Bullwhip effect

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Introduction

The fundamental belief of operations and supply chain management is about getting work done quickly, efficiently, without error, and at low cost.

An efficient supply chain management is always necessary for smooth running of business

Strategic Sourcing

- Strategic sourcing is the development and management of supplier relationships to acquire goods and services in a way that aids in achieving the immediate needs of the business.
- Eg: Suppose I want to produce a laptop, I need motherboard from intel, graphic card from NVIDIa, Harddisk from SANDISK..,
- The strategic sourcing tells you need to maintain a good relationship with those firms.
- So, when your firm need a more no of hard disks with that relationship you can get that for cheaper rates and can pay money later.

Scenario - I

- The Great Indian Festival Sale in Amazon happened on October 16th – 23rd 2020. In that sale the Dell & Lenevo Laptops are sold heavily. Bulk orders are placed than usual.
- Many customers are happy that prices are reduced and purchases are of more number than usual.
- So companies has to produce more number laptop which in-turn requires more people to work and more hardware components from sandisk, nividia, intel.
- So the companies like NVIDIA, Intel and Sandisk must work overtime and handle those hardware components to Dell and Lenevo to make a laptop. They must quickly react to the large surge in raw material requirements.

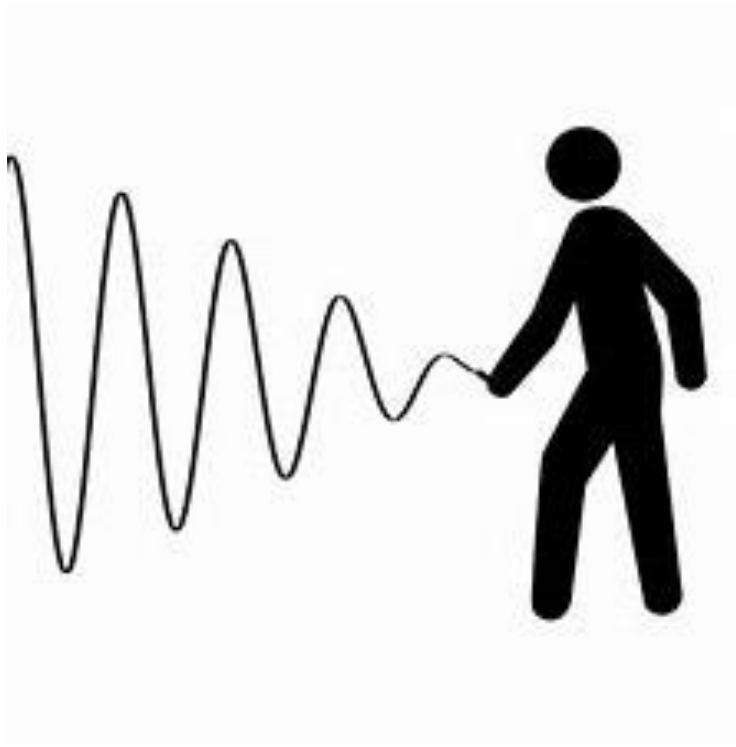
Rise of Bullwhip

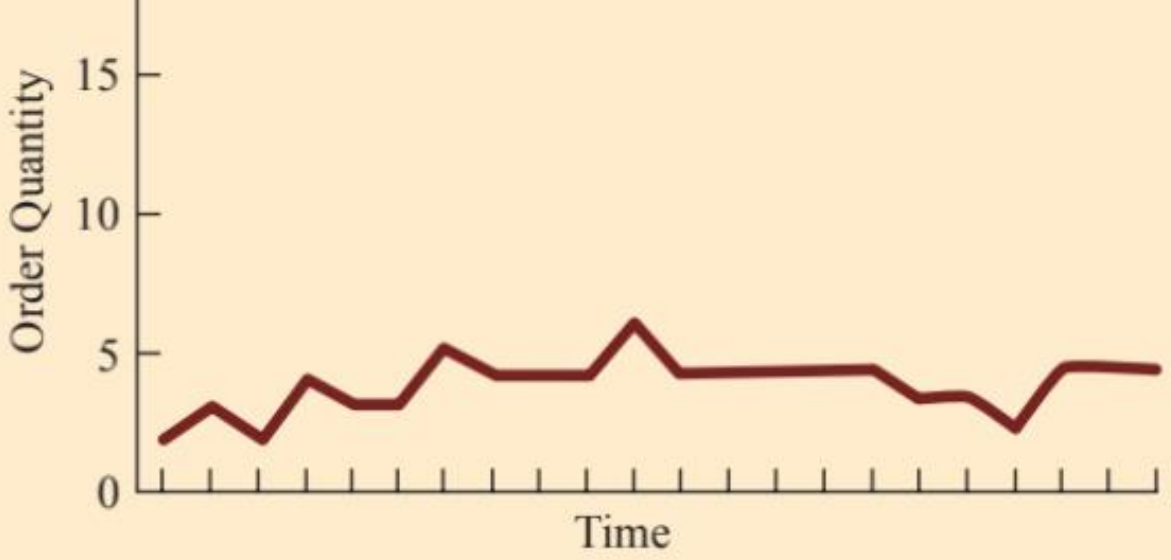
- So here the orders from customers to amazon are more
- Amazon sellers to wholesale dealers are more
- Wholesale dealers to Companies like Dell & Lenevo are more
- Dell and Lenevo orders to Sandisk, NVIDIA & Intel are more.
- This phenomenon of variability magnification as we move from the customer to the producer in the supply chain is often referred to as the bullwhip effect.

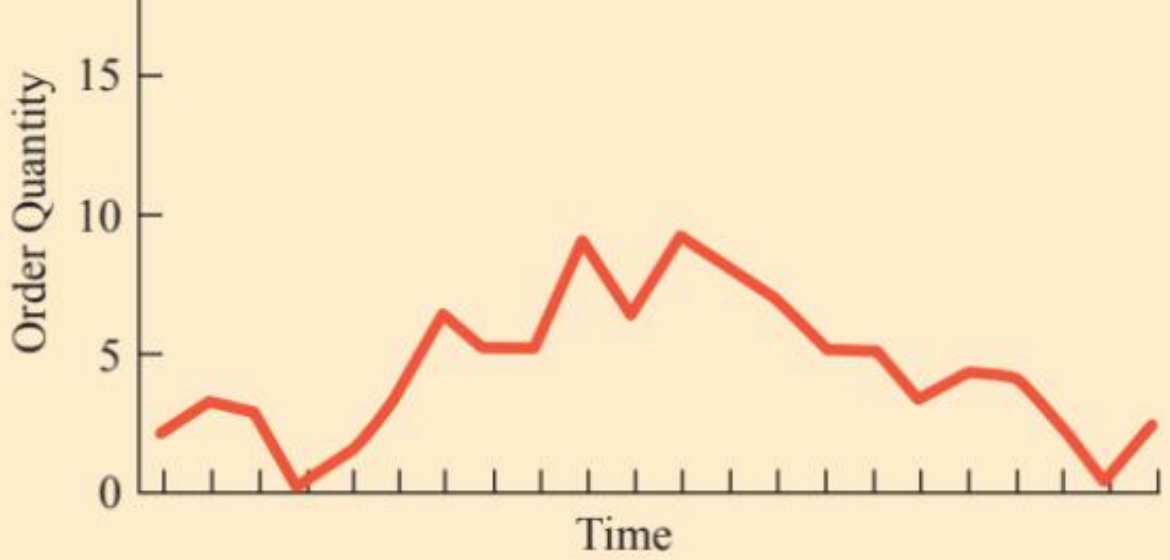
Bullwhip

- A slight change in consumer sales ripples backward in the form of magnified oscillations upstream, resembling the result of a flick of a bullwhip handle.

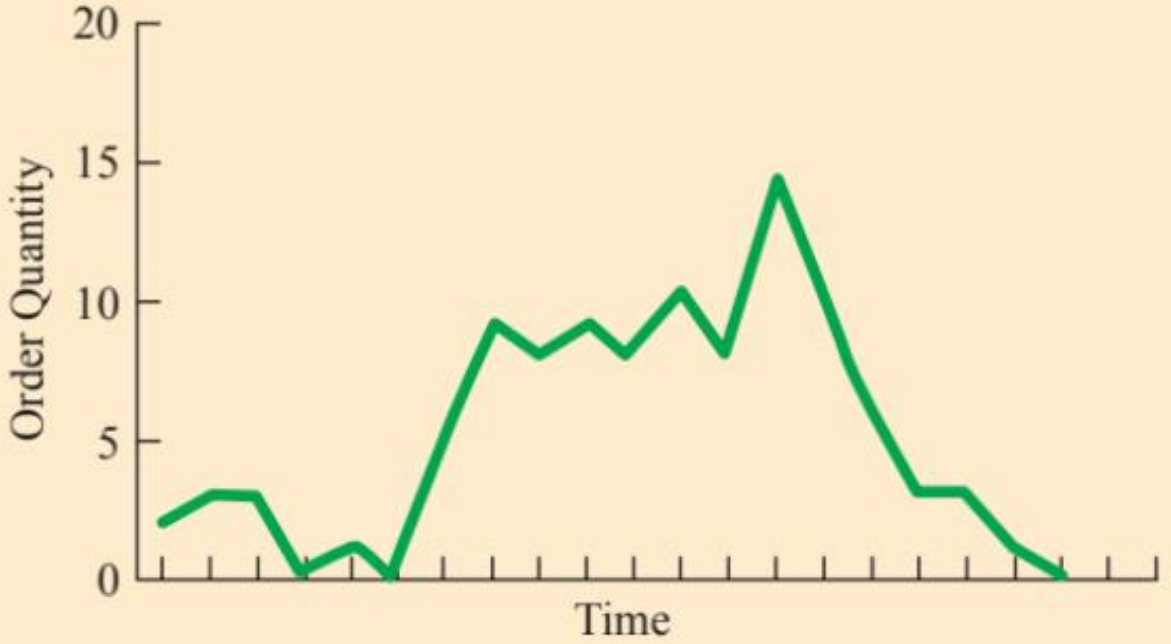
- What happens on Bullwhip?
- Production Increases
- No of working hours increases
- Labor demand high wage as they work overtime due to this bluewhip



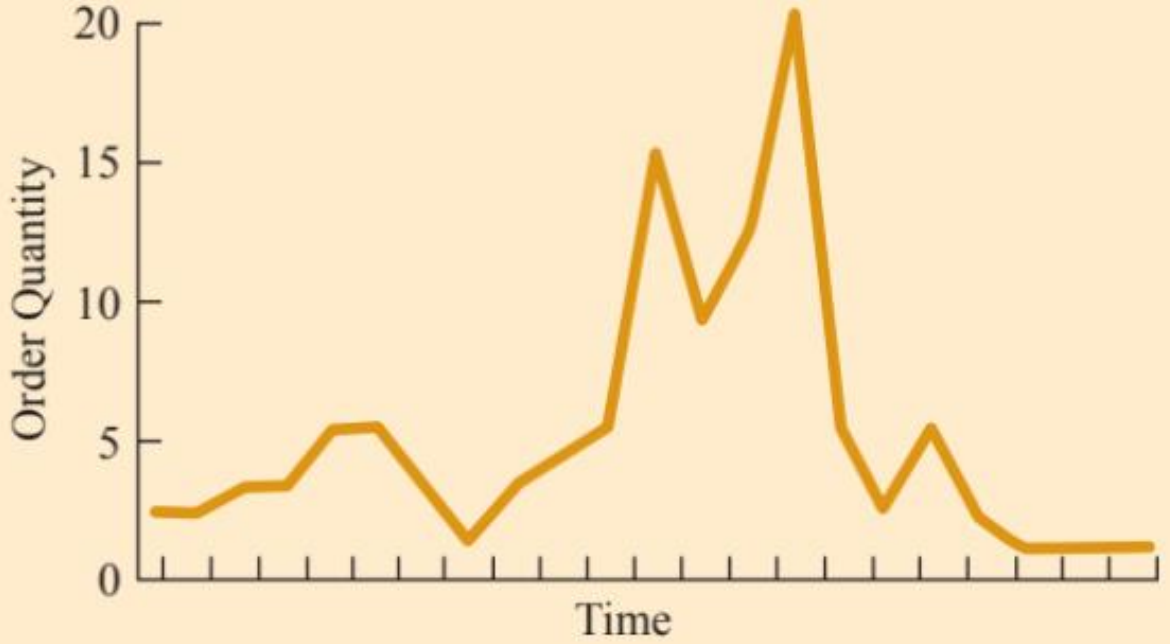




Wholesaler's Orders to Manufacturer



Manufacturer's Orders to Supplier



Blue whip can happen at any stage in Supply chain.

- Wholesale Dealers demanded more laptops suddenly
- Lenovo and Dell need to request hardware part providers to manufacture
- This affects Sandisk, NVIDIA and Intel manufcature to handle more orders

What happens if a firm didn't care bull whip

-> Companies need to shut down the production as they cannot control the demand

-> All the brand name generated will be in vain due to a single blue whip.

-> Rise of new competitors in the market

-> Business loss to the raw material supplier

These activities contribute a big imbalance in supply chain

Manufacturing cost ↑

Inventory cost ↑

Replenishment lead time ↑

Transportation cost ↑

Labor cost for shipping and receiving ↑

Level of product availability ↓

Relationships across the supply chain ↓

Profitability ↓

Bluewhip & Lack of Coordination

Information Processing Obstacles

Operational Obstacles

Pricing Obstacles

Incentive Obstacles

Behavioral Obstacles

Different Coordination Obstacles

Information Processing Obstacles & Remedies

- Independent forecasting on each stage based on orders received.
- If we couldn't do proper forecasting a lack of information is passed and causes the Blue whip.
- Sharing the point of sale data. Your point of sale data is data collected by a business when a transaction happens. Eg: Data of the orders placed in Amazon in GIF(Great Indian Festival)
- Make a collaborative forecasting. Helps to recheck the decisions taken.

Single Stage Replenishment

- Single stage control of replenishment

Replenishment means adding more stock to replace what has been sold. Single stage replenishment helps to get the replacement stock at once. It includes

A) Continuous replenishment programs (CRP)

Adding stocks at once in continuous intervals

B) Vendor managed inventory (VMI)

Manufacturer is responsible for optimizing the inventory held by a distributor. It makes you to know how many items are sold to order raw materials to manage the bull whip.

Operational Obstacles

It happens when

- Ordering in large lots in order to reduce the fixed costs associated with order placement and transportation.
- Large replenishment lead times that expose the company to higher levels of variability, and raise the need for higher levels of safety stock.
- Rationing and shortage gaming: Ordering larger quantities than necessary, in order to eventually get what you need.

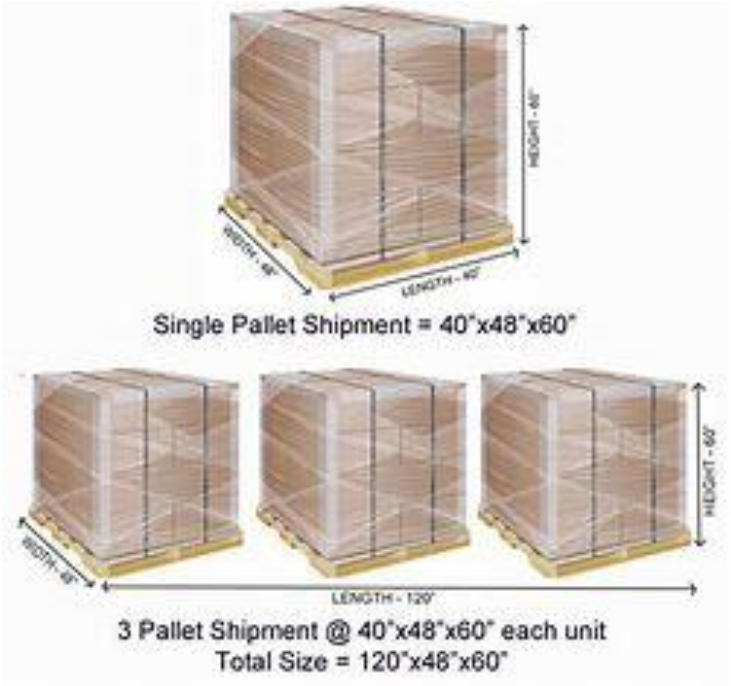
Remedies

- Reduce the replenishment time with the help of technology

-> Computer assisted Ordering

-> EDI (Electronic Data Interchange) is the computer-to-computer exchange of business documents in a standard electronic format between business partners.

- Reduce lot sizes
- Computer-assisted ordering
- Shipping in LTL sizes by combining shipments
- Exploit technology and other methods to simplify receiving
- Ration based on past sales and information sharing to limit gaming



Pricing Obstacles

- Lot size based discounts
- Discounts on products like the festival sale makes bull whip.

Remedies

- Stabilize pricing
- Eliminate promotions (EDLP)
  -> Everyday low price is a pricing strategy promising consumers a low price without the need to wait for sale price events or comparison shopping.
- Limit quantity purchased during a promotion
- Move from lot size-based to volume-based q
- uantity discounts

Incentive Obstacles

E.g., sales force incentives based on the amount of sells during

- an evaluation period in a month or quarter.

- "Sell-in" rather than "sell-through" based evaluation.

-> How many units of a product is a manufacturer selling into the retailer (amazon / walmart).

-> How many units of a product is selling out to the customer

(from the retailer)

- Local optimization within functions or stages of the supply chain (E.g., the shipping department trying to control the transportation cost by reducing the frequency of the shipments, ignoring the impact of this decision on the inventory costs and the customer service)

Remedies

- Align incentives across functions
- Alter sales force incentives from sell-in to sell-through
- Pricing for coordination, e.g.,
- Buy-back contracts
- Quantity-flexibility contracts
- Build strategic partnerships and trust!

Behavioral Obstacles

- Each stage of the supply chain views its actions locally, being unable to see the impact of its actions on other stages.
- Different stages react to the current local situation rather than trying to identify the root causes
- Eventually, stages start blaming each other for the experienced problems, becoming enemies rather than partners
- Lack of trust results in opportunism, duplication of effort and lack of information sharing
- From a more pragmatic standpoint, it is generally hard to trace the consequences of certain actions because they will occur in some other stage(s) of the supply chain.
- The same happened in Amazon GIF for some mobiles due to which they placed out of stock board.

Building Trust into a Supply Chain Relationship

Deterrence-based view

A) Use formal contracts

B) Parties behave in trusting manner out of self-interest

Process-based view

- Trust and cooperation are built up over time as a result of a series of interactions
- Positive interactions strengthen the belief in cooperation of other party

Neither view holds exclusively in all situations

Downstream & Upstream

- Upstream defines everything that comes into your company from suppliers (usually raw materials) and used by your company to produce something. It also defines the relationship and information flow between your company, your suppliers, and your suppliers' suppliers.

Eg: Harddisk, Motherboard, fiber pieces needed to assemble the laptop. For Intel, it gets fiber piece from another supplier.

- Downstream defines everything that goes out of your company after the production cycle. Usually goods ready to sell. It also defines the processes required in order your produced goods to reach the customers in an efficient manner (time, cost etc.)

Eg: Laptop

Push Pull Supply Chain Management

- A supply chain management falls under one of the two categories.
- Push : execution is made based on the customer order
- Pull : customer order is anticipated before.

Push -> Customer / retailer order laptop and company start assemble the laptop

Pull -> Company already assembles the laptop keeping that customer / retailer will order.

Real life example:

Ordering Tiffin in hotel (Dosa)-> push process as he will prepare tiffin

Getting side dishes (Chutney, Sambar) alongside of tiffin -> pull process as he knows that you ask for that.

Thank you