5.6 Production planning (HL)

Stock control charts

A stock control chart is an easy way to monitor and analyse stock levels and better control costs. A stock control chart records when stocks are delivered and when they are sold. It can then be used to make decisions about when to order new stocks and in what quantities. The main parts of a stock control chart are:

- **Maximum stock level.** This is the total amount of inventory a company wishes to hold, using current storage facilities.
- **Buffer stock level.** This refers to stock that is held just in case there is an unexpected order or late delivery. Buffer stock is a backup so that customers' needs can still be met if something unforeseen occurs.
- **Lead time.** This is the time it takes a supplier to fulfil an order; the difference between when an order is placed and when it is delivered.
- **Reorder level.** This is the point when new stock is ordered from a supplier. It takes into account the lead time and buffer stock level.
- **Reorder quantity.** This is the amount of stock that is ordered from a supplier.

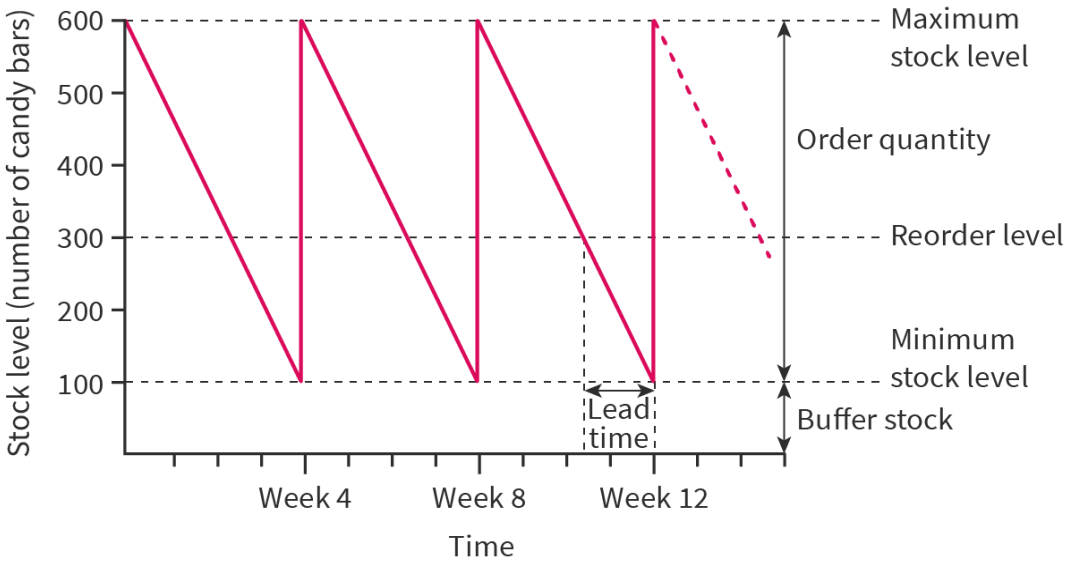

Figure 1. A simple stock control chart for a candy (sweet) shop. Notice the axis labels and labels of the main parts of the chart.

Figure 1 shows a stock control chart for a candy (sweet) shop that has the following stock conditions:

- The shop is only large enough to hold 600 candy bars; this is the maximum stock level. Each time a candy bar is sold, it is recorded on the chart. Sales are represented by the downward sloping parts of the chart.
- When the shop has only 300 candy bars left (the reorder level), it will place an order of 500 bars with its suppliers. 500 is the reorder quantity.
- The time it takes for the suppliers to deliver new stock is referred to as the lead time. It is measured on the *x*-axis from the time of reorder to the time of delivery. In this case, the lead time is just under two weeks.
- In weeks 4, 8 and 12 new stock is delivered. This is represented by the vertical lines on the chart.
- The owners of the candy shop never want to be in the situation where they have no candy bars left to sell. They have therefore set a minimum stock level of 100 bars.

The simple chart in **Figure 1** is useful for gaining an understanding of the main parts of a stock control chart. However, the reality is usually much more complicated. Late deliveries, seasonal demand and production delays create unpredictable stocks. At times, companies may hold a quantity of stock below their buffer stock level, or may even run out completely. Conversely, low sales levels can result in storerooms becoming full and the business having to find new places to keep unsold stock. **Figure 2** shows how this candy store stock control chart may look in reality.

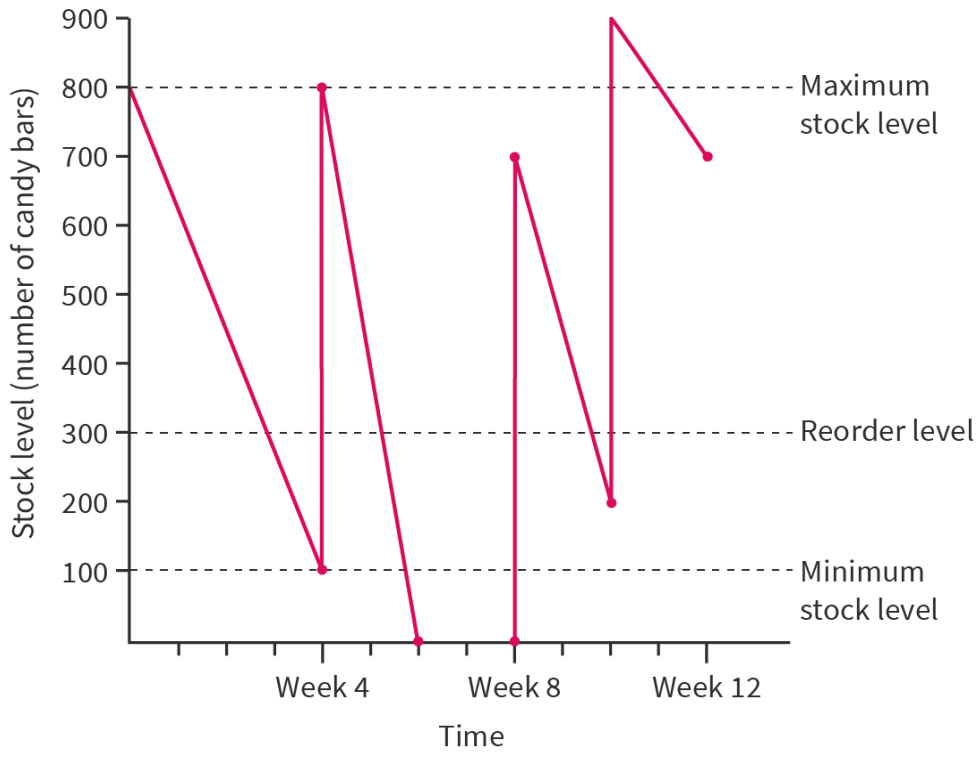

Figure 2. A more realistic stock control chart for the candy (sweet) shop.

Concept

Creativity

Technological innovation, including process innovation (Subtopic 5.8 (/study/app/y12-business-management-a-hl-may-2024/sid-351-cid-174702/book/the-big-picture-id-39044)), can improve stock control systems. Real time data gathering has enabled many businesses to manage their stock levels by analysing consumer behaviour patterns and forecasting future demand more accurately.

The use of computer systems and artificial intelligence (Subtopic 5.9 (/study/app/y12-business-management-a-hl-may-2024/sid-351-cid-174702/book/the-big-picture-id-39043)) has enabled some companies to use robotics within warehouses. Robots can track stock, locate products and select and move orders in order to aid inventory management.

Stock control management software can be used to manage stock, sales, orders and deliveries. Such systems can make stock control more efficient, improve communications between key stakeholders, reduce delays and improve delivery times. This can have a positive impact on customer service too.

Making connections

Artificial intelligence (AI) is a subject covered in Subtopic 5.9 (/study/app/y12-business-management-a-hl-may-2024/sid-351-cid-174702/book/the-big-picture-id-39043). AI is being implemented by businesses to predict or forecast sales trends and demand, automate inventory management, analyse data to manage logistics, and use robots to monitor warehouse inventory. Thus, AI is a key piece of digital technology used to improve stock control and reduce the irregularities shown in **Figure 2**.

Activity

Learner profile: Knowledgeable
Approaches to learning: Thinking skills (transfer)

Questions

1. Use the information in **Table 1** to draw a stock control chart for 4 months (16 weeks), for the mushroom stock of Giovanna's restaurant. Mushroom use is expected to be constant over the time period.

Table 1. Mushroom stock for Giovanna's restaurant.

Opening stock	600kg
Maximum stock level	700kg
Minimum stock level	200kg
Reorder quantity level	300kg

Reorder quantity	500kg
Quantity used per week	100kg
Lead time	1 week

2. Explain some consequences of poor stock control for the restaurant.

3. Explain how a delay of two extra weeks for delivery might impact the restaurant.