



Inventory management in the supply chain

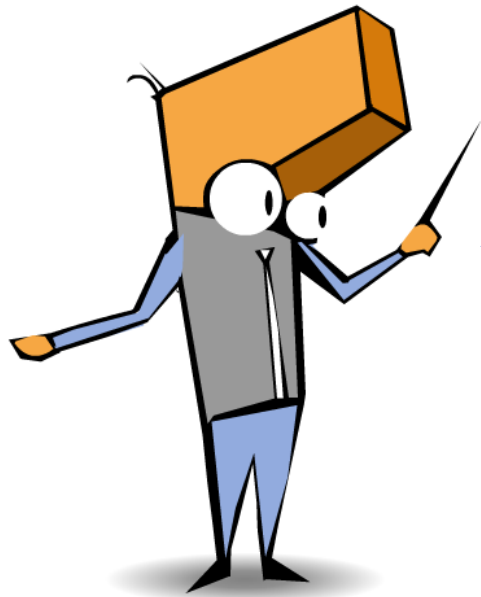
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Basic concepts

Learn the theoretical basics



Is holding inventory in the supply chain necessary?

In what form can inventory be held in the supply chain?

In a supply chain, inventory (or stock) is defined as any tangible goods held in each location in a supply chain in an amount exceeding the present demand of the location.

What is meant by an amount exceeding the present demand?

Present demand is demand met within a period allowing for replenishing the stock, i.e. obtaining it from an external or internal supplier (e.g. the company's production department).

Let's imagine a real-life situation. Theoretically, you can go to the shops every day and buy your groceries in very small amounts. Most probably, however, this isn't what you do. You usually buy more so that there's enough for longer. You may have many reasons to do that. Reasons for this sort of behaviour in business are one of the main topics of this lesson.



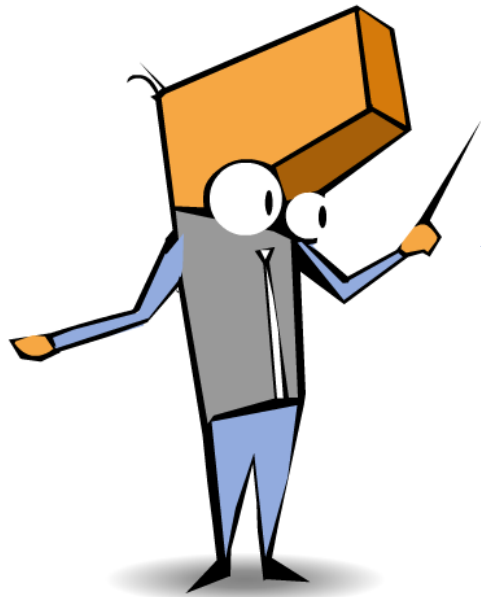
In a supply chain, inventory (or stock) is defined as any tangible goods held in each location in a supply chain in an amount exceeding the present demand in each location.

Does inventory only include tangible goods?

As defined above, it does. Note, however, that there is the concept of "supply of time" in logistics.

A business has it if it doesn't need to hold an inventory of finished goods to carry out its sales activities. This is the case when the lead time is so long that the company has time to produce the goods or purchase them from its suppliers. Whether or not this is possible depends on the decoupling point adopted in the supply chain.

To learn more about decoupling points, go to the lesson with that title.



Remember that the closer inventory is to the end consumer, the greater its value.

The reasons in the sales market

- The need to ensure sales continuity in conditions of high volatility of sales.
- The need to ensure sales continuity in conditions of high volatility of supply (fluctuations in delivery volumes, uncertainty as to delivery dates)

Reasons in the supply market

- Long and fluctuating times of deliveries from the supplier
- Periodic unavailability of raw materials (e.g. no seasonal fruit available outside the period they normally occur in)

Internal reasons

- The desire to achieve economies of scale – to minimise transport costs per one unit of the purchased goods
- The desire to obtain discounts from suppliers for a one-off purchase of a large quantity of goods
- High rejection rate in the manufacturing process
- Purchasing department organised to carry out periodic inventory checks.
- Production levelling (production levelled over a long period of time results in holding seasonal inventories to meet peak seasonal demand)

The reasons for holding inventory are related to the classification of inventory. In the classic approach, we distinguish among different types of inventory based on three criteria.

Classification
according to place
of origin

Classification
according to
place of origin

Raw materials – materials
to be used in the manufacturing process

Classification
according to reasons
for holding

Work-in-process inventory – materials
that are being processed

Classification
according to pace of
turnover

Inventory of finished products or goods

Spare parts and auxiliary materials

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Classification
according to place
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Classification
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Classification
according to pace of
turnover

Classification
according to the
reasons of
holding

Cycle stock – stock used between replenishment cycles

Safety stock (buffer stock) – provision for increased demand or a longer replenishment cycle

Seasonal stock – provision for seasonal increase in sales to ensure that demand can be satisfied

Speculative inventory – goods purchased at a bargain to be used when their market price increases

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Classification
according to place
of origin

Classification
according to pace
of turnover

Fast-moving inventory – goods and products that regularly sell in large quantities

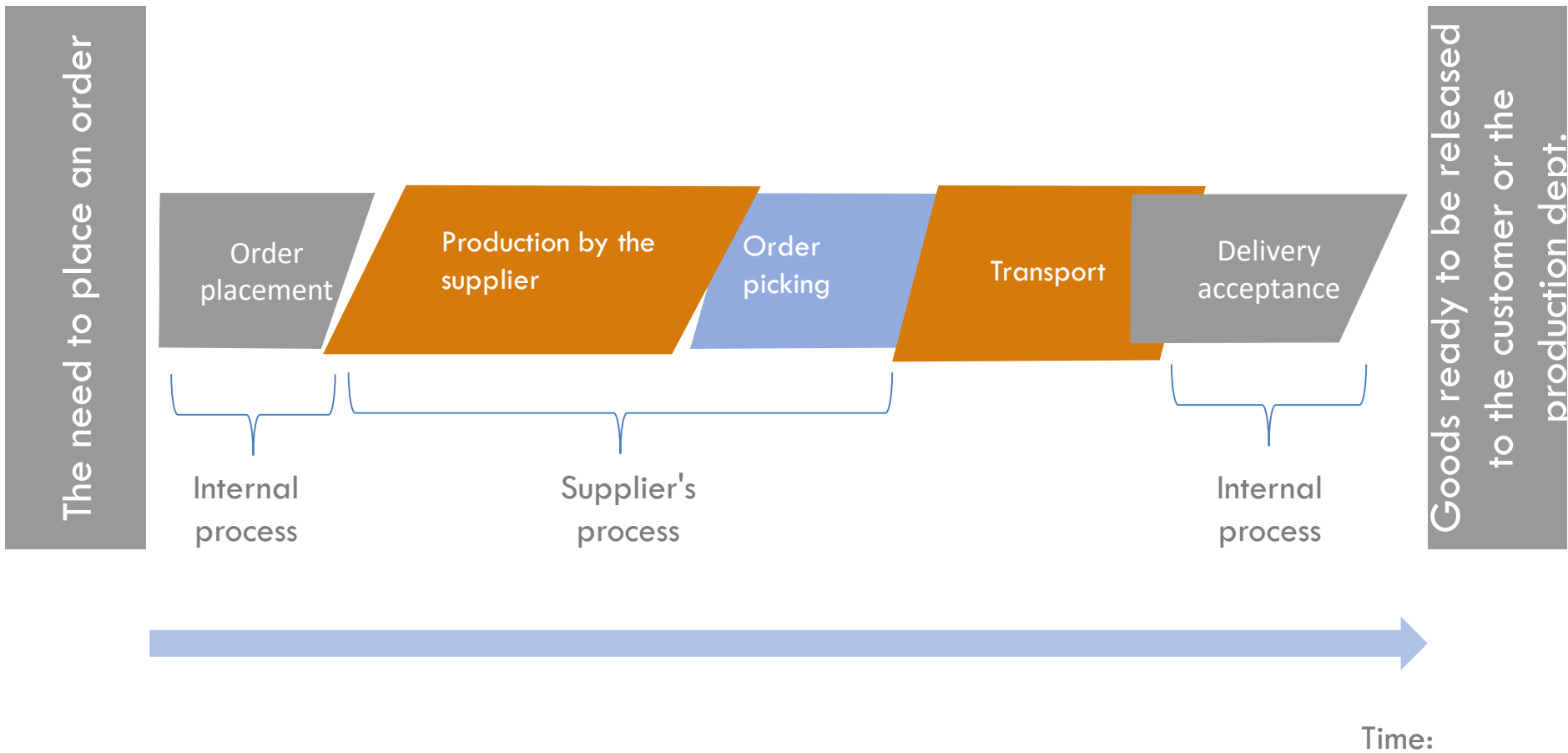
Classification
according to reasons
for holding

Slow-moving inventory – goods and products selling intermittently or in small quantities

Classification
according to pace of
turnover

Non-moving inventory - excess or emergency inventory

One important concept in inventory management is the stock replenishment cycle. This is the period of time from the moment a need arises to place an order to the moment when it is possible to release the ordered goods to the production department or to an external customer. The replenishment cycle time is denoted as T .



Advantages of holding inventory

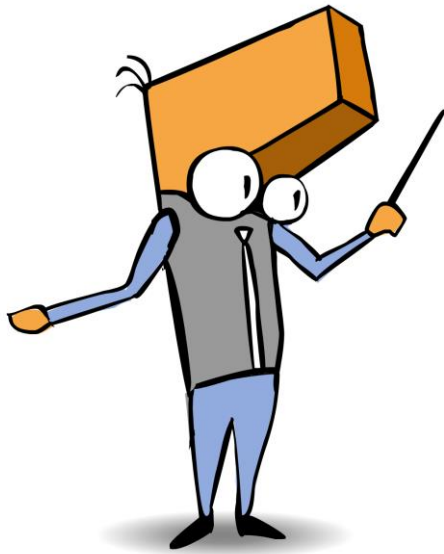
- Sales continuity is ensured
- Production continuity can be maintained
- Reduced purchasing costs per unit of purchased goods



Disadvantages of holding inventory

- The costs of holding inventory:
 - Warehouse space rental costs
 - Warehouse operation costs
 - Depreciation
- Reduced availability of funds for other investments
- Borrowing costs involved in purchasing inventory

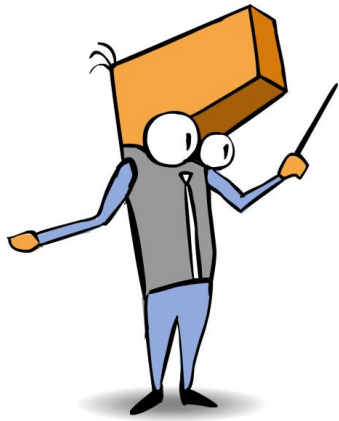




What to do to minimise
inventory in the supply chain?

Best Practice in inventory management in a supply chain

- **Demand management** – minimising the current and seasonal volatility of demand
- **Demand forecasting** – increasing predictive accuracy by using forecasting methods and monitoring forecasting errors
- **Sharing information in the supply chain** – exchanging information on forecasts, planned downtime, special orders
- **Inventory checks in each location in the supply chain** – ongoing control of recorded inventory and its verification against the actual amounts held
- **Purchasing stabilisation** – evaluation of suppliers, selecting suppliers that ensure the timely execution of orders
- **Stabilisation of internal processes** - reduction of the rejection rate in the production processes, shortening of the ordering process



Let's recapitulate the basics
of inventory management in the supply chain:

- Inventory is held in the supply chain mainly for reasons related to the volatility of demand and instability of supply
- Other major factors include processes within the organisation
- Holding inventory has its benefits and downsides.
- Knowledge of inventory management methods and support tools allows for reducing inventory without affecting its availability to customers



This course focuses on material inventory management in the supply chain in conditions of uncertain demand. This means that we're going to look at a business situation in which the company offers its customers products from stock on hand.

If you want to learn about managing the flow of materials for an order, read about MRP.

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End
of the lesson