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Introduction to inventory optimisation for ecommerce

Optimising inventory management to improve ecommerce competitiveness

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eCommerce: A booming industry

More and more businesses are embracing eCommerce as online sales channels continue building momentum. In 2023, global sales are expected to reach $6.3 trillion (Insider Intelligence), and UK eCommerce sales will hit 38.1% of total retail sales in the UK (Statista).

In 2021, the global B2B eCommerce market was valued at $17.9 trillion – five times the B2C market (Statista).

As the eCommerce marketplace becomes more crowded, businesses must be operationally fit and focused on delivering an exceptional online experience.

The stakes are high.

While there are exciting growth opportunities, competition is intense, and if you slip up, a competitor will take advantage.

The inventory management challenge

You may have already invested in sales and marketing software or eCommerce platforms to manage your products, pricing and customer service needs.

When focusing on optimising the front-end customer experience, it's easy to forget your back-end operations. Having a robust supply chain to ensure you can meet market demand is of utmost importance.

Inventory management is at the heart of every good supply chain. Ensuring you have the right products in your warehouse to fulfil orders is critical to customer satisfaction and meeting revenue targets. Holding too much stock hurts working capital and profits.

In this eGuide, we will:

Explain the importance of effective inventory management

Introduce you to the concept of inventory optimisation

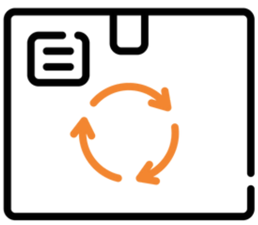
Show you how you can optimise your inventory processes to improve your eCommerce competitiveness

The importance of effective inventory management

If you're looking to establish your company as an online market leader in your industry, you need to understand inventory management's impact on three fundamental business areas:

Ensuring high service levels and product availability

Generating positive customer reviews and brand reputation



Not tying up working capital in stock

Let's look at each in turn...

Ensuring product availability

The internet makes it easier for customers to research their purchases and compare products. With so many online options, customers are very sensitive to how quickly they can receive their orders. If the timeframe doesn't suit, they will take their business elsewhere.

Product availability is the number one factor to success. eCommerce has helped spawn customers' expectations of instant gratification.

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 can.

Just one out-of-stock product can lead to a negative chain reaction throughout the supply chain.

For example:

If a building merchant is out of stock of fencing panels, they risk losing sales for:

- The primary items – the fence panels
- Companion products – concrete posts, bags of cement and gravel
- Future sales – the customer could stay with competitors who met their needs.

What seems to be a simple stockout of fence panels can lead to lost sales both immediately and in the future. Such scenarios can be prevented by ensuring stock availability.

Generating positive customer reviews and brand reputation

When trading online, customer reviews are critical to success, for a number of reasons:

1. In 2021, nearly 70 per cent of online shoppers typically read between one and six customer reviews before making a purchasing decision (Statista).
2. Reviews influence customers to buy at the precise moment they're actively looking to spend money (Forbes).
3. Search engines like Google and marketplaces like Amazon use customer reviews to rank merchants and products on their platforms.
4. Online reviews are instant and often uncontrollable, so your brand reputation is more exposed. This makes it easier to tarnish and harder to rectify online than offline.

With customer reviews so closely linked to buying processes and purchasing behaviour, delivering a great shopping experience with a quality product is imperative. This leads to a positive review and impact on your brand.

Effective inventory management is the backbone to making this happen, as it ensures you have the products to keep customers happy.

Avoiding tying up working capital in stock

As your eCommerce business grows, your supply chain will become more complex. Customer demand will increase, sales channels will multiply, and your supplier base will expand. To ensure product availability, it's critical to have a good inventory management strategy.

A common misconception is that drastically increasing inventory levels is the best way to ensure product availability. It sounds logical that holding more stock reduces the risk of stockouts and poor service episodes, but it isn't that easy for several reasons.

Working capital

Inventory is a form of working capital. The more money you invest in stock sitting in a warehouse, the less you have for investing in other areas of your business, such as sales and marketing, temporary staff or new product development. Too much cash tied up in inventory can also negatively impact a company's liquidity - a sign of financial concern.

Warehouse costs

The more inventory you hold, the more warehouse space you need, often at a cost premium.

Excess and obsolete stock

If your stock doesn't sell, it can quickly become obsolete. Selling off excess stock usually involves heavy discounting, while obsolete stock may need to be written off altogether. Both will damage your profit margins.

To deliver positive customer experiences, generate great reviews and maximise sales, you need to find a way to ensure product availability without holding excessive amounts of stock.

The answer lies in inventory optimisation.

An introduction to inventory optimisation

The final section of our eGuide looks at how complementing your inventory management processes with inventory optimisation techniques will help you improve eCommerce competitiveness.

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

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.

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

Here's how...

How to optimise your inventory processes

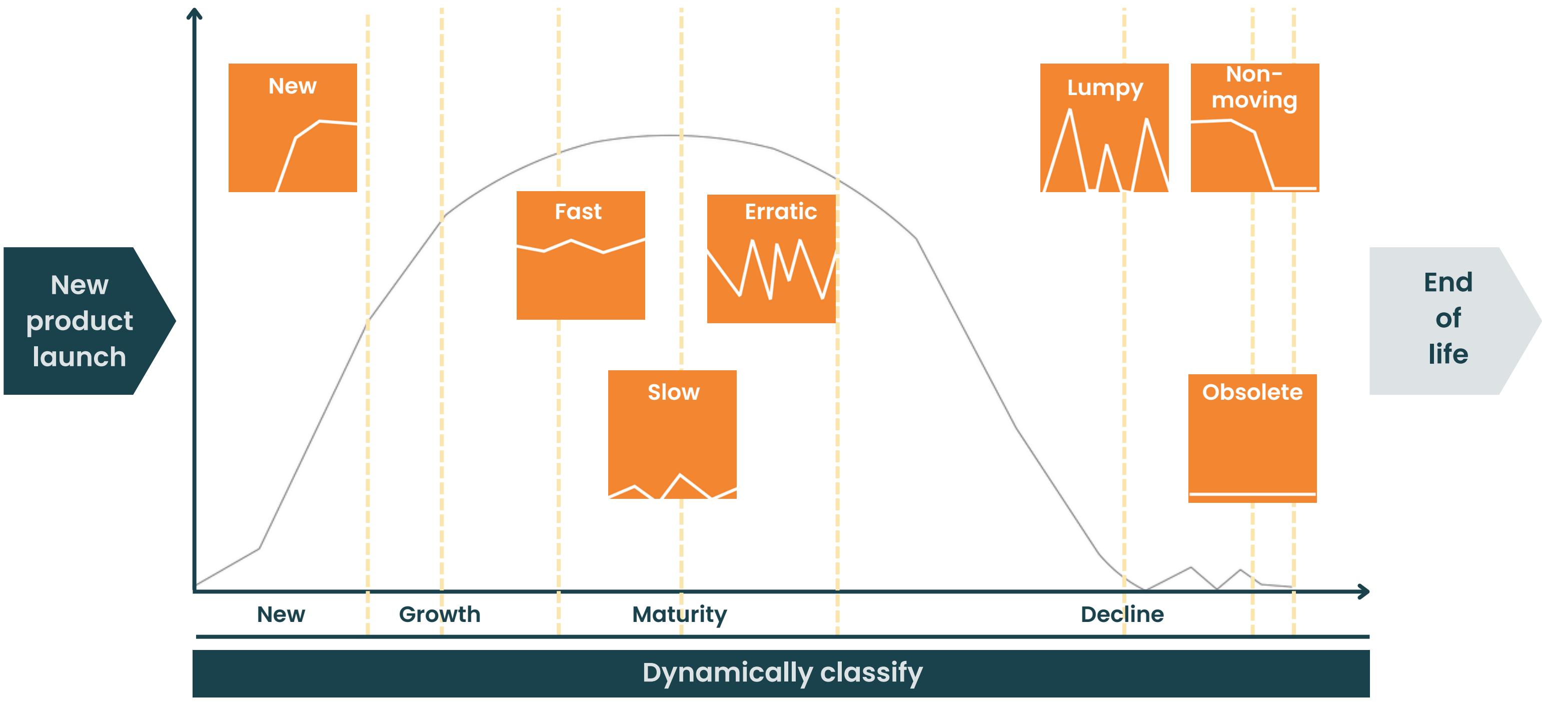
As an eCommerce business, you can introduce the following inventory optimisation strategies to help improve competitiveness:

1. Identify the demand types of each SKU in your warehouse

Every item in your warehouse will follow a different demand pattern depending on its demand type. As shown on the next page, the product will have a different deviation from the average demand for each demand type.

For example, ‘erratic demand’ rises and falls with a lot of deviation from the mean. Whereas ‘fast demand’ has a lot less deviation from the mean.

As your products move through the product lifecycle (from launch to growth, maturity and decline), they will move from one demand type to another.



By analysing historical sales and demand data for each item in your warehouse, you can build a picture of their current demand type and group accordingly.

Demand types are important as they change how you calculate future demand, safety stock and re-order points. For example, you'd potentially carry more safety stock of a product with erratic than slow demand. Equally, you'd forecast the demand for a new product (with no historical data) differently from a fast product with lots of steady data.

2. Forecasting demand

You must proactively anticipate future demand fluctuations to be one step ahead of the dynamic eCommerce marketplace. Demand forecasting will allow you to remain agile and quickly respond to changes in customer demand.

If using a spreadsheet, the simplest way to forecast demand is to use a moving average calculation, e.g.

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

Many ERPs and eCommerce platforms will also have similar, basic functionality. However, this simple equation has many drawbacks. For a start, it only looks backward and does not consider future variables, such as seasonal variances. Additionally, it does not consider your products' demand types (and the deviation from mean average sales), place in the product lifecycle, trends or seasonality.

Forecasting parameters must be highly reactive to short-term demand movements in a fast-moving industry like eCommerce. A better strategy is to identify your demand types, as previously discussed. Then use historical data and suitable, corresponding demand forecasting models to predict your future base demand.

Demand forecasting is particularly useful for omnichannel retailers. Sales across every channel can be aggregated to show overall demand for each SKU, then consolidated to produce economical supplier purchase orders.

3. Seasonality, trends, promotions and new products

Seasonality, trends and promotional activity all impact demand and must be factored into your demand forecasts.

With your base demand laid out, you should now consider the following:

Seasonality: Carefully review your products' sales data to identify seasonal trends and ensure you understand the impact festivals, such as Easter or Ramadan, and the weather have on market demand for your products. You don't want to lose sales due to shortages during peak seasons or have expensive surpluses as demand tails off.

Trends: Ensure you understand the difference between a seasonal peak or trough and a rising or falling trend. Adjust your calculations accordingly to ensure forecast accuracy.

Promotions: Add any promotional activities to the forecast. Special offers, discounts and long-term price drops will impact the overall demand for your product. Remember to aggregate the offers across all channels to provide your overall inventory demand for each SKU.

Demand forecasting is critical for estimating future demand across all your sales channels so you can ensure product availability and help drive customer satisfaction. Make sure you also share this information with your suppliers, so they can improve their service and plan deliveries more strategically to improve cost-efficiency and product availability.

4. Accurate replenishment

With your projected demand taken care of, you need to work out how to fulfil it cost-efficiently. As discussed above, it's a mistake to think you need to carry excessive inventory to ensure product availability.

Inventory optimisation techniques can help you calculate how much stock you order and when to order it so you have enough to meet demand without tying up too much capital. It will give you accurate re-ordering points and calculate sufficient safety stock levels to reduce your risk of stockouts drastically. Calculations can be quite complex, so we will keep things simple.

Here are a few key metrics to understand:

Service level

This is the probability of not having a stockout or not losing sales. Aiming for a 95% service level target is good practice, i.e. you'll fulfil 95% of your orders. When setting your service level target for a certain product, you need to consider the cost of holding the stock versus the cost of a stockout. The higher you set your service level, the more safety stock you'll need, increasing associated costs. Ensure your service level targets are realistic and meet the business needs.

Lead time

This is the time your supplier takes to deliver to your warehouse from when you raise the purchase order.

Safety stock

This stock covers any uncertainty in demand during your lead time. If an item has a 95% target availability, the safety stock should be set to not run out of stock with a 95% probability. A simple calculation for this is:

$$Z \times \sigma LT \times D\ avg$$

Z is the desired service level, σLT is the standard deviation of lead time, and D avg is demand average.

Re-order point

This is the point at which you re-order. In the simplest terms, this is the:

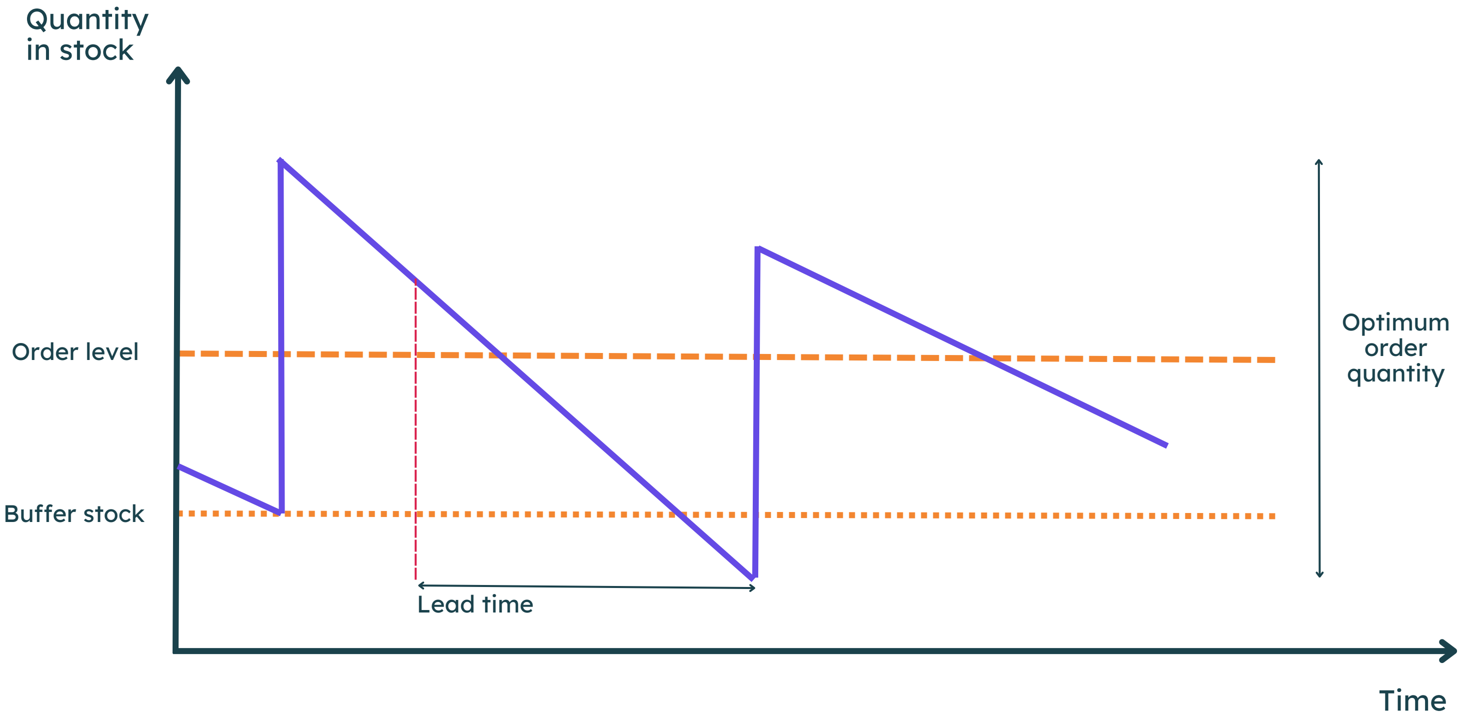
Forecast demand over leadtime + safety stock

Optimum order quantity

This is the amount you need to re-order, taking into account the demand forecast, lead times and any supplier constraints, e.g.:

$$OOQ = \frac{\text{Total demand forecast}}{\text{X number of periods after lead time}}$$

The diagram below shows how these elements are related.



There are many more complex formulas that you can use to calculate your replenishment needs and increase the accuracy of your predictions. However, these can get very challenging with only a spreadsheet as support. Consider investing in inventory optimisation software that automatically calculates each formula and saves you valuable time.

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

4. Stock rules optimisation

With demand forecasting and replenishment taken care of, the final part of the jigsaw is knowing what products to hold in your warehouse.

By setting stocking rules, you can prioritise the items you hold in stock based on their value and pick frequency. You can then free up working capital to invest in other business areas.

Consider using a classification model, such as ABC analysis, to group your products based on their value and turnover rate (how often they are picked). You can then define their corresponding service levels. The result is the creation of a matrix of stock items with varying stocking rules.

For example:
Fast-moving, lower-value items with a high service level should be stocked well, as they are cheap to stock and sell, and you want to ensure their availability.

In contrast, you might decide not to stock high-value, rarely picked items and fulfil them to order instead.

A key challenge with such categorisation is ensuring you regularly review each SKU to ensure its value and pick frequency haven't changed. Again, inventory optimisation software can carry out such checks automatically and provide alerts, giving you more time to make strategic decisions.

Setting intelligent stock rules allows you to manage your warehouse and order more efficiently and frees up working capital for investment in other business areas.

Inventory optimisation in practice

More and more companies are using inventory optimisation techniques to improve the efficiency and cost-effectiveness of their inventory management processes. Ultimately, this makes them more competitive in the eCommerce marketplace.

However, undertaking inventory optimisation methodology without the right tools can prove complex and time-consuming, so consider using software systems to support it. While some ERP, WMS, and eCommerce platforms can offer basic inventory optimisation functionality, investing in specialist inventory optimisation software ensures you have the best support for the job.

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

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Find out more about inventory optimisation

Book a demo