

Product Lifecycles

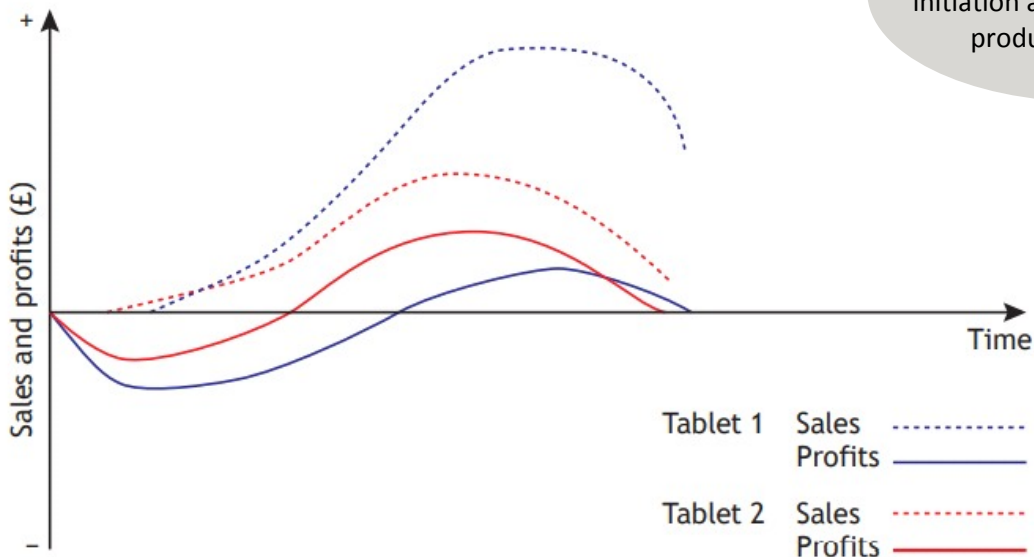
Stage	Description	Sales & Profits
Introduction	Product is launched onto the market. Product is heavily advertised and sales begin to increase.	Sales are low and costs are high. Very little, if no, profit.
Growth	The product has gained greater awareness and sales grow rapidly.	Sales grow rapidly and profit begins to increase.
Maturity	Sales are at a peak and the product is well known in the marketplace. Extension strategies might be used at this stage to keep sales at a peak.	High profits.
Decline	Sales decline as newer and better products are introduced into the market. The product is no longer wanted. Product is eventually withdrawn.	Profits fall and a loss might be incurred eventually.

Sales and Profits

The graph below compares the sales and profits of two tablets. **Tablet 2** is the commercially viable product as it has:

- a reduced lead time compared to tablet 1
- less time in negative profit compared to tablet 1
- sales which start earlier and last longer
- a longer time in profit

Lead Time
The time between the initiation and completion of a production process.



Ensuring a product is kept competitive in the market:

- Reduce the price to improve sales
- Use special offers
- Increase marketing/advertising
- Celebrity endorsement
- Use alternative or cheaper materials
- Purchase components from more economical suppliers
- Use more efficient manufacturing processes
- Increase personalisation, eg. colour choice
- Minor changes to functionality
- Changes to aesthetics of product or packaging

One off production - only one product is made at a particular time. This could be a prototype or a one off object. One off production takes a long time and often means it is expensive. A classic product could be a mobile phone prototype, a one off specialist product, handmade items, etc.

Batch production - A small quantity of the product is made. This is when a series of products which are all identical are made jointly in either large or small numbers.

Mass production - A large number of the product is made on a production line. Many hundreds of the product could be made. This is often called repetitive flow production. This product is often quite reasonably priced due to the large scale production techniques used.

Continuous production - Many thousands of the product are made. The difference between this and mass manufacturing is that continuous production is on 24 hours a day. This kind of production means the product will often be quite reasonably priced.

Just in time production - Rather than producing goods and supplying customers from stock, JIT processes focus on producing exactly the amount you need at exactly the time your customers need it. This minimises waiting times and transport costs, prevents over-production, reduces capital tied up in stock and decreases product defects.

Factors which influence production methods:

- Volume of production
- Life expectancy
- Consumer demand
- Lead time
- Price of product
- Size, skill and flexibility of workforce
- Existing plant and machinery
- Investment
- Number and type of component parts
- Flexibility



Example:

Before deciding on a suitable production system for the kettle, the manufacturer would have to consider the number of kettles to be produced; how long the demand for the kettle will last; and the kettle's selling price. If there is a large continuous demand for the kettle, the manufacturer could decide to invest in tooling to mass-produce the kettle as they would be confident of making a profit. If the kettle had different models and variations, it may be more economical to invest in machinery that is more flexible so that different models can be made as orders come in in batches.

Methods to Improve Production

Just in Time (JIT)

A method of stock control that keeps cost levels to the minimum. As the name suggests, stock arrives *just in time* for it to be used in the production process and goods are only manufactured when a customer order is received.

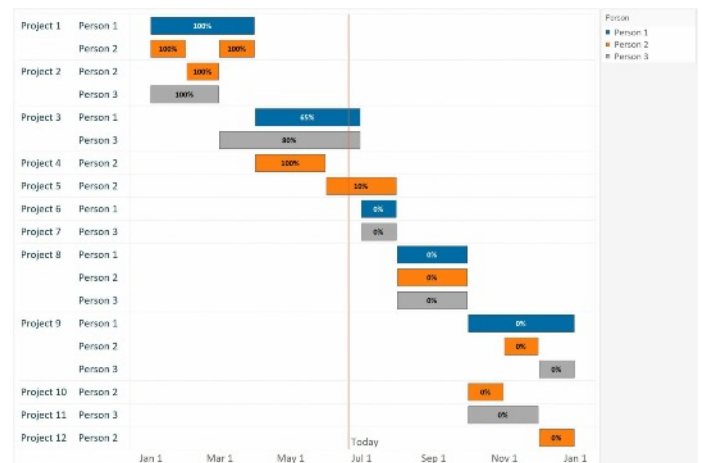
Advantages	Disadvantages
Less cash is tied up in stock	Suppliers may not be reliable so stock might not be delivered on time
Less storage and warehouse space is required	Less environmentally friendly as more journeys with less stock may be made
Wastage should be reduced	Cost of delivery may be higher as more often
Allows more flexibility - changes in trends will have a reduced impact	Discounts for any bulk buying might be lost

Gantt Charts

A chart that can be used to monitor progress against planned targets and actual progress. Key dates of a projects schedule will be recorded, including start and finish dates.

Advantages:

- structured project planning of production (JIT)
- clarity of complex tasks provided in one document
- improved communication between team
- better coordination of tasks
- improved time management
- increased productivity
- reduction in stock wastage
- less hours lost in production
- time management
- labour requirements
- manufacturing costs reduced
- storage of component parts reduced



Standard Components

A pre-manufactured product that is used in the manufacturing of another product. They can improve the production process as:

- They provide reliable components with known quality
- reduce assembly time
- reduce costs



Automation

Can improve production as workforce is reduced; reduces errors; increases production; has the potential to run 24 hours a day.

CAD/CAM

Provides a flexible manufacturing system, reduces workforce, increases efficiency and accuracy.

Jigs

Improve production as they reduce human error; hold, support and locate component parts; reduce the need for marking-out; increase productivity; increase reliability, accuracy and quality; reduce the need for skilled labour.