

An introduction to inventory optimisation

How to optimise your inventory management to improve profitability and competitiveness.



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Staying competitive in an ever-changing marketplace

Businesses that want to grow and maintain profitability have a lot to think about. Regardless of industry, supply chain position, or location, one thing is certain – competition is intensifying and staying profitable is getting more challenging.

The global trading landscape is more uncertain than ever, with daily economic, political, and social change. Technology is also driving online purchasing, automation, and connectivity at a dramatic rate.

To stay competitive, many businesses are seeking ways and opportunities to cope with such dynamic marketplaces and high-risk environments.

Some are focusing on enhancing their online user experience or investing in solutions to manage omni-channel sales and pricing.

Others are modernising their back-office systems, such as

their enterprise resource planning (ERP) platforms, to improve operational efficiency and supply chain transparency.

Fewer, however, are looking at ways to ensure they have the right products in stock to meet customer demand. This strategic approach is known as ‘inventory optimisation’. Inventory optimisation is being embraced across a range of industries, from automotive and energy to retail and electrical wholesale.

In this eGuide, we’ll introduce the concept of inventory optimisation and explain the fundamental theories that underpin it.

The **inventory** optimisation challenge

For many stock-holding businesses, having a robust supply chain is critical to meet market demand in a profitable way.

Inventory optimisation processes should be at the heart of every good supply chain to ensure you have the right products in your warehouse to fulfil orders. Too little stock will impact customer satisfaction and meeting revenue targets. Holding too much stock will tie up working capital and affect profitability.

In this eGuide we will:



Introduce you to the concept of inventory optimisation



Delve into the importance of effective inventory optimisation



Show you how to optimise your inventory processes using inventory optimisation methodology

An introduction to inventory optimisation

Inventory optimisation is a relatively new concept and can often be confused with basic inventory management processes.

Inventory management is the business process responsible for ordering, managing, storing and moving inventory.

As an element of supply chain management, inventory management supervises the flow of goods from manufacturers to warehouses and onto the relevant sales channels.

In contrast, inventory optimisation is the art of balancing high service levels with the lowest possible inventory investment. It allows businesses to ensure product availability while reducing inventory costs and minimising the risk of excess stock.

This is done by forecasting demand and managing supply variables while dynamically adjusting stock rules and inventory parameters.

Inventory optimisation aims to have the right products, in the right place at the right time – as efficiently and cost-effectively as possible.



While most ERP platforms and warehouse management systems (WMS) offer good inventory management functionality, few provide inventory optimisation capabilities – and they're basic at best.

Complementing inventory management with inventory optimisation is helping businesses improve competitiveness.

Here's how...

More and more stock-holding businesses are turning to inventory optimisation software that can be easily integrated with their existing ERP to offer a more advanced solution.



The importance of effective inventory optimisation

Inventory optimisation affects three fundamental areas of your business:

1. Product availability

Product availability is the number one factor to success. When an order comes in it's imperative the products are in stock to keep customers happy and coming back time and again. Being out-of-stock can often lead to lost sales, not only of the out-of-stock item, but of associated items or complete 'baskets'.

With customers working to tight deadlines, more and more are demanding same or next day delivery. At the same time, businesses are expanding their sales channels to offer online ordering, adding a new layer of transparency across many industries. If you can't fulfil a customer's order because you're out of stock, it's easier than ever for them to find a competitor who will.

A simple stockout can lead to lost immediate and future sales. Ensuring stock availability can prevent this from happening.

2. Positive customer reviews and brand reputation

Consumers (B2C and B2B) are increasingly relying on the opinions of others before making a purchase. More than ever, buyers are turning to customer references and online reviews before committing to working with a business, signing a contract, or procuring goods.

Customer reviews are also closely linked to purchasing behaviour because they influence customers precisely when they're actively looking to spend money (Forbes). Therefore, you must deliver a great customer experience that leads to a positive review and a positive impact on your brand.

Effective inventory optimisation is the backbone of making this happen. It ensures you have the products to keep customers happy, and you can deliver them to meet their service expectations.

3. Inventory optimisation supports operational efficiency

Many businesses mistakenly think they need to carry excessive stock to reduce the risk of stockouts and poor service episodes. While this may sound logical, here are three key reasons why this isn't the case.

1. Working capital

The more working capital you invest in stock sitting in a warehouse, the less you have for other areas of your business, such as running promotions or trialling new products. Tying up too much cash in inventory can also negatively affect a balance sheet.

2. Warehouse costs

Holding inventory costs money. The more you hold, the more warehouse space you need, which often comes at a premium.

3. Risk of excess and obsolete stock

If the stock you're holding doesn't sell, the excess can quickly turn obsolete. Selling off excess stock usually involves heavy discounting, whilst obsolete stock may need to be written off altogether. Both scenarios will damage your profit margins. With money tied up in existing excess stock, you may lose the ability to adjust your stock portfolio to capitalise on market trends.

Three stages to inventory optimisation

01

Demand forecasting

- Demand types and the product lifecycle
- Seasonality, trends and promotions

02

Stocking policies

- Stock classification
- Multi-location inventory planning

03

Replenishment

- Replenishment calculations
- Automatic daily order proposals



Demand forecasting

The first stage of inventory optimisation is statistical demand forecasting.

It's very common for business systems (ERPs and WMS) to use a basic moving average formula to calculate demand forecasts:

$$\text{Future average demand per month} = \frac{\text{average demand over X months}}{X \text{ months}}$$

However, this simple equation has many drawbacks.

For starters, it only looks backwards and does not consider future variables, such as seasonality or trends. It also fails to consider a product's place in the product lifecycle and consequential demand type.

Both are critical factors in producing accurate forecasts, and are central to forecasting when using inventory optimisation methodology.

Let's look at these in a little more detail.

Demand types and the product lifecycle

Every item in your warehouse will move through a unique product lifecycle (from launch to growth, maturity and decline). As they do so, the demand for each item will change, e.g. it will have a different demand type. For example, a product in its growth stage could have a high level of consistent demand, whereas a product reaching the decline stage could have more volatile demand as sales drop off.

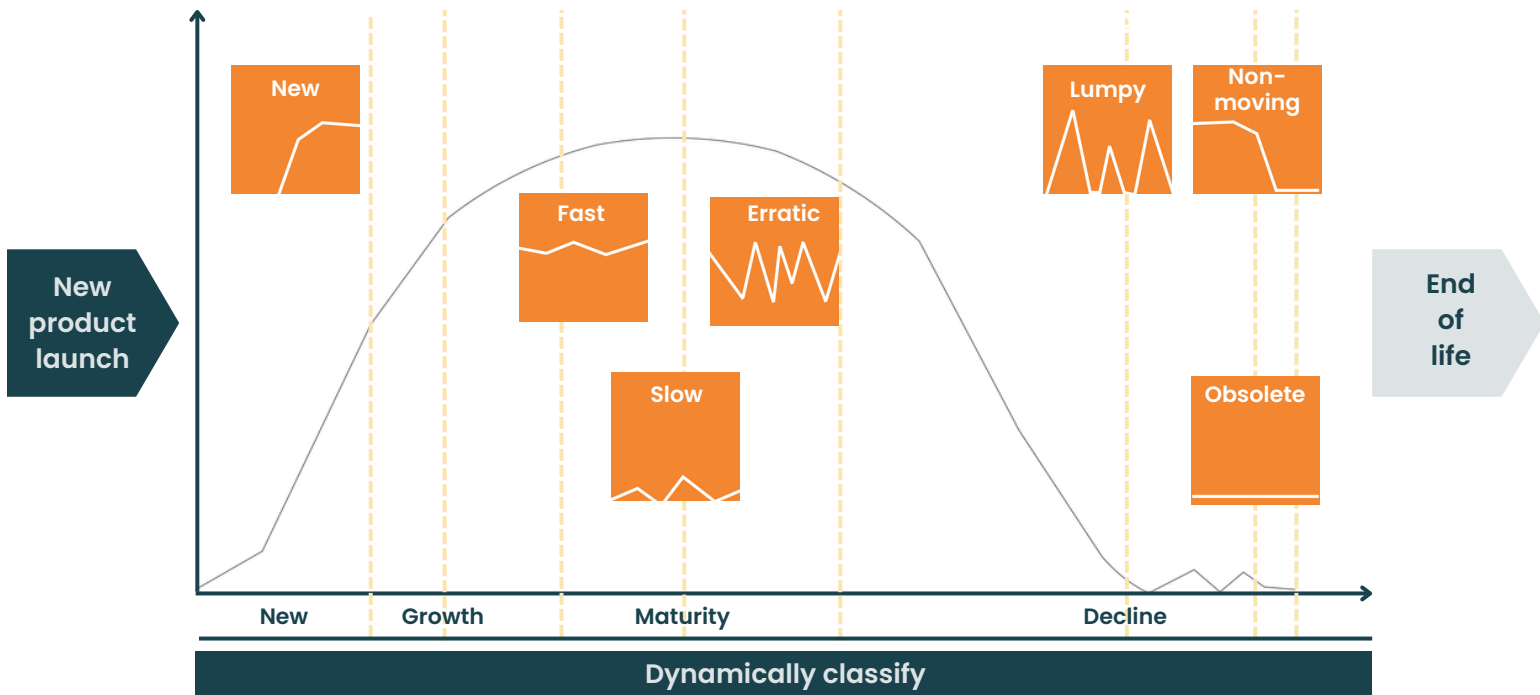


Diagram: Product lifecycle and demand types, as classified by EazyStock

Each demand type has a different deviation from its mean average demand, e.g. ‘lumpy demand’ rises and falls with lots of deviation from the mean, whereas ‘fast demand’ has a lot less deviation from the mean.

Demand types are important because they dictate the statistical algorithm to forecast demand. For example, a different algorithm should be used to forecast demand for a product with ‘lumpy demand’ (moving average) to a product with ‘fast demand’ (double exponential smoothing).

By analysing historical sales and demand data for each item in your warehouse, you can build a picture of current demand types, group them accordingly and apply the most suitable forecasting model.

Seasonality, trends and promotions

Seasonality, trends, and promotional activity all impact demand. With a base demand laid out, you should then consider seasonality, trends and promotions.

Seasonality

You can identify seasonal patterns and adjust forecasts by reviewing historical sales data. This helps prevent shortages during your peak seasons and expensive surpluses as demand tails off.

Trends

It's important to understand the difference between a seasonal peak or trough (as above) and a rising or falling trend over time and adjust calculations accordingly to ensure forecast accuracy.

Promotions

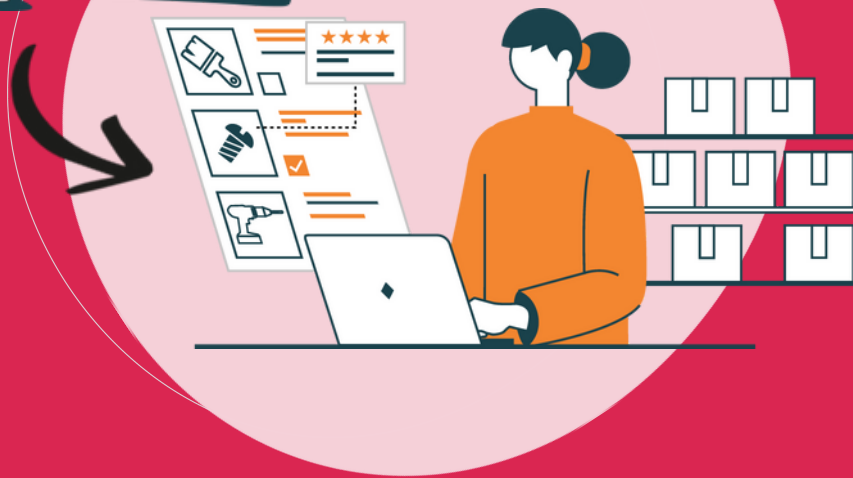
Special offers, discounts, and long-term price drops all impact the overall demand for your products. It's easy to add these qualitative factors to the forecast manually.

Statistical demand forecasting is critical to estimate future demand across all your sales channels accurately, so you can ensure product availability and help drive customer satisfaction.

This information can also be shared with your suppliers. This will help them improve their service to you and plan deliveries more strategically, helping improve cost-efficiency and service levels.



Stocking policies

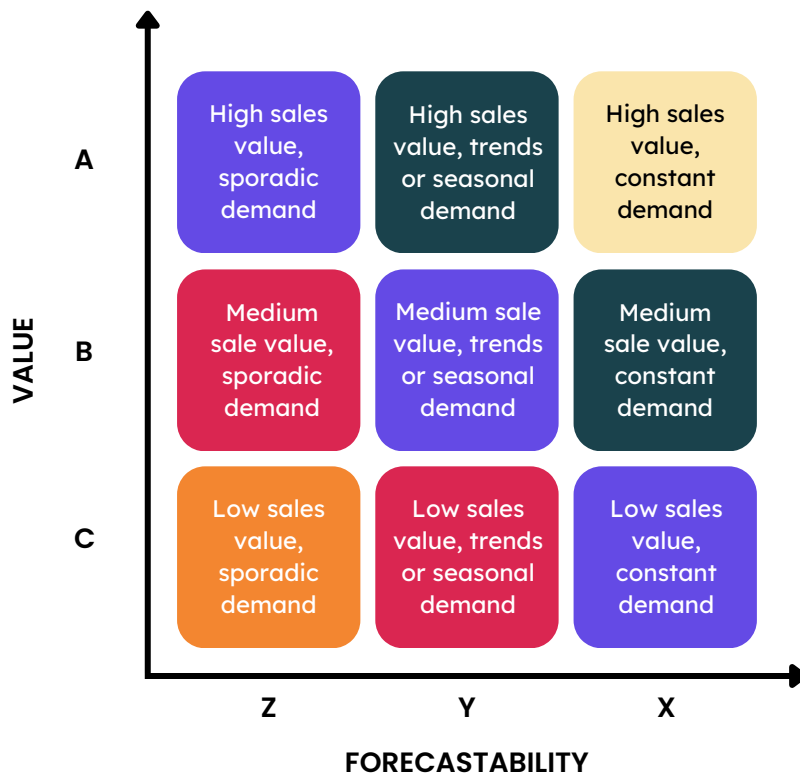


Stocking policies

The second stage of inventory optimisation is setting optimum stocking policies. The main objective of setting stocking policies is to prioritise the stock you carry so you hold more of the items that are important to the business.

A simple inventory classification model, such as ABC analysis, will let you group products based on their value. You can then stock more category 'A' items with a good profit margin versus 'C' items that bring less value to the business.

For a more sophisticated approach, XYZ analysis segments items based on their value and demand variability. For example, the likelihood that demand will vary from the forecast.



Adding another level of insight allows you to make more informed ordering and stocking decisions. For example, it makes sense to treat AX items with a constant demand differently to those with erratic demand (AZ items).

With inventory optimisation software, stock classification is even more advanced. For every SKU, EazyStock will account for its value and annual usage (VAU) (unit cost x sales volume), demand volatility and pick frequency (it makes sense to treat items that are frequently picked differently to those rarely picked).

The result is an inventory policy matrix with 243 varying stocking rules.

Whether you use ABC analysis, the XYZ model or your own inventory classification methodology, getting your stocking rules in place means you can set a service level target for each segment.

For example, high service levels are usually set for items picked more frequently with a lower VAU. These would be stocked well, as they are cheap to stock or sell, and you want to ensure their availability.

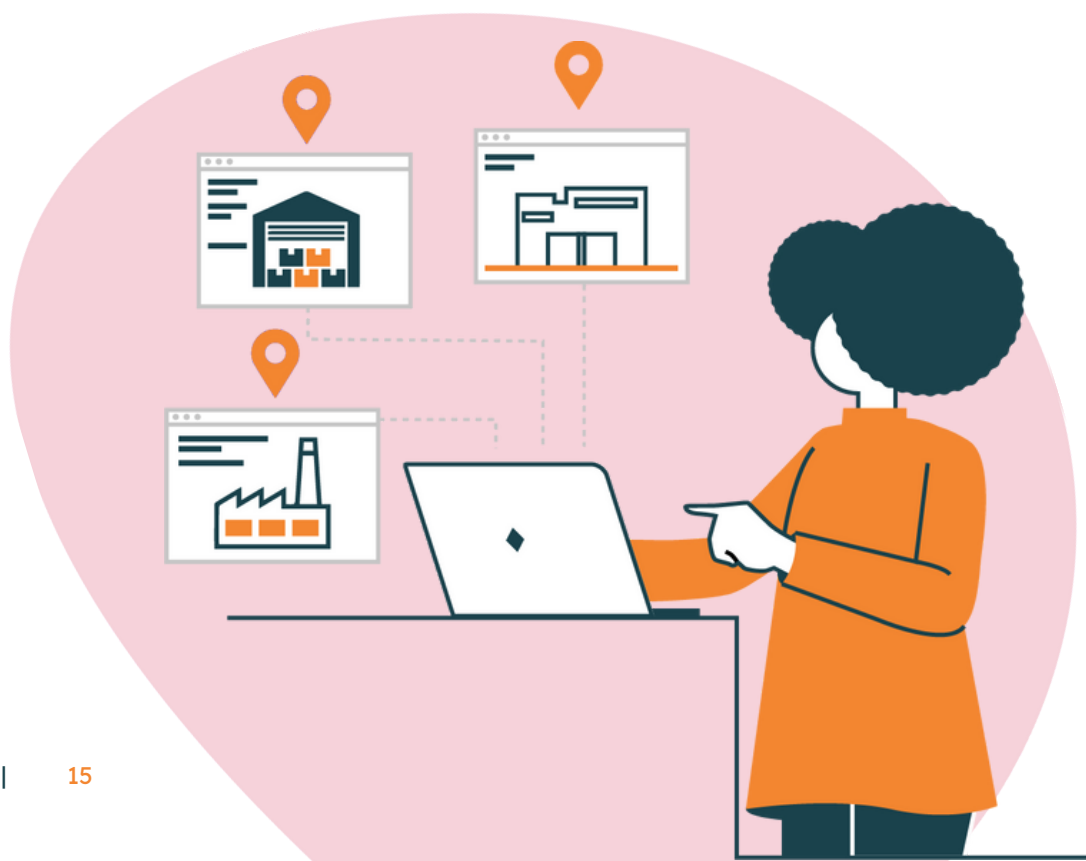
In contrast, high VAU items that are rarely picked may not even be stocked and could be fulfilled to order.

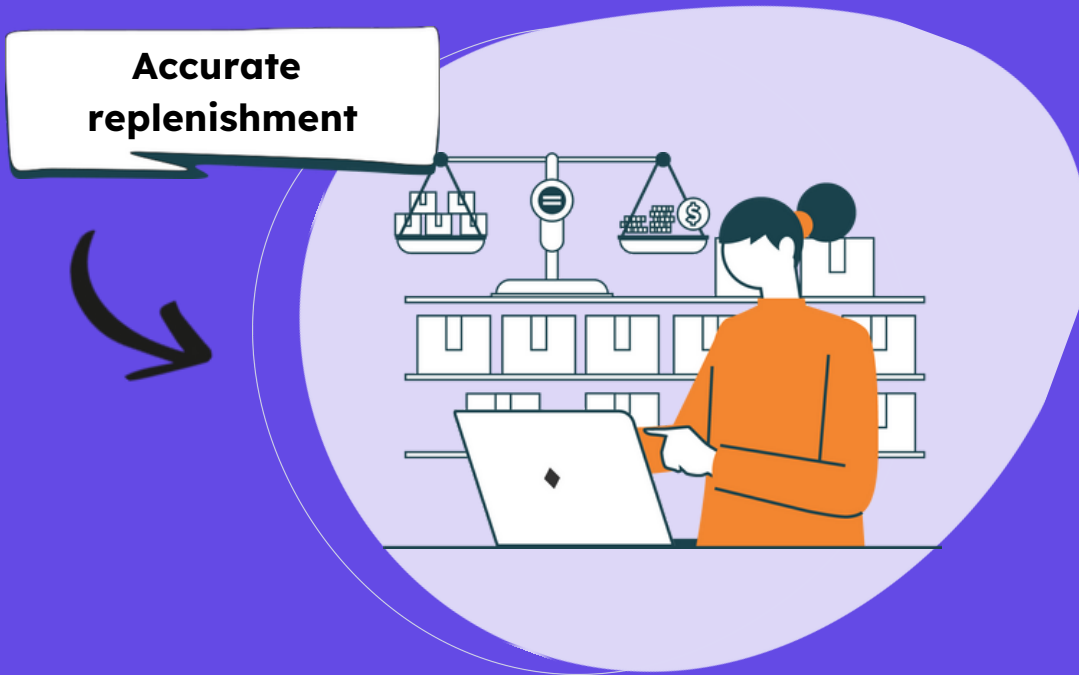
Multi-location inventory planning

Finally, if you have more than one warehouse, it doesn't matter how well you optimise your inventory levels if you store these items in the wrong locations.

Multi-location inventory optimisation is about distributing your inventory across your warehouses in the right quantities when needed. You can then move items from regions where demand is low to those where it's higher. Products are then available to ship to local customers as quickly and cost-effectively as possible.

Setting intelligent stock rules and service levels will allow you to manage your warehouse and order more efficiently and free up working capital for investment in other business areas.





Accurate replenishment

With demand forecasting and stocking policies taken care of, the final part of the inventory optimisation jigsaw is optimising your replenishment processes.

Central to any replenishment strategy is knowing how much stock to reorder and when to reorder it to cost-effectively meet demand.

With your service level targets set, the next step is calculating reorder points and quantities, and sufficient safety stock levels to hit them and prevent stockouts.

It's common for many businesses to use rules-based, linear methodology for replenishment calculations. This is usually because they use spreadsheets or an ERP system to crunch the numbers. For example, inventory planners will reorder either when they hit a fixed date or when stock drops to a specified level.

The amount they reorder is either a fixed amount or variable to meet a minimum or maximum stock capacity.

Unfortunately, rules-based calculations are a 'one-size-fits-all' approach when not all inventory items are the same! By definition, this approach will deliver the right amount of inventory for some items but too much or too little for others.

Consequently, managers will get stock imbalances that result in excessive inventory costs, impeded cash flow and poor or inconsistent service levels – all simultaneously!



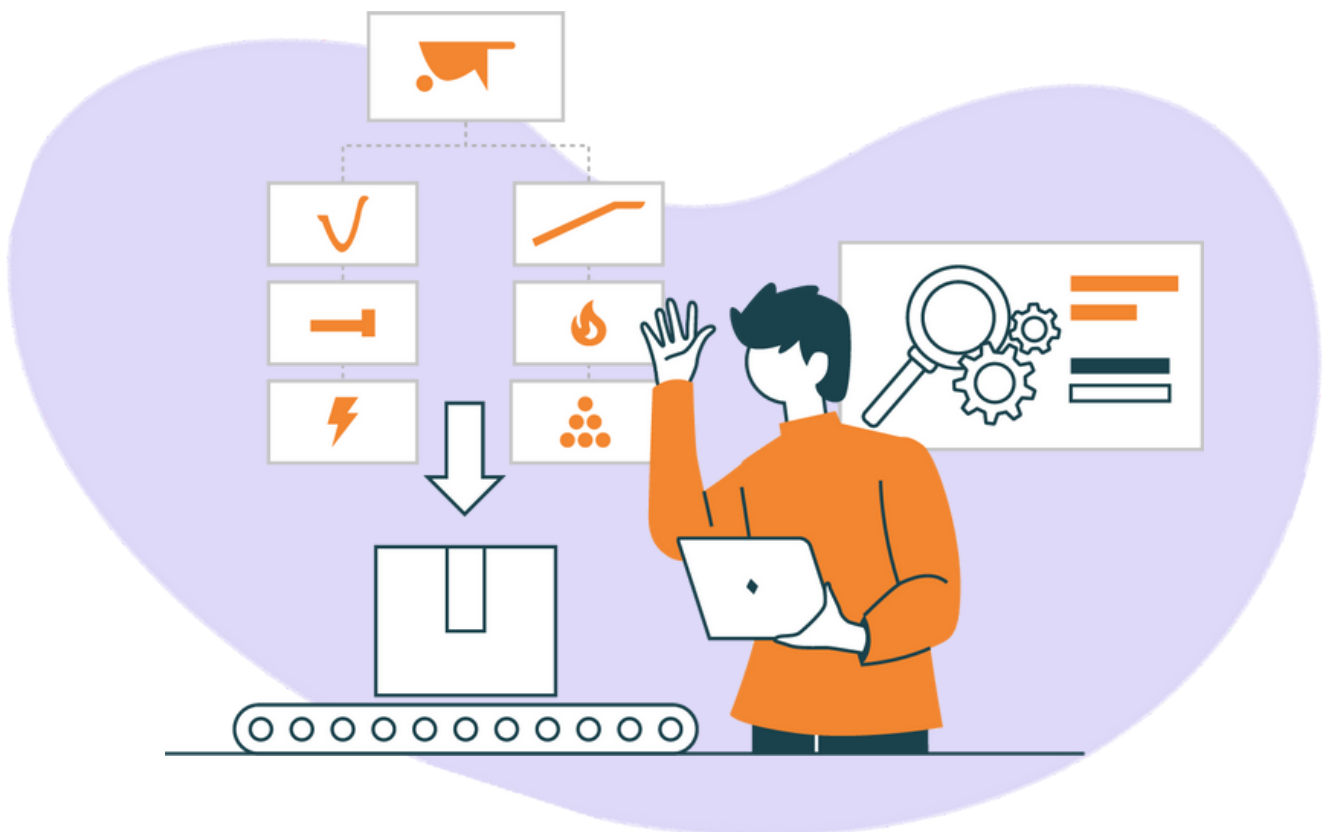
This means that safety stock (buffer stock) levels, reorder quantities and reorder points are all set based on the following variables:

- Required service level targets - to meet your fulfilment targets without holding excess stock.
- Demand forecasts and demand types - to account for different demand types at different stages in a product's lifecycle, seasonality, trends, etc.
- Supplier lead times - so you can ensure enough safety stock to cover any variability in lead times. For example, during the Chinese New Year, many Chinese manufacturers shut down production, which often causes significant supply disruptions for many western distributors who fail to account for it in their replenishment planning.
- Cost-effective order quantities - to weigh whether it's cheaper to buy in bulk with higher carrying and opportunity costs or aim for smaller regular reorders.
- Current stock levels, stock on order and in transit - for a complete overview of your stock levels, you also need to know what's coming to your warehouse from your suppliers. This may seem obvious, but most systems don't have this information available in an easily retrievable way.

There are many complex inventory optimisation formulas that you can use for replenishment calculations. However, these can get very challenging with only a spreadsheet as support. The alternative is to invest in inventory optimisation software that automatically calculates each formula and saves you valuable time.

Systems like EazyStock automatically generate daily order proposals, providing a list of recommended items and quantities to reorder. You can then decide whether to review the orders (which you may do for high-priority items) or simply automate the ordering process (which you may do for faster-moving, low-value items where the risk of excess stock is low).

By optimising your replenishment processes, you can be sure that you'll have the right products available to meet your expected demand. You'll be able to carry sufficient safety stock in case of unforeseen surprises without the cost of holding excess stock.



Inventory optimisation in practice

More and more businesses are utilising inventory optimisation techniques to make their inventory management processes more efficient and cost-effective - ultimately making them more competitive in challenging marketplaces.

However, undertaking inventory optimisation methodology without the right tools can prove complex and time-consuming. While some ERPs and WMS can offer a basic level of inventory optimisation functionality, investing in specialist inventory optimisation software will ensure you have the best support for the job.

Connect, forecast, optimise and order

Software like EazyStock is quick and easy to set up. It saves valuable time and resources, giving inventory management teams more time to analyse findings and make informed strategic decisions.



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**Don't just manage
your inventory,
optimise it!**

**Connect, forecast, optimise and order. Having
the right stock at the right time is easy,
with EazyStock**

Book a demo