

An introduction to inventory optimisation for the office supplies industry

Optimising inventory to
improve competitiveness



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The importance of stock availability

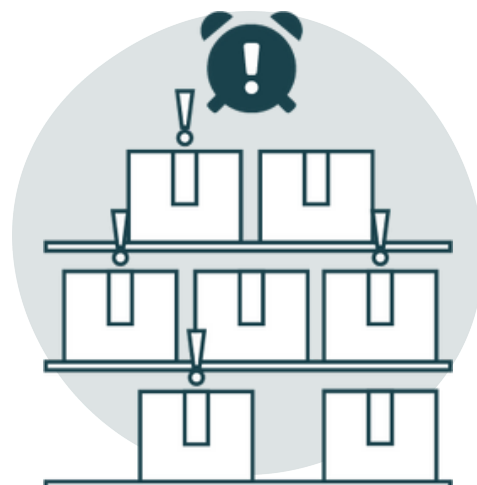
Stock availability is critical for any office supplies business – whether a manufacturer, wholesaler, reseller or retailer. It's imperative to have the right products in stock to fulfil every order to ensure returning customers.

With more and more customers wanting same or next-day deliveries, competitors expanding their product portfolios to offer more choice, and the online marketplace adding a new layer of transparency across the industry, times are tough.

Businesses wanting to maintain profitability have a lot to think about. Many focus on enhancing their online user experience or investing in solutions to manage omnichannel sales and pricing. Others are modernising their back-office systems to increase operational efficiency, such as their enterprise resource planning (ERP) platforms.

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', and is being embraced across a range of industries, from automotive and energy to retail and electrical wholesale.

In this eGuide, we'll introduce inventory optimisation and explain the fundamental theories and software functionality that underpin it.



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. Essentially, 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 – those that do are 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.



Three stages to inventory optimisation

Inventory optimisation software focuses on three critical inventory management functions:

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.

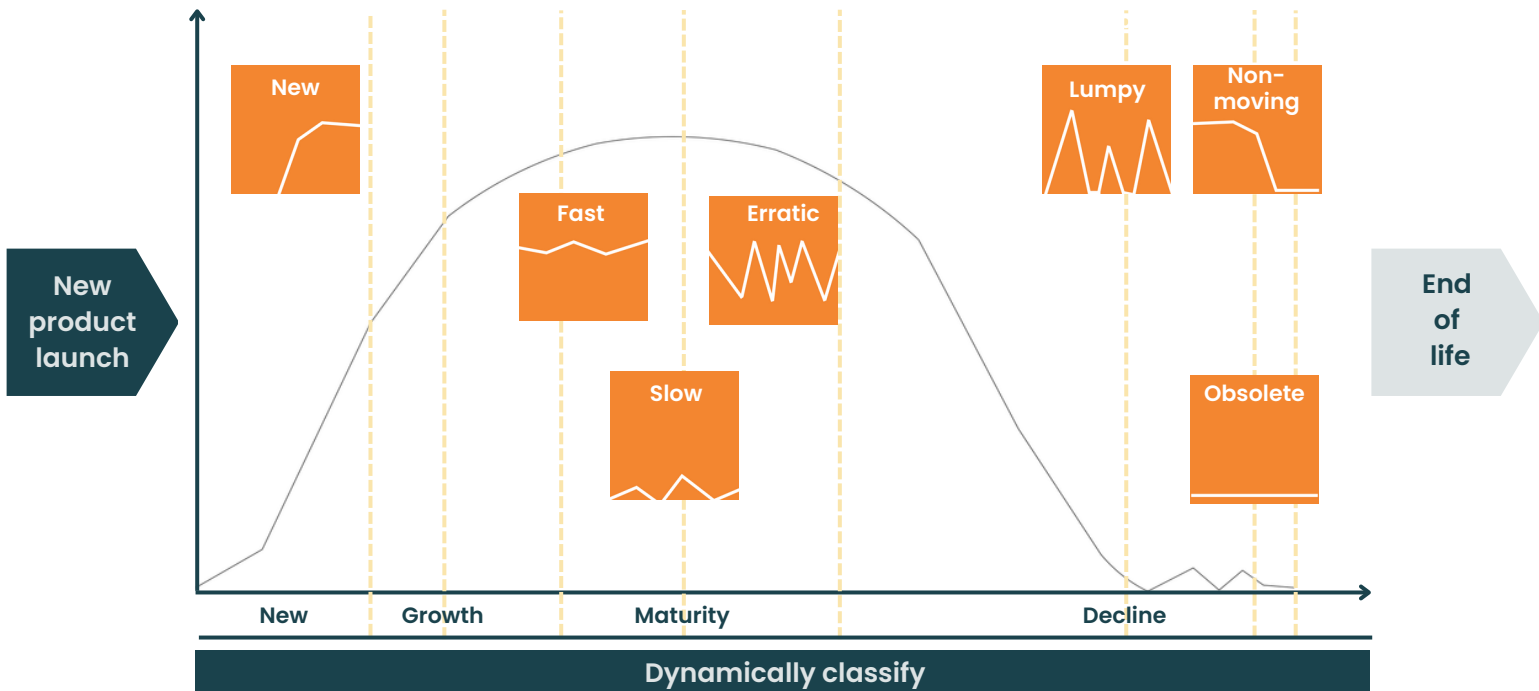


Diagram: Product lifecycle and demand types, as classified by EazyStock

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.

Inventory optimisation software analyses every SKU in your warehouse and assigns a demand type. Demand types are important because they dictate the right 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).

As products move along their lifecycle, the system will update the demand types and corresponding algorithms to maintain forecast accuracy.

Seasonality, trends and promotions

Seasonality, trends, and promotional activity all impact demand. With a base demand laid out, inventory optimisation then considers 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. Inventory optimisation software will easily spot the difference 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 next step in inventory optimisation is to determine your inventory policy, e.g. identify which products to stock and in what quantities.

Many businesses make the mistake of thinking they need to carry excessive amounts of inventory to ensure product availability. Here are three key reasons why this is not 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. Too much cash tied up in inventory can also hurt a company's liquidity.

2. Warehouse costs

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

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 excess stock, you may also lose the ability to adjust your stock portfolio to capitalise on market trends.

Businesses, therefore, need a way to ensure product availability without holding excessive amounts of stock. Enter inventory optimisation.

Stocking rules optimisation

The main objective of setting stocking rules is to prioritise holding more of the items that are important to the business.

Businesses without inventory optimisation software can use a simple inventory classification model, such as ABC analysis. ABC analysis groups products based on their value, so you stock more category 'A' items with a good profit margin versus 'C' items that bring less revenue to the business.

With inventory optimisation software, stock classification is much more advanced. For example, EazyStock will base stocking policies on several key criteria:

The value of annual usage (VAU) of each SKU – considers sales volume and the product's unit cost.

How often each SKU gets picked – distinguishes high-volume products with many requests (1000 requests for 1 unit) from high-volume products with low requests (2 requests for 500 units).

The demand volatility of each SKU – EazyStock automatically segments items based on their demand volatility behaviour and, therefore, how easy it is to forecast their demand.

The result is an inventory policy matrix that looks similar to this:

Picks class	DG	A1	A2	A3	A4	B1	B2	B3	C1	C2	
P0	0	N	94.00%	95.00%	96.00%	96.50%	97.00%	97.50%	98.00%	98.50%	99.00%
		L	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%
		S	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%
P1	1	N	94.00%	95.00%	96.00%	96.50%	97.00%	97.50%	97.10%	80.00%	99.45%
		L	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	98.40%
		S	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	99.25%	99.80%
P2	3	N	94.00%	95.00%	96.00%	96.50%	97.00%	97.30%	97.00%	97.40%	99.40%
		L	70.00%	70.00%	60.00%	60.00%	60.00%	70.00%	93.00%	95.00%	98.00%
		S	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	97.50%	99.25%	99.95%
P3	5	N	94.00%	95.00%	96.00%	96.50%	97.00%	97.30%	97.00%	97.40%	99.40%
		L	70.00%	70.00%	60.00%	60.00%	60.00%	70.00%	93.00%	95.00%	98.00%
		S	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	97.50%	99.25%	99.95%
P4	7	N	94.00%	95.00%	96.00%	96.50%	97.00%	97.30%	97.00%	97.40%	99.40%
		L	60.00%	70.00%	60.00%	60.00%	60.00%	70.00%	93.00%	95.00%	98.00%
		S	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	97.50%	99.25%	99.95%
P5	10	N	92.50%	93.50%	94.50%	95.50%	96.50%	97.50%	98.50%	99.50%	99.99%
		L	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%
		S	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%
P6	15	N	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%	95.00%
		L	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%
		S	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%
P7	24	N	97.80%	97.80%	97.80%	97.80%	97.80%	97.80%	97.80%	97.80%	97.80%
		L	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%
		S	99.90%	99.90%	99.90%	99.90%	99.90%	99.90%	99.90%	99.90%	99.90%
P8	47	N	99.90%	99.90%	99.96%	99.95%	99.96%	99.97%	99.98%	99.90%	99.99%
		L	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%	70.00%
		S	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%	90.00%

You’ll notice a percentage in each segment – this is a target service level KPI. Inventory optimisation methodology works on the basis that every SKU is given a service level target. Service level is another term for ‘stock availability’ and is the probability of not getting a stockout. It’s an important key performance indicator (KPI) that shows how well demand is being fulfilled.

High service levels are typically set for frequently picked items with lower VAUs. These would be stocked well, as they are cheap to stock/sell, and you want to ensure their availability. In contrast, rarely picked high-VAU items may not even be stocked and could be fulfilled to order.

Multi-location inventory planning

If you have more than one warehouse, you must ensure you optimise the stock you carry in each location for the local demand.

EazyStock automatically suggests the redistribution of excess inventory from one warehouse, where demand for a product maybe low, to another, where it is much higher. With **the redistribution functionality** you can avoid unnecessary purchases by using the existing stock before placing new orders.



EazyStock calculates management rules for every SKU in the inventory policy matrix to ensure you hit your service levels (more about this in the next section).

As a result, you can meet fulfilment rates or service level targets with the lowest possible inventory levels and, therefore, minimum investment.



Accurate replenishment

With demand forecasting and stocking policies taken care of, the final part of the jigsaw is knowing how much stock to reorder and when to reorder it, to meet demand in the most cost-effective way.

During implementation, EazyStock's replenishment parameters are configured to reflect the demand dynamics of the market in which you operate, accounting for variables such as seasonality, speed of innovation and demand volatility.

These replenishment parameters are then combined with the inventory policies and target service levels,

to determine the algorithms that EazyStock uses in its replenishment calculations.

Let's look at some examples of EazyStock's replenishment functionality:

Safety stock levels

This is the stock used to cover any uncertainty in demand and supply during your lead time. If an item has 95% target availability, the safety stock will be set so that the item will not run out of stock with 95% probability.

Reorder alerts

Most businesses (and ERP/WMS systems) will reorder either when they hit a fixed date or when stock drops to a specified level. However, these linear methods fail to account for supply and demand variables. In order to do so, EazyStock factors in demand forecasts (so ordering mirrors customer demand), safety stock levels (so stockouts can be avoided) and supplier lead times (so supplier holidays or busy periods are accounted for).



Recommended order quantities

The three traditional ways to set reorder quantities are ordering a regular fixed amount, varying the amount to hit a max/min capacity, or using the Economic Order Quantity calculation. Again, the calculations are one-dimensional and do not reflect supply and demand dynamics.

Instead, EazyStock automatically generates daily order proposals that consider demand forecasts, inventory policies, safety stock, current stock levels, reserved stock, products on the way, and backorders.

Ultimately the system provides a list of items and quantities to reorder. You can then decide whether to review the orders (which you may do for high-priority, slow-moving 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).

EazyStock will continuously analyse your stock to ensure each SKU falls into the correct demand type (based on its behaviour), and the appropriate area of the inventory policy matrix. This ensures it's always using the right inventory policy and replenishment parameters.

By optimising your replenishment processes, you can be sure that you'll have the right products available to meet your expected demand while also carrying 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.



eazystock

**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**

Contact us