

## Chapter 17 Production of goods and services

### Key terms

1. Productivity: the output measured against the input used to create it.
2. Buffer inventory level: the inventory held to deal with uncertainty in customer demand and deliveries of supplies.
3. Lean production: a term for those techniques used by businesses to cut down on waste and therefore increase efficiency, for example, by reducing the time it takes for a product to be developed and become available for sale.
4. Kaizen: a Japanese term meaning “continuous improvement” through the elimination of waste.
5. Just-in-time(JIT): a production method that involves reducing or virtually eliminating the need to hold inventories of raw materials or unsold inventories of the finished product. Supplies arrive just at the time they are needed.
6. Job production: is where a single product is made at a time.
7. Batch production: where a quantity of one product is made, then a quantity of another item will be produced.
8. Flow production: where large quantities of a product are produced in a continuous process. It is sometimes referred to as mass production.

## 1.The meaning of production

1.1 **Production**: the process transforms input into goods and services (output)

1.2 **Productivity**: is the output per an input. It also measures efficiency.

$$\text{Productivity} = \text{Output} / \text{Input}$$

### Method to improve productivity

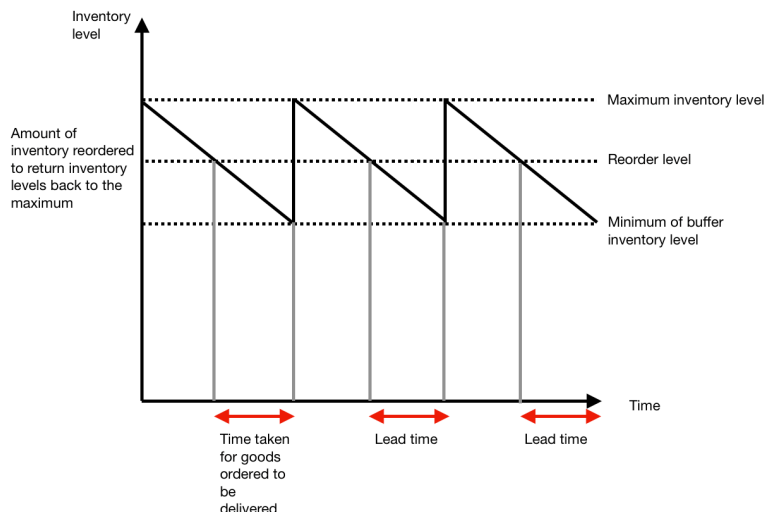
- Improving the layout of the machines in the factory
- Improving labour skills by training workers
- Introducing automation

### Benefits of increasing efficiency / productivity

- Increased output relative to the input required.
- Lower costs per unit.
- Fewer workers may be needed and lower labour cost.
- Higher wages for workers increase motivation.

**Why does a business hold inventories (Stock)** ; Inventories need to be controlled to ensure that there is always enough inventory to satisfy demand.

**The buffer inventory level** : is the inventory held to deal with uncertainty in customer demand and deliveries of supplies.



### **3. The concept of lean production**

**Lean production** : is a term for those techniques used by businesses to cut down on waste and therefore increase efficiency.

There are 7 types of waste that can occur in production and they are :

- **Overproduction**
- **Waiting**
- **Transportation**
- **Unnecessary inventory**
- **Motion**
- **Over-processing**
- **Defects**

#### **Benefits of lean production**

- Less storage of raw materials or components.
- Quicker production of goods and services.
- No need to repair defects or provide replacement services.
- Better use of equipment.
- Cutting out some processes to speed up production.
- Less money tied up in inventories.
- Improved health and safety leading to less time off work due to injury

#### **The concept of lean production**

1. **Kaizen**: meaning continuous movement and focusing to eliminate waste from ideas of workers who discuss together (not from technology) .
2. **Just in time**: is a production method that involves in reducing or eliminating the need to hold inventory of raw materials or unsold material.
3. **Cell production**: is where the production line separates each identifiable part of finished goods instead of having a flow or mass production line.

## 2.\*The main methods of production

2.1 Job production is where a single product is made at a time.

Advantages	Disadvantages
<ul style="list-style-type: none"><li>• It is most suitable for personal services or one-off products.</li><li>• The product meets the exact requirements of customers</li><li>• The workers often have more varied jobs.</li><li>• Often high quality products can charge higher prices.</li></ul>	<ul style="list-style-type: none"><li>• Skilled labour is often used</li><li>• Costs are higher since often labour intensive.</li><li>• Production often takes a long time.</li><li>• Products are specially made to order and any errors can be expensive.</li><li>• Material may have to be specially purchased leading to higher cost.</li></ul>

2.2 Batch production: is where quantity one product is made then quantity another items are produced (however, produce in similar products)

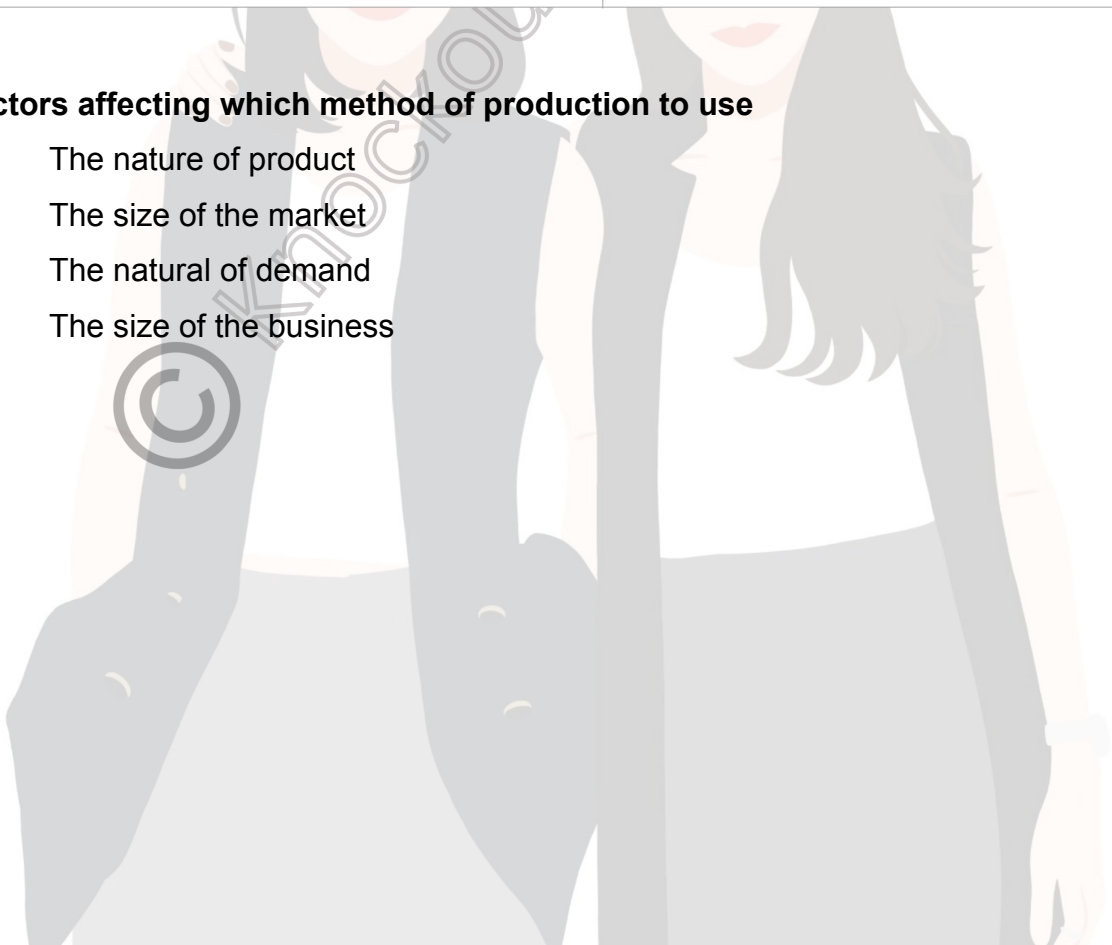
Advantages	Disadvantages
<ul style="list-style-type: none"><li>• It is a flexible way of working and production can easily be changed from one product to another.</li><li>• It still gives some variety to workers' jobs.</li><li>• It allows more variety to products which are identical.</li><li>• Production may not be affected greatly if machinery breaks down.</li></ul>	<ul style="list-style-type: none"><li>• It can be expensive as semi-finished or finished products will need moving.</li><li>• Machines have to be reset between production batches → waste time and output lost</li><li>• Warehouse space will be needed for stock material.</li></ul>

**2.3 Flow production:** is where large quantities of products are produced in continuous process. (For mass production)

Advantages	Disadvantages
<ul style="list-style-type: none"><li>• Higher output and standardize</li><li>• Costs are kept low.</li><li>• Capital-intensive ⇒ reduce labour cost and increase in efficiency.</li><li>• Economies of scales ⇒ average cost will be lower.</li><li>• Automated production lines can operate 24 hours a day.</li><li>• Goods are produced quickly and cheaply.</li><li>• No need to move from one part to another area. ⇒ save time</li></ul>	<ul style="list-style-type: none"><li>• It is boring system ⇒ little job satisfaction</li><li>• There are significant storage requirements.</li><li>• Higher cost of capital.</li><li>• If one machine breaks down the whole production line will have to be halted.</li></ul>

**Factors affecting which method of production to use**

- The nature of product
- The size of the market
- The natural of demand
- The size of the business



<b>Advantages and disadvantages of new technology</b>	
<b>Advantages</b>	<b>Disadvantages</b>
<ul style="list-style-type: none"><li>• Greater productivity</li><li>• Greater job satisfaction as routine and boring jobs are now done by machines.</li><li>• Increasing skills for labour since labour need to work with capital.</li><li>• Better quality of products.</li><li>• More accurate from using computers to monitor demand and inventory.</li><li>• Quicker communication and reduced paperwork</li><li>• Better and quicker making decisions</li></ul>	<ul style="list-style-type: none"><li>• Increasing unemployment.</li><li>• Requiring a higher fund from keeping updated technology.</li><li>• Low job satisfaction to employees.</li></ul>

