A Course Material on

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Subject : LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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LECTURE - 4

1.3 Supply Chain Demand Volatility and Information Distortion

1.3.1 Supply Chain Demand Volatility:

Supply chain volatility is defined as unplanned variation of upstream and downstream material flows resulting in a mismatch of supply and demand at the focal firm. Managing supply chain volatility is often identified as one of the major challenges of modern supply chain management, as even the most accurate calculations cannot prepare you for the completely unforeseen.

When volatility exists, processes across the supply chain are being challenged. Failure to adapt to this volatility can lead to demand being unmet – and unmet demand translates into lost sales, lost profit, lost customers and eventually loss in market share, especially when competition surfaces.

Causes of Demand Volatility

Volatility is a reality in many supply chains. Not only are retailers serving end consumers facing volatile demand. This volatility is being passed on to manufacturers and distributors at different stages of the industry value chains.

Many factors contribute to this volatility including:

- Increased customer choices,
- Product customization
- Rapid technological improvements
- Global competition

- Promotion policies
- Supply chain bullwhips.

How is Volatility Calculated?

Decades of research have been dedicated to calculating supply chain volatility. Calculating is often done by using complex systems and formulae, that rely not only on the company's own numbers, but also factor in external influences like e.g. weather. Here, several forms of volatility have to be accounted for and calculated individually:

- Organizational volatility: volatility that occurs within the company itself
- Behavioral volatility: changes in demand
- Market-related volatility: changes in the market
- Institutional volatility changes in regulations
- Environmental volatility: changes in the environment, such as natural catastrophes

Why managing volatility is important?

Managing volatility in a cost-effective manner can lead to significant benefits for a company from lower supply chain costs to improved customer service levels. Managing volatility effectively can be a huge competitive differentiator for companies, for example by being prepared for a sudden surge in demand by having the right amount of inventory stored. Competitors that do not have enough inventories to deal with the increase in demand will have to face unsatisfied customers and lost revenue.

Managing volatility efficiently in a demand driven environment is a significant challenge and requires companies to employ robust supply chain tactics. Often, the focus tends to be on one area of the supply chain (e.g. inventory optimization). Without the consideration of all aspects of the supply chain, this may result in sub-optimal results. A holistic system approach is more effective. This holistic approach contains:

- **Complexity reduction**: Complexity has increased due to a growing number of products, channels, customers, and geographies - managing this complexity is crucial in addressing potential volatilities.
- **Lead time reduction**: Lead time is the amount of time that passes from the start of a process until its conclusion. The less time passes between start and finish, the smaller are the chances for something to go wrong.
- **Cycle time reduction**: Having shorter cycle times allows information to flow more quickly throughout the whole organization, enabling businesses to react to changes swiftly.
- **Postponement**: While there are numerous postponement strategies, one strategy is to store inventory at sub-assembly level and only assemble the product after an order has been placed. This allows for more flexibility.
- **Buffer management**: This can include inventory buffers. If you have sufficient stock, volatility will not damage your supply chain as immediately.
- **Visibility and collaboration**: Collaborating with customers, suppliers, and partners allows for more open and clear communication and increased flexibility should demand suddenly change. The right mix of the above strategies depends on the specific context of a company.