation due to quality products

#### Disadvantages:

- ✗ Relies on commitment of all staff
- ✗ Training must be provided
- ✗ Productivity can be reduced



### Quality Awards

**Definition:** Evidence of high standards – these show customers that certain standards have been met.



### Wastage

**Definition:** Occurs when products cannot be sold because they are of poor quality, or damaged, or stock is out of date.

## Total Quality Management (TQM)

**Definition:** Creates quality through continuous improvement, development of systems and products and by creating an organisational culture of quality.

For TQM to be effective a number of production management and control methods need to be used:

- **Quality chains** → the next person in the production process (chain) is treated as a customer and customer satisfaction is the objective.
- **Empowerment** → giving employees control over tasks completed.
- **Monitoring** → checking that standards at each link in the chain are being achieved and the use of statistical tools to measure levels of failure to achieve quality.
- **Teamwork** → a team is responsible for a production process → the team is empowered to check the quality of raw materials, interact during the installation process and check the quality of the finished product → implies that responsibility lies within the team → can build trust and morale, whilst improving communication between members.
- **Quality circles** → employee involvement in the decision-making and product-improvement process → employees meet to identify and solve problems.
- **Zero defects** → attempting to achieve perfect product quality, time after time.
- **Benchmarking** → the process of setting standards of quality and output which are based on the best that competitors can offer.



## The importance of quality to a business

### Satisfying and increasing customer expectations

- To gain and retain customers
- Repeat custom
- Word of mouth advertising
- Brand loyalty

### Increasing sales

- Reputation of the business
- Positive image to consumer
- Positive word of mouth
- Improved customer satisfaction



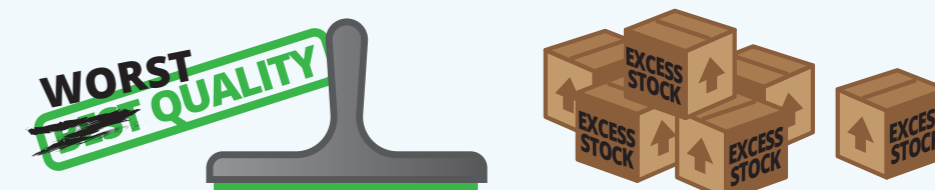
### Reducing cost and waste

- Reduce product returns and recalls
- Avoid negative publicity
- Cost of recall and reworking faulty goods
- Dealing with customer complaints
- Loss of trust



## Ways in which businesses can ensure that they provide high quality goods and services

- **Well designed products** → use of CAD/skilled designers
- **Quality of employees** → qualifications → training → skills → experience
- **Motivation** → financial/non-financial explained → job production
- **High quality materials** → to ensure products less likely to break
- **Investment in up-to-date machinery** → CAM/CAD → ensure products more accurately made
- **Quality control** → e.g. supervision / inspectors / checking
- **Dealing with complaints/listening to customers** → to give confidence → customer feedback
- **Belonging to professional organisation/Quality standards** → to give confidence
- **Quality assurance** → TQM → quality circles → kaizen



## Consequences of bad quality goods and services

- **Customers will be lost** → dissatisfied customers will look elsewhere
- **The reputation of the business will suffer** → they may develop a reputation for faulty or poor standard products and services
- **Increased costs** → in wastage and the recall and replacement of faulty products
- **Storage costs** → for unwanted products that consumers do not want
- **Legal action** → if the product causes harm to consumers

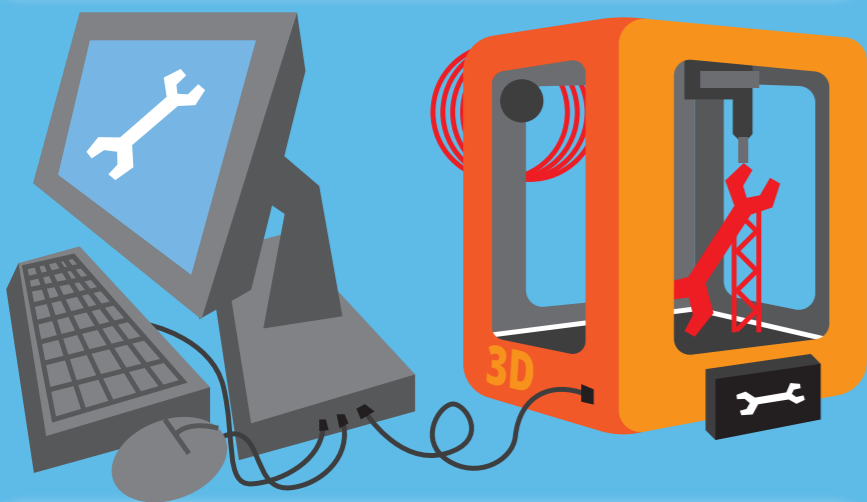
## Technological Influence

### Information and Communications Technology (ICT)

**Definition:** The computing and communications systems that a business might use to exchange information with stakeholders.

### How can ICT be used in a business?

- **Communication** → through emails / texts / word processing → ordering
- **Marketing** → websites / "spam"
- **Stock control / customer details** → databases → tills → barcodes
- **Record keeping** → and analysis / spreadsheets → finance → online banking
- **Selling** → online auction sites
- **Research** → using the internet



### 3D Printing

**Definition:** Products and components can be produced using 3D printers working from computer-drawn designs.



### Computer-Aided Design (CAD)

**Definition:** Allows designers to produce new products using 3D models displayed on computer screens.

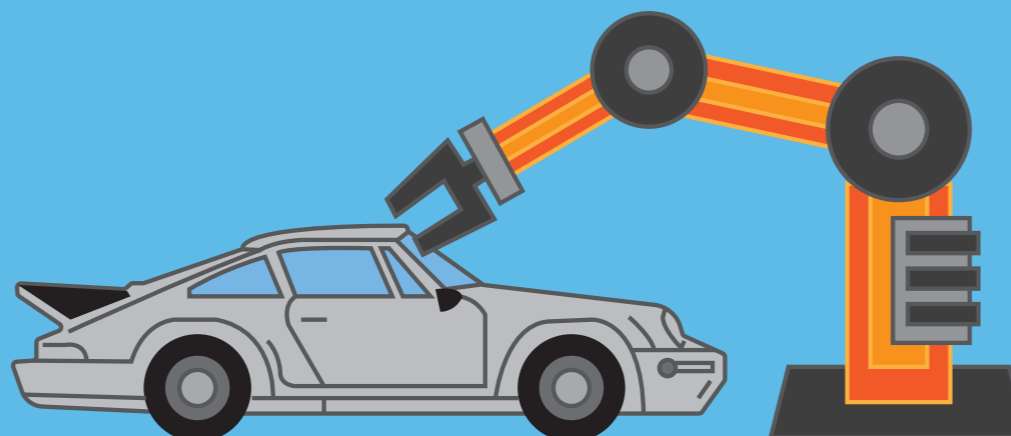
#### Advantages:

Reduce costs and improve quality are the main benefits, there are a number of different examples:

- ✓ **Speeds up design** → simple to edit
- ✓ **Alternative designs can be considered** → simple to edit
- ✓ **Producing drawings of finished goods and parts / no need to build models (prototypes) nor finished goods** → reduce costs
- ✓ **To view finished goods before manufacture to find best design** → improves quality and accuracy of the design
- ✓ **Testing** → materials and design to reduce errors and reduce costs
- ✓ **Linked to CAM to speed up production**

#### Disadvantages:

- ✗ **Cost of setting up** → machinery → training of workers



### Computer-Aided Manufacturing (CAM)

**Definition:** Uses computers to operate robots and other machines in production lines.

#### Advantages:

- ✓ **Can be linked with CAD** → speeds up the whole production process
- ✓ **Measurements easily transferred to manufacturing process**
- ✓ **Less scope for error in production** → more accurate → allows for standardised quality → greater customer satisfaction → fewer returns
- ✓ **Used in mass production/flow production** → easy to adjust → speed → cheaper
- ✓ **Fewer employees** → lower wage costs → less supervision

#### Disadvantages:

- ✗ **Cost of setting up** → machinery → training of employees → possible redundancy payments to unskilled workers
- ✗ **Reputation of business if making redundancies**

### Why would employees be concerned by the introduction of new technology?

- **May lose jobs** → technology may replace need for workers / changes require fewer employees
- **Promotion opportunities may be reduced** → with smaller workforce
- **Lower morale** → lack of job security / promotion opportunities
- **Fewer hours** → reduced pay
- **Need to familiarise with technology** → need to be trained → may need to work harder
- **Health risks** → technology could be dangerous
- **New skills may be gained** → which may lead to higher pay → greater opportunities

## Impact of technology on customers

- **Better service** → as more work done by machines
- **Lower prices** → as lower total wage bill
- **Inferior service** → because of lower morale of employees
- **Higher prices** → to pay cost of machines
- **No effect** → as customers do not appreciate differences in service

## Apps (Applications)

**Definition:** Pieces of software designed for a specific purpose and for use on smartphones and tablets.

## Social Media

**Definition:** Involves websites and applications which allow users to create and share information, ideas and interests with other individuals, communities and networks.

## Video Conferencing

**Definition:** The use of computers to provide a video link between two or more people.



## Web Chat

**Definition:** Simple means of communicating in real time using only web browsers such as Firefox or Internet Explorer.

## E-Commerce

**Definition:** Involves the buying and selling of goods and services via the internet.



## Purchasing materials using e-commerce [buying on the internet]

### Advantages:

- ✓ **Can see images of products** → can compare many products
- ✓ **Prices of many sellers can be compared** → on one computer
- ✓ **No need to travel to suppliers** → so costs saved
- ✓ **Can pay online** → may save bank charges
- ✓ **May be cheaper** → because seller costs lower
- ✓ **Wider choice** → from many sellers
- ✓ **Order 24/7** → more convenient for business owners

### Disadvantages:

- ✗ **Goods not inspected** → to see if goods meet the need
- ✗ **Images may be misleading** → so quality difficult to judge
- ✗ **Delays** → in receiving goods → if goods need to be returned
- ✗ **Possibility of fraud** → if goods not sent → when paying
- ✗ **Technical issues** → e.g. reliability, speed
- ✗ **Convenience/easier** → than possibly having to drive miles to purchase the item

## M-Commerce

**Definition:** Mobile commerce involves buying goods and services through handheld mobile devices such as smartphones.

## Benefits of creating customer records using a database

- **More effective data handling** → sort and search for customer records quickly → inputting the data
- **It is easy to make changes** → save your work and print it out again
- **Can create reports** → print out records and store hard copies
- **Can create mail merge** → speed up sending correspondence via letters
- **Marketing** → creating customer profile and loyalty scheme



## Why would customers be concerned by the introduction of new technology?

### The customers:

- **Delays in service** → consequences of this
- **Better service** → as more work done by machines
- **Lower prices** → as lower total wage bill for the business
- **Inferior service** → because of lower morale of employees
- **Higher prices** → to pay cost of machines
- **No effect** → as customers do not appreciate differences in service

## Supply Chain



### Procurement

**Definition:** Involves obtaining or buying of goods and services from an external source. These are to be used in the production process or are to be sold on.

### Supply Chain

**Definition:** A complex system of businesses, people, activities, information and resources involved in moving goods and services from source to customer.

### Warehouse

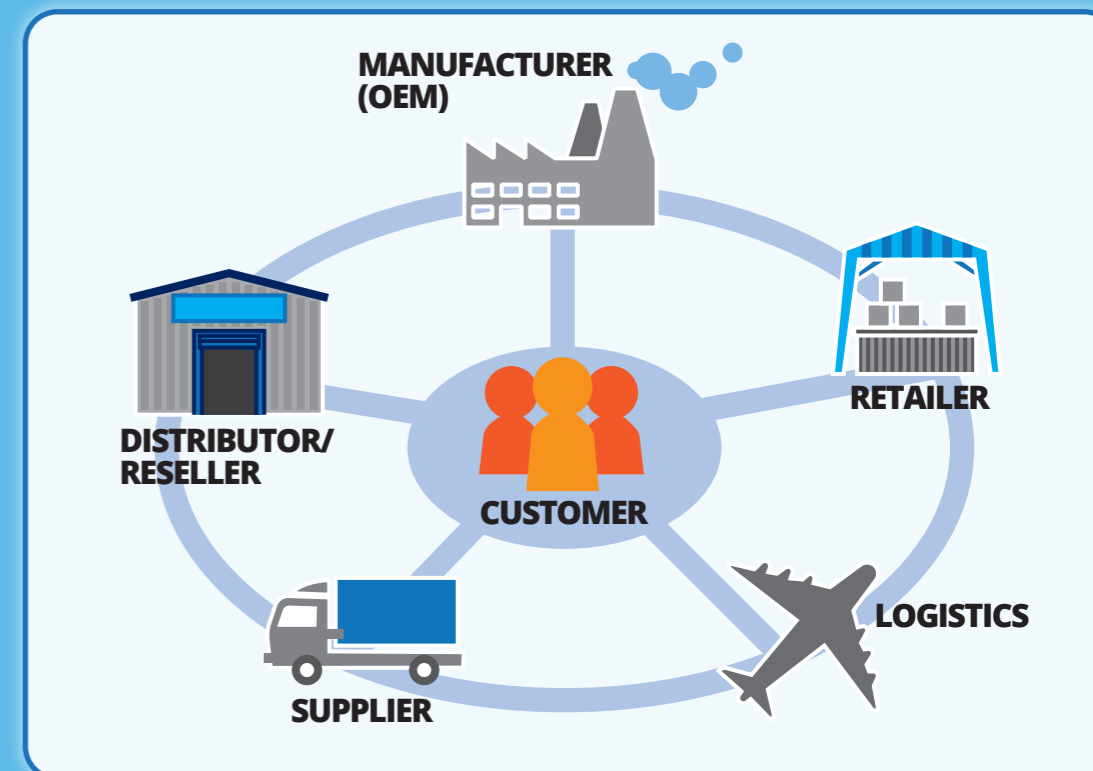
**Definition:** A place where resources or finished products are stored before they are sold.

### Why Supply Matters

- **Customer satisfaction** → businesses need stock to be delivered on time so that they can meet their own customer requirements → they will not run out of supplies or be unable to produce or sell
- **Costs** → if suppliers can produce efficiently this will help reduce the costs of the business → enables it to provide its products at a better price → increases its own profit margins
- **Quality of finished goods** → if a supplier provides good quality products this can help with the reputation and quality of the business → it will not have problems with defects and returned items
- **Reliability** → if suppliers can produce and deliver quickly and reliably, a business can hold relatively little stock because it can be replaced easily → this reduces stockholding costs

Suppliers can cause problems for businesses if:

- their deliveries are late
- their prices are high or keep changing
- the quality of the products they supply is poor



### Choosing Suitable Suppliers

The choice of suppliers is a critical one for businesses because it will affect the success of what they do.

The choice will involve a number of factors:

- **Cost**
- **Quality**
- **The range of products that can be supplied**
- **Speed of delivery**
- **Flexibility of the supplier** → in terms of the quantities that can be produced and the times of deliveries
- **Reliability** → e.g. the ability to deliver within a certain time slot
- **Reputation** → what have others said about working with this business
- **Payment terms** → e.g. how long does the business have to pay
- **The contract terms** → e.g. what financial compensation would be paid if deliveries were late
- **Behaviour of suppliers** → concerned about the ethics of the suppliers behaviour such as how they treat their staff → this could affect the business' own reputation

## Logistics

**Definition:** Involves the management of the movement of goods from where they are to where they are needed: often between the manufacturer and the consumer.

Logistics is the flow of materials:

- **Into a business from suppliers**
  - Delivery and transportation from suppliers
  - Correct quantity and quality on time
- **Within a business as raw materials are transformed into a finished product**
  - Warehousing and stock management
  - Inventory of supplies and finished goods
  - Packaging of finished goods
  - Security of supplies and finished goods
- **Out of a business to reach the customer**
  - Transportation and distribution of finished products



Any disruptions in any part of this flow will mean that a business is unable to match supply to demand.



## Stock

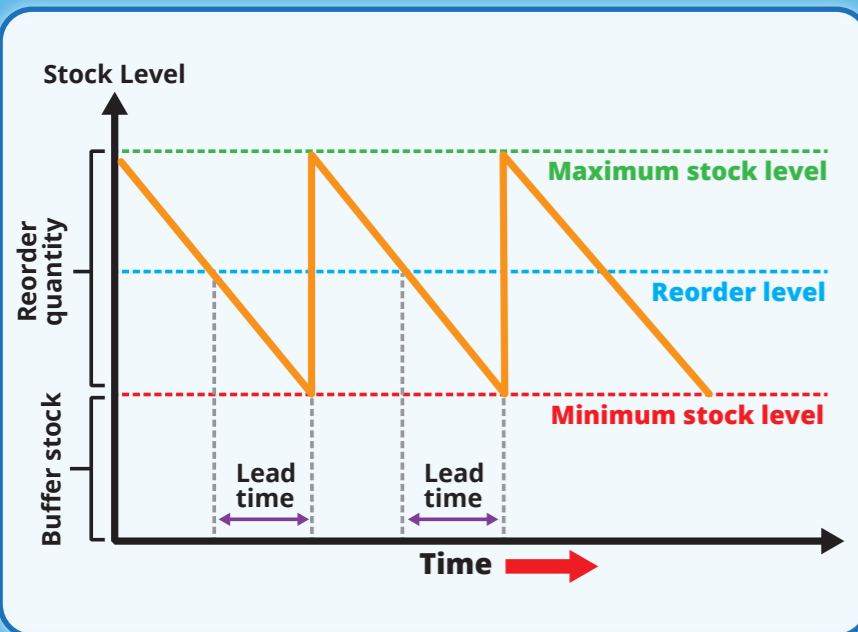
**Definition:** Raw materials that have not yet been used or products that have been made, but not sold.

It can also include semi-finished goods or finished goods.

Holding stocks are important in order to:

- have supplies to keep production going
- have stocks to meet customer demand.

Stock Control Method	Just-in-Case (Traditional)	Just-in-Time
<b>Definition</b>	<ul style="list-style-type: none"> <li>• Holds stock just-in-case there is a delay from suppliers or a sudden unexpected increase in demand.</li> </ul>	<ul style="list-style-type: none"> <li>• Requires businesses who adopt the idea to keep their stocks of finished goods and / or materials to a minimum.</li> <li>• Goods will only be produced when orders are received and / or materials are only received when they are needed.</li> <li>• This process saves storage costs and avoids having assets tied up in stocks.</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>✓ <b>Stock usually available</b> → not held up by bottlenecks / delays in delivery</li> <li>✓ <b>Bulk purchases</b> → discounts available → lower prices → lower costs</li> <li>✓ <b>Quality of stock can be checked</b> → longer time available</li> <li>✓ <b>Stock can be kept in correct environment</b></li> </ul>	<ul style="list-style-type: none"> <li>✓ <b>Stock only bought when needed</b> → no need for warehouse → lower storage cost</li> <li>✓ <b>Materials generally in good condition</b> → straight from manufacturer</li> <li>✓ <b>Up-to-the-minute materials bought</b> → based on current technologies</li> <li>✓ <b>Little waste</b> → only buying what needed → small surplus of stock in downturn</li> <li>✓ <b>Stock delivered straight to where it is needed</b> → no extra cost / reduced chance of damage</li> <li>✓ <b>Can reduce cash flow problems</b></li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>✗ <b>Need to find storage</b> → warehousing can be expensive → may be lost depending on other business</li> <li>✗ <b>Stock needs to be moved from where it is stored to factory</b> → expensive / greater chance of damage</li> <li>✗ <b>Labour costs</b> → involved in looking after stored goods</li> <li>✗ <b>Materials may deteriorate</b> → perhaps wrong environment</li> <li>✗ <b>Materials may become out-of-date</b> → technology means new material always being developed</li> <li>✗ <b>Downturn in business means high cost materials not needed</b> → cannot be resold → will not get outlay back</li> </ul>	<ul style="list-style-type: none"> <li>✗ <b>Depend on suppliers</b> → if they run out of materials → production may have to stop</li> <li>✗ <b>Delivery difficulties</b> → delays through weather / congestion / accidents</li> <li>✗ <b>No bulk buying</b> → deliveries more expensive → more need to be paid for → no economies of scale</li> </ul>



## Buffer Stock

**Definition:** The amount of stock held between the minimum stock holding and zero stock. Used in case of late deliveries or extra orders.

## Lead Time

**Definition:** The amount of time that elapses between placing an order and the delivery of that order.

## The relationship between the functional areas of a business and its supply chain

### Marketing

- Cost of raw materials and manufacturing to inform pricing decisions
- Product features and functions
- USP e.g. ethically sourced
- Quality of product → leading to brand loyalty and repeat sales
- Customer satisfaction
- Place available to end customer

### Operations

- Quality of supply will affect the quality of the product
- Frequency of delivery will affect the operations process

### Finance

- Cost of raw materials
- Payment terms negotiated with suppliers, impacting on cash flow
- Sales revenue
- Higher profit margins from increased efficiency, lower stock holding costs and less waste

## Where to Source Supplies

Locally v globally and less developed countries

### • Ethics

- Are suppliers paid a fair rate?
- Can ethical behaviour be tracked back through the e-supply chain e.g. working conditions or child labour?
- Impact on local economy e.g. jobs

### • Costs

- Do cost savings justify the uncertainties or risk to quality?

### • Logistics

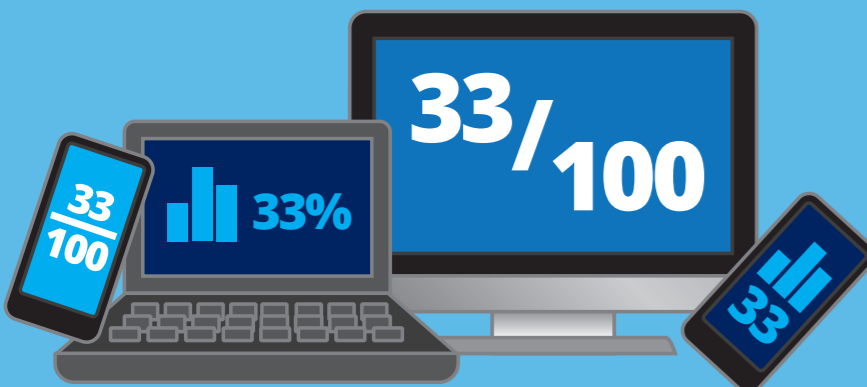
- Delivery time
- Risk of stock not arriving or being damaged



## How to Store and Distribute Supplies

This will depend on the:

- frequency and size of deliveries
- storage requirements e.g. security or special conditions such as refrigerated
- flow of materials through the production process
- distribution of finished goods
- right quantity and quality at the right time
- ability to match supply to demand to achieve customer satisfaction.





## Picking a Supplier

Suppliers will **affect unit costs** in the following ways:

- The price of the components directly affects the cost of a product.
- Discounts may be offered for buying in bulk.
- Appropriate payment terms will help businesses avoid bank charges.
- If a supplier can deliver reliably and regularly then stock holding costs can be reduced.

Suppliers will have a **direct influence on prices** as:

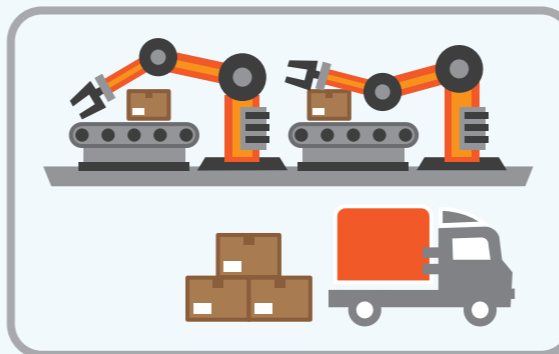
- High quality components allow businesses to charge a higher price.
- Reliability and speed of supply can add value to a product and allow a premium price to be charged.
- Reliability and quality will help a business establish a good reputation.

Suppliers will affect **reputation and customer satisfaction**:

- quality of raw materials entering the production process
- delivery of supplies on time
- flexibility to match supply to demand
- speed of delivery



### MANUFACTURING PLANT



### DISTRIBUTOR - 1



### DISTRIBUTOR - 2



### DISTRIBUTOR - 3



### RETAILER - 1

### RETAILER - 2

### RETAILER - 3

### RETAILER - 4



## Summary of the impacts a supplier can have on a business

Selecting the right supplier is important as they will impact on a business in the following ways:

- costs.
- quality of finished goods.
- price changes.
- customer satisfaction.
- reputation.
- sales.
- profits.

## The impact of supply decisions on stakeholders

**The owners of the business** → supply decisions impact on features such as quality of the products, the costs and the speed of delivery → this will affect sales, profits and dividends

**The local community** → transportation of products will impact on air pollution and congestion → choice of local suppliers can create jobs and help grow the community

**The suppliers themselves** → if a supplier wins a contract it may be able to expand and reward its own staff and investors → if they lose a contract then they may see sales and profits fall

**The government** → movement of products around the country will affect the pressure on infrastructure such as the road system. Choosing a UK supplier will boost the economy.



SUPPLIER



DISTRIBUTOR



RETAILER