A Course Material on

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Subject : LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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LECTURE - 5

1.3.2 Information Distortion in Supply Chain Management

The bullwhip effect refers to a logistics supply chain inefficiency when there is either too much or too little inventory. Usually, this comes as a response to incorrectly reacting to or forecasting customer demand.

Small fluctuations at any point along the supply chain can have a major impact on the rest of the logistics chain. Most partners only understand and address their specific orders without considering how the overall chain has to function together to deliver the best service with the most minimal waste.

The truth of the matter is that each partner influences the entire chain, especially when it comes to forecasting inaccuracies. One minor order inaccuracy or inefficiency can create a butterfly or bullwhip effect that impacts the entire chain. This is one reason that it is critical that companies partner with a good 3PL to help ensure good supply chain health and accuracy of operations.

Bullwhip Effect

When one supply chain partner has a change in demand or ordering, it can create a massive ripple effect in the rest of the chain. It's like cracking a bullwhip (hence the name). Although the movement of the wrist is small, it creates an amplified chain reaction with a large swing at the end of the whip.

This occurs when, most often, there is a change in demand at the retail level. This change disrupts all the other partners, including distributors, wholesalers,

manufacturers, and raw material suppliers, who are now also working to meet that new demand.

Although you want all of the partners to adjust production according to changes in demand, the bullwhip effect refers to the negative side of over- or under- reacting to those fluctuations in a way that leads to loss.

Example of the Bullwhip Effect

Here's a basic example of how even one small reaction can have a major and exponential ripple effect on the entire supply chain.

Let's say a pet store sells on average 100 packs of a particular dog bone brand every week. One week, though, they sell 300 packs of those dog bones. This might be because they ran a promotion, an article came out raving about the product, a dog rescue suddenly decided to buy up all the store's stock, or it was just simply a good week for dog bones.

The retailer now assumes that its customers want more of that product because the demand increased drastically. So, they decide to order 300 packs instead of 100 to meet the higher projected forecasted demand. Their distributor then orders 500 on their end to make sure they don't run out, since their retailer has now upped their demand so dramatically and quickly. The manufacturer then produces 600, just to be on the safe side for demand and quality control.

The average demand is 100 dog bones. Even the now-increased demand to 300 is half of what the manufacturer ends up making (600 packs of dog bones).

This can also happen with a lowered demand, like if the retailer orders less and all the other supply chain partners also order less, but later down the road the demand increases again.

Impacts of the Bullwhip Effect :

The bullwhip effect either creates excess or a lack of inventory. A surplus of inventory is expensive and wastes resources, while insufficient stock leads to unfulfilled orders and poor customer service (which can result in lost business in the short- and long-term).

There may also be secondary impacts of the bullwhip effect, like a breakdown of communication, loss of the partnership, or shipping delays. Overall, it sets off a chain reaction that impacts the processes of every logistics partner, which in turn means loss and expense is nearly inevitable.