A Course Material on

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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LECTURE – 15

Determining ROP without safety stock

Businesses which follow lean inventory practices or a just-in-time management strategy usually don't have safety stock. In such cases, your reorder point can be calculated by multiplying your daily average sales by your lead time. Typically, when you don't have safety stock, your re-order level and the frequency of your orders tend to be higher.

Taking the above perfume example without including safety stock, your ROP should be:
ROP = 200 x 7 = 1400 bottles

Therefore, you should place an order for the next batch of perfumes when you have 1400 bottles left.

How to calculate ROP with different vendors

You may purchase items in your inventory from various vendors, and different vendors have different lead times. Therefore, it's best to think of your reorder point on an individual item level.

For example, let's suppose that you're a retailer who sells water bottles and snack boxes. The two items are purchased from different vendors with different lead times. The water bottles take one day to get delivered (lead time = 1 day) and the snack boxes take four days (lead time= 4 days). In a typical day, you sell 5 water bottles and 10 snack boxes.

Without safety stock, your ROP with the vendor who delivers the water bottles should be:

ROP = 5 x 1 = 5 bottles

When you have 5 bottles left, that means you have one day of sales before you run out of stock. Since your lead time is also one day, the new stock should arrive just in time for you to continue selling without interruption.

Similarly, your ROP with the vendor who delivers the snack boxes should be

ROP = 4 x 10 = 40 boxes

You should reorder when you have 40 boxes of stock left in your inventory, which is four days of stock. Given that your lead time is also four days, the new stock should arrive just in time for you to continue selling without interruption.

A reorder point is crucial for effective inventory management. It saves holding costs and prevents stock outs, overstocking, and lost sales by ensuring that sufficient stock is always available in your inventory.

Reorder Point Formula to Maximize Sales

Every manufacturing business out there faces questions like:

— How much material do I need to order from my supplier?

— When do I need to place my next supply order? and

— When do I generate a new manufacturing order?

If you're struggling to answer these questions, you can use a **reorder point** calculation to help you out.

What is the Reorder Point?

The reorder point is a stock threshold that you don't want to go below. The ideal inventory reorder point allows for adequate time to make a new order before your stock reaches this threshold.

Reorder point is the metric that tells you two essential things:

1. When it is the right time to order more materials from your supplier(s); and

2. When it is the right time to manufacture more products by creating a manufacturing order (MO).

This means your stock will be regulated much better, with fewer interruptions like supply-chain breakdowns or production bottlenecks.

Your inventory reorder point levels should cover every item in your inventory, including every product variation's product recipe. Sound complicated? This is part of a bill of materials (BOM).

You can link your inventory levels with each product's BOM and track it with the right MRP system.

For example, Katana Smart Manufacturing Software lets you set reorder points and highlights when you need to order more materials to keep ideal inventory levels.

The reason it's important to learn how to calculate your reorder points is that as your business grows, and handles more products and SKUs, the more difficult it's going to be to maintain your ideal stock levels.

Next, let's look into how to calculate your reorder point with the reorder point formula.

This doesn't have to be done by hand, you can get cloud-based software to do it for you, and let you know when you're running low.

How to Calculate Your Reorder Point?

Now you know how important the **reorder point formula** is, how do you actually go about calculating it?

First things first, you're going to need to figure out how much safety stock you carry. If you're not sure, you can read more about calculating your safety stock here. But very quickly, the safety stock formula is:

Safety stock = (maximum daily usage x maximum lead time in days) - (average daily usage x average lead time in days)

But moving on, the actual ROP formula is pretty straightforward:

Reorder Point = (Average Daily Usage x Average Lead Time in Days) + Safety Stock

Optimizing inventory management by tracking reorder points

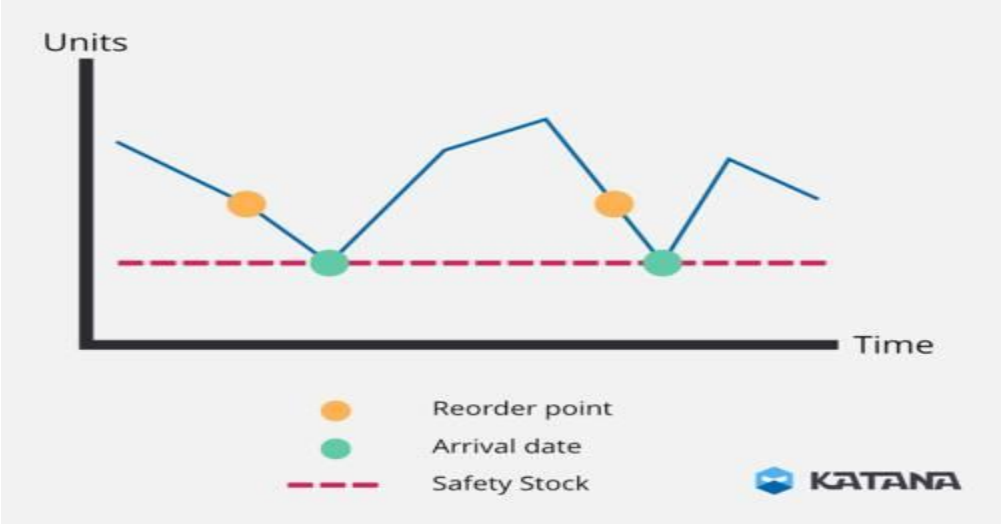
But, let's break it down to avoid any confusion.

What is Average Daily Usage?

Depending on what you're looking into, the average daily usage is the number of raw materials you consume, or finished goods you sell in one day.

What is the Average Lead Time in Days?

The average lead time in days is how long it takes for your raw materials to be delivered from a supplier or how long it takes you to manufacture a product. However, both the delivery time and manufacturing rate both form a part of understanding your manufacturing lead time too.



Reorder Point and Safety Stock

Your safety stock is your trump card in emergencies. You shouldn't have to keep dipping into it.

The ideal **reorder point ensures that your business does not dip below your safety stock levels.**

If you miss your reorder point and use some safety stock, you need to order even more materials to replace that safety stock once the supply order arrives.

If you don't, your safety stock will eventually deplete down to nothing and, more orders cost more money, so you should try to avoid this.

Therefore, an ideal reorder point is typically a little higher than your safety stock level to factor in delivery time.

But how much higher does it need to be? It depends on the average lead time of your reorder and the average demand during the lead time.

Why is this the case? Well, let's take a look at these two reasons:

— **Reason one -** When you place a new order, it does not arrive at your warehouse immediately. It may take weeks or sometimes even months for the order to be processed and shipped to your desired location; and

— **Reason two -** During the lead time, you keep using the remaining stock in your warehouse for your manufacturing and sales operations.

Thus, a good reorder point also needs to take into account how much quantity of the ordered item is actually left in your warehouse by the time the reorder arrives. It is essential to take this lead time into account. Otherwise, you run the risk of running out of stock before the reorder arrives.

Your reorder point should make production in your business flow, not stop and start.

Setting your reorder point too late defeats its purpose.

Setting it too early means it sits around doing nothing for too long, increasing carrying costs and harming your bottom line.

You can get more information on how to reduce lead time to increase customer satisfaction here.

Reorder point calculation formula and safety stock calculation formula are in a way two sides of the same coin:

— **Safety stock -** describes the amount of inventory a business keeps in the warehouse to protect against spikes in demand or shortages in supply; and

— **Reorder point -** is the last line of defense before you resort to using safety stock, and opening backorders. It keeps your safety stock in reserve for true emergencies only and makes sure that each material you use is reordered in line with their usage.

Therefore, you don’t have an overabundance or drought of stock. You get the perfect balance, safe in the knowledge that you can deal with anything, and still keep going.

Read on to find out how to use a reorder point formula to set your reorder point.