A Course Material on

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Subject : LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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LECTURE - 6

Causes the Bullwhip Effect

As we saw in the last example, there were a few things that can easily "go wrong" and cause this bullwhip effect.

First, the retailer amplified their expectations with regard to the product. They simply saw a higher number of units sold without looking at the *why* behind that week's demand. For example, if the product were on sale, it would push people to buy; once the units aren't on sale anymore, though, demand might go back down. Or if it were a single purchaser who bought up an extra amount, they may not have this continued demand moving forward.

Not only that, but each partner created their own "buffer" of inventory. This, in turn, created a major excess of inventory production. Each party was relying solely on information and orders from the partner immediately next to them in the supply chain without consulting additional factors or enhancing the overall communication of the chain.

Some of the causes of the bullwhip effect are as follows:

Incorrect Demand Forecasting

Most of the issues boil down to this incorrect demand forecasting. It's challenging to try to predict demand while accounting for all of the complex factors that go into delivering the right product, at the right time, in the right places. There are always going to be fluctuations and disruptions—some expected and some unexpected—that

will impact the supply chain, especially as logistics process becomes more global and purchasing moves to the web. Forecasting is a challenge for so many retailers, distributors, and manufacturers, even in relatively stable markets. Incorrect forecasting ultimately leads to a lot of guessing games that can kick off this bullwhip effect.

Some common concerns that can launch this effect:

- Lead-time and upstream issues, like manufacturing delays
- Over- or under-reacting to changes in demand
- Relying too heavily on historical demand to predict future demand without considering other key factors
- Not having risk management strategies in place for inventory.

Lack of communication

A breakdown of communication is one of the key causes of the bullwhip effect. For example, two managers within the same retailer may identify demand differently and thus order different quantities from their supplier. Or the retailer may not explain the rise in demand to their distributor, so the distributor doesn't know the permanency (or lack thereof) of the new manufacturing production quantities he should ask for.

It's critical for there to be a strong alignment between all the stakeholders along the supply chain to minimize loss and inefficiencies.

Order Batching

"Order Batching" occurs when retailers wait until orders build up before placing a new request with the supplier. The supply chain partners then round up or round down based on their needs. For example, they might round down if they have equipment constraints, or they might round up if they want an inventory buffer in case of product quality checks. The more partners who do this rounding and batch-ordering, the more the original demand quantity get distorted.

Price Fluctuations

If a retailer is holding a special discount or deal, it can disrupt buying patterns for a short period of time. These fluctuations can alter what demand looks like from the outside. These need to be planned for in advance to minimize under stocking during the promotional period, while acknowledging that demand will likely decrease again once the event is over. This relates back to the vital aspect of communication along the supply chain to ensure every partner knows what demand looks like and *why*.

Return Policies

Return policies, particularly free returns, and reverse logistics can also create an amplified bullwhip effect. A lot of ecommerce consumers will buy more goods than they need, like multiple sizes of the same pair of shoes, to try it on and then send it back. If retailers don't appropriately consider these multiple buys and returns, they can exaggerate demand and end up with surplus stock once it's sent back.

How can you Minimise the Bullwhip Effect?

Let’s look at how we can address the causes of the bullwhip effect most effectively to reduce loss and cost.

Better forecasting methods

Incorrect demand forecasting is the primary cause of the bullwhip effect. Implementing enhanced means of forecasting is critical to ensuring that one incorrect order doesn’t upset the entire chain. There are a lot of advanced technologies that simplify and accurately predict forecasting demand from the consumer all the way back to manufacturing and raw materials.

These technologies include:

- Artificial intelligence and predictive analytics
- Inventory optimization software
- Internet of Things (IoT)
- Demand sensing software
- Forecasting software

A lot of supply chains have started exploring a more demand-driven approach to inventory management. This requires a strong implementation of both technology and partner communication to react quickly to occurrences along the supply chain, especially with regards to short-term and long-term fluctuations in demand. For this to work, supply chain visibility and advanced procedures are vital.

Improve Partner Communication

Supply chain partners have been striving to improve communication, visibility, and transparency for the past few years, but now it’s even more important than ever.

To accomplish this, partners should normalize daily and weekly contacts between one another as well as implement consistent technology across the board that everyone agrees upon and uses regularly.

Blockchain technology is especially useful as it radically opens up the transparency of the supply chain, giving minute-by-minute updates on a product's whereabouts and how demand fits into the overall demand of the vendor.

.Reduce the size of orders

Vendors and supply chain partners should consider creating contracts and processes for smaller, more specific orders rather than large order batches. As opposed to waiting for orders to come in from consumers and then rounding up or down, supply chain partners may want to consider utilizing a smaller receipt with more frequent deliveries.

Partners should also discuss means of eliminating shipping delays and other transportation concerns. Often, holdups during the transport process can lead to vendors re-ordering or ordering at new demands to address their consumers' need, which creates even more inventory friction along the chain.

Price Consistency

Deals and discounts work well to move stock and gain new clients, but they can also create major surges in business that is difficult to track. These sorts of fluctuations have to be adequately prepared for and strategized in advance.

Consistently offering good product prices minimizes sale swells that lead to incorrect demand orders, ultimately resulting in a negative bullwhip effect.

Enhance Customer Service

Customer service is key to understanding what customers want while also reducing canceled or returned orders. A good customer service team can radically reduce returns, which strengthens the line of demand. This creates a smoother ordering pattern where demand is accounted without guesswork, loss, or damages.