What is Inventory Optimization?

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What is inventory optimization?

You've heard of inventory management, and you probably already have some inventory management practices implemented in your supply chain. So, what is inventory optimization?

According to Wikipedia, inventory optimization is: "a method of balancing capital investment constraints or objectives and service-level goals over a large assortment of stock-keeping units (SKUs) while taking demand and supply volatility into account."

In plain English, inventory optimization is the practice of having the right inventory to meet your target service levels while tying up a minimum amount of capital in inventory. To achieve this, you need to account for both supply and demand volatility. Inventory optimization is the next level of inventory management for warehouse and supply chain managers and buyers.

Inventory Optimization will make you more competitive

The world is going through several revolutions simultaneously; digitalization, globalization and security threats are just a few of the macro trends that affect companies and supply chains worldwide. Consumer behaviours and habits are changing more rapidly than anyone thought possible just a few years ago while new technology makes it possible to source cheaper and better products from all over the world. This results in complex global supply chains where every link contains an opportunity for something to go wrong. But those who account for uncertainties within their supply chain will be one step ahead of their competition and better prepared to meet customer demand.

Enterprise-sized companies like Amazon and Target already have advanced systems in place for optimizing the supply chain, allowing them to source products from all over the world and deliver to their customers – sometimes within a few hours. But this is far from reality for many small- and mid-sized businesses (SMBs) who are still trying to calculate order quantities, safety stock and reorder points in Excel. Manually managing the supply chain results in rough estimates for inventory quantities which in turn leads to excess inventory (that will eventually go obsolete) or, alternatively, poor service levels to their customers. Ten years ago, it might have been ok to ask your customer to wait a few weeks until you got the right product in stock, but today you're likely to lose that customer to another vendor if you aren't able to deliver. After all, your competitor is just a click away.

Key Elements of Inventory Optimization

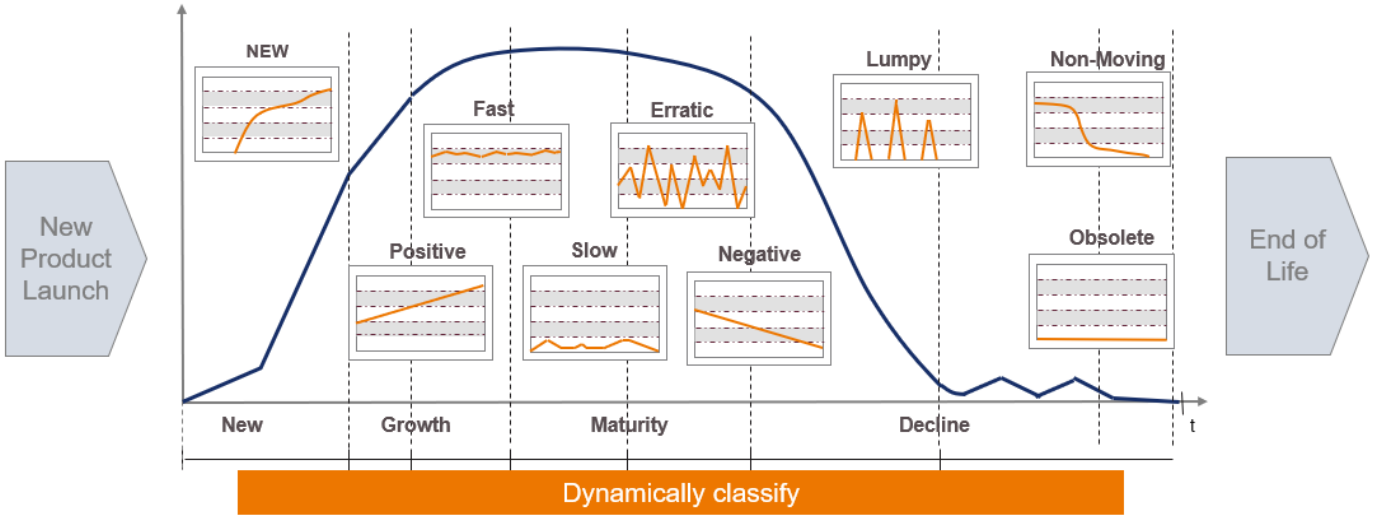
Optimizing your inventory means that you will determine exactly how much you need to order of every single SKU and when you need to order it to always be able to serve your customers. Inventory optimization takes seasonality and campaigns into account as well as supplier lead times and schedules. This way you will always have the right products in the right warehouse without tying up too much capital in inventory. This blog post will briefly go through the key elements of optimizing your inventory and link to resources that will give you more details of each key concept:

1. Demand forecasting
2. Inventory policy
3. Replenishment

1. Demand Forecasting

There are several ways to forecast demand including looking at last year's or last period's demand or request forecasts from your sales force. This can work for some SKUs, but on other items these methods can put you on the completely wrong track.

Every product has a life cycle. For example, when the product is first introduced to the market it will not have any historical demand at all. From there it will likely move into to a positive trend where the demand is constantly growing until it becomes a stable and fast-moving SKU. From there, it might get more irregular and then move into a negative trend where the demand is falling to becoming a dying and finally obsolete product. To accurately forecast your SKUs you need to know where in the life cycle all your SKUs are right now and how they move through the product life cycle.



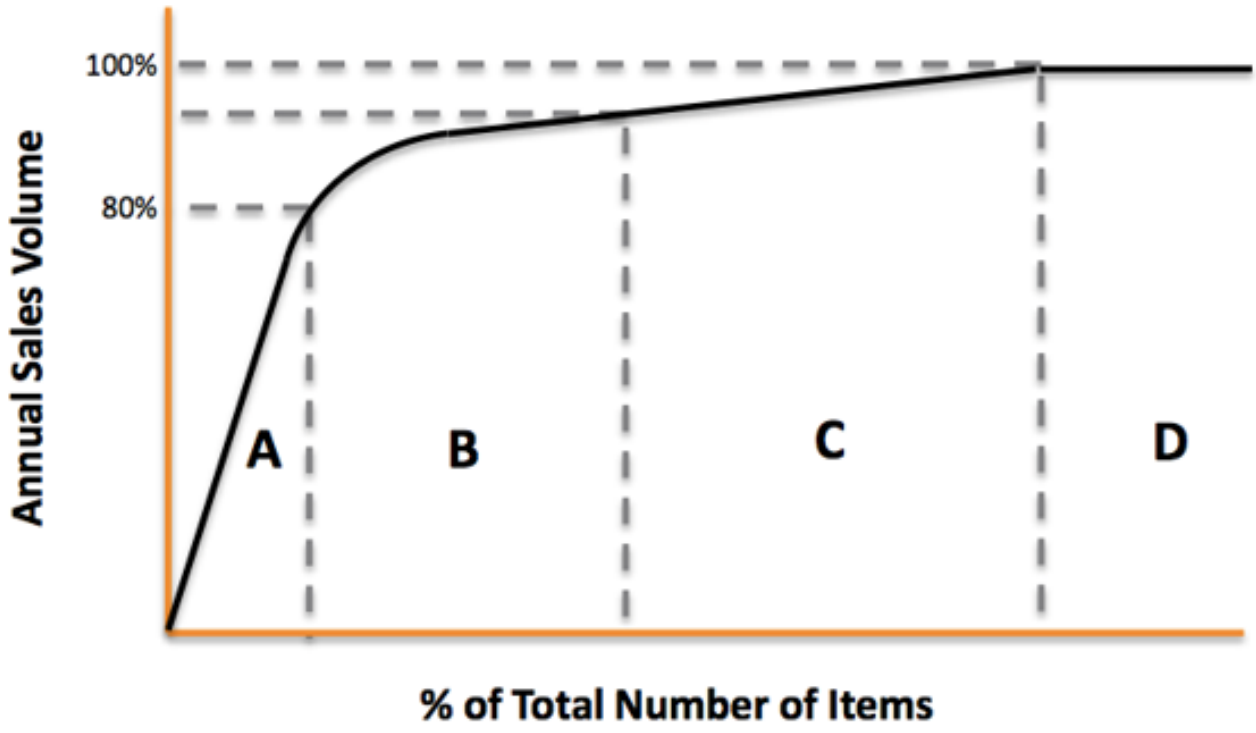
Another thing to keep track of is seasonality. A product that only sells in the summer, like sunscreen, cannot be forecasted based on the previous quarter's demand. New product introductions also throw a wrench into demand forecasting; a product that was new a year ago cannot be forecasted based on last year's demand.

Finally, campaigns and promotions are great tools for marketers but can be a headache for planners and purchasers. It might seem obvious that you have to plan for campaigns, but in reality, this is not always done properly and the entire campaign risks failure.

2. Inventory Policy

The next step is to determine your inventory policy, which means determine which products to stock and how much to keep of each unit.

One common method is to sort SKUs based on ABC analysis, where you classify your inventory into A, B and C classes depending on their annual consumption value. This blog will not go into the detail of ABC classification, but you can read all about it in our blog post on ABC analysis. This analysis helps you to determine which items to stock in your warehouse and which items can be ordered on demand.



ABC analysis & The Pareto Rule for inventory management

Then you need to determine how much safety stock you need to keep in order cover sudden demand peaks, supplier disruptions or other unforeseen disruptions. You can read more about safety stock calculations in our blog.

Finally, it doesn't matter if you have the exact right quantity of each item if you store them in the wrong places. Therefore, if you have more than one warehouse, you need to optimize your inventory to be distributed over your locations in the right quantities at the right time and place. And if you don't have enough demand of an item in one specific region, but still enough global demand, you'll want to find the right warehouse to store it in to be able to ship it out to where it's needed as quickly and cost effectively as possible.

3. Replenishment

Last but certainly not least is stock replenishment. This is to calculate reorder points and order quantities and turn them into actual orders.

A few things you need to track to optimize your purchases are:

1. Supplier Reliability

Supplier lead times have a big effect on stock availability and service levels. In addition to lead times for your different items, you also need to know opening hours and production cycles. For example, many Chinese manufacturers shut down production completely for the Chinese New Year which comes as a surprise to many western distributors. Another common challenge is some products have lead times of several months. If one of your fast-moving items has an exceptionally long lead time and your customers expect fast deliveries, you can get into real trouble if you didn't order enough quantities in time.

2. Goods in Transit

If you are placing an order for an item, it's not enough to know what you currently have in stock to determine the order quantity. You also need to know what you currently have in transit and on the way into your warehouses from your suppliers. This may seem obvious, but most ERPs and other systems don't have this information easily available.

Conclusion

These are crucial elements to having the right stock in the right places at the right time and are the foundation of inventory optimization. You can do all these calculations in Excel and manually enter them into your ERP, but if you have a few hundred items in your inventory (or more!), it's almost impossible to correctly track everything manually.

EazyStock is a tool that does all this for you and automates your replenishment so that you only have to take action when the system alerts you.

Our next blog post will go through how EazyStock calculates demand, determines your inventory policy and automates your purchasing so that you can spend your time on more value adding activities for your inventory and supply chain.