

**Q. No. 8.**

**ABC Industries**  
**Balance sheet ending Dec 31, 2020**

Asset	Rs.	Liabilities and stockholder's equity	Rs.
Cash	32,720	Accounts payable	120,000
Marketable securities	25,000	Notes Payable	-----
Account receivable	-----	Accruals	20,000
Inventory	-----	Total current liabilities	-----
Total Current Asset	-----	Long term debt	-----
Net fixed Asset	-----	Stockholder's equity	600,000
Total Assets	-----	Total Liabilities and stockholder's equity	-----

The following financial data for 2016 is also available

- (a) Sales totaled 1,800,000
- (b) The Gross profit margin was 25%
- (c) Inventory turnover was 6.0
- (d) There are 365 days in the year.
- (e) The average collection period was 40 days
- (f) The current ratio was 1.60
- (g) The total asset turnover ratio was 1.20
- (h) The debt ratio was 60%

**Complete the 2020 balance sheet for ABC Industries using the given information (20)**

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**Q. No. 4.** What are the internal sources of Job candidates? How can managers forecast the supply of internal candidate? (20)

**Q. No. 5.** Compare the advantages of mass marketing to those of market segmentation for a company. Discuss with relevant business examples. (20)

**Q. No. 6.** What is the bullwhip effect and how does it relate to lack of coordination in the supply chain? (20)

**Q. No. 7** Tiger Corporation is considering to invest in a given project. After tax cash flows of the project are given below:

Years	Project \$
Initial Cash Flows	150,000
1	50,000
2	56,000
3	64,000
4	68,000
5	72,000

**Determine Payback Period, Net Present Value and Profitability Index using 13% as required rate of return (20)**

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Account receivable	-----	Accruals	20,000



# Business

## Administration

Q8. Given financial Data

$$\text{Sales} = 1,800,000$$

Working and Calculations

a. Gross Profit

$$\begin{aligned}\text{Gross Profit} &= \text{Sales} \times \text{Gross Profit margin} \\ &= 1,800,000 \times 0.25 = 450,000\end{aligned}$$

b. Cost of Goods Sold

$$\text{Gross Profit} = \text{Sales} - \text{Cost of goods Sold (COGS)}$$

$$450,000 = 1,800,000 - \text{COGS}$$

$$\text{COGS} = 1,800,000 - 450,000$$

$$\text{COGS} = 1,350,000$$

c. Inventory Turnover = COGS / Average Inventory

$$6 = 1,350,000 / \text{Average Inventory}$$

$$\begin{aligned}\text{Average Inventory} &= 1,350,000 / 6 \\ &= 225,000\end{aligned}$$

d. Total Current Assets = 32,720 + 25,000 + 197,260

$$+ 285,000$$

$$= 479,980$$

e. Accounts Receivables

$$\text{Average Collection Period} = \frac{\text{Accounts Receivable} \times 365}{\text{Sales}}$$

$$40 = \frac{\text{Accounts Receivable} \times 365}{1,800,000}$$

$$\begin{aligned}\text{Accounts Receivable} &= \frac{40 \times 1,800,000}{365} \\ &= 197,260.\end{aligned}$$



f. Total assets

$$\text{Asset turnover ratio} = \frac{\text{Sales}}{\text{Total Assets}}$$

$$1.2 = \frac{1,800,000}{\text{Total Assets}}$$

$$\text{Total Assets} = \frac{1,800,000}{1.2}$$

$$= 1,500,000$$

g. Net Fixed Assets

$$\text{Total Assets} = \text{Current Assets} + \text{Fixed Assets}$$

$$1,500,000 = 479,980 + \text{Fixed Assets}$$

$$- \text{Fixed Assets} = 479,980 - 1,500,000$$

$$\text{Fixed Assets} = 1,020,020$$

h. ~~Long Term~~ Debt Total Liabilities

$$\text{Debt Ratio} = \frac{\text{Total Debt Liabilities}}{\text{Total Assets}}$$

$$60\% = \frac{\text{Total Debt}}{\text{Total Liabilities}}$$

$$\text{Total Liabilities} = 1,500,000$$

$$\text{Total Debt} = 1,500,000 \times 60\%$$

$$= 900,000$$

i. Current Liabilities

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$1.6 = \frac{479,980}{\text{Current Liabilities}}$$

$$\text{Current Liabilities} = \frac{479,980}{1.6}$$

$$= 299,988$$



j. Notes Payable

$$\text{Total current liabilities} = 120,000 + \text{Notes} + 20,000$$

$$299,988 = 140,000 + \text{Notes}$$

$$\text{Notes} = 299,988 - 140,000$$

$$= 159,988$$

h. Long term debt = ~~600,000~~

$$\text{Total liabilities} = \text{Current liabilities} + \text{Long term}$$

$$900,000 = \text{159,988} + \text{Long term Debt}$$

$$\text{Long term Debt} = 900,000 - 299,988$$

$$\text{Long term Debt} = 600,012.$$

### ABC Industries

Balance sheet ending Dec 31, 2020

Asset	Rs	Liabilities & Stock holder equity	Rs
Cash	32,720	Accounts Payable	120,000
Marketable Securities	25,000	Notes Payable	159,988
Accounts Receivable	197,260	Accruals	20,000
Inventory	225,000	Total Current Liability	299,988
Total Current Asset	479,980	Long term debt	600,012
Net Fixed Asset	1,020,020	Stock holder Equity	600,000
Total Assets	1,500,000	Total Liability + Stock holder Equity	1,500,000



Q7	Year	Cashflow	Discount factor	Present value
	0	-150,000	1	-150,000
	1	50,000	0.885	44250
	2	56,000	0.783	43848
	3	64,000	0.693	44352
	4	68,000	0.6133	41704
	5	72,000	0.5427	39074

### a. Payback Period

Payback period is the required time for an investment to return the initial investment in terms of Present value.

as for the above project the cash flow turns positive in period 4, making it ~~24158~~ <sup>24158</sup> ~~23771~~ at the end of year 4

Then the Payback period lies between year 4 and 3.

### b. Net Present Value

Net Present value is the net cash of the entire cash flow project that is

$$NPV = -150,000 + 44250 + 43848 + 44352 + 41704 + 39074$$

$$= 63232$$

### c. Profitability Index (PI)

The profitability Index (PI) is a financial metric used to evaluate the attractiveness of an investment given as follows

$$PI = NPV / \text{value of Initial Cashflow}$$

$$= 63232 / 150,000$$

$$= 0.421 \text{ } ~~0.421~~ \%$$

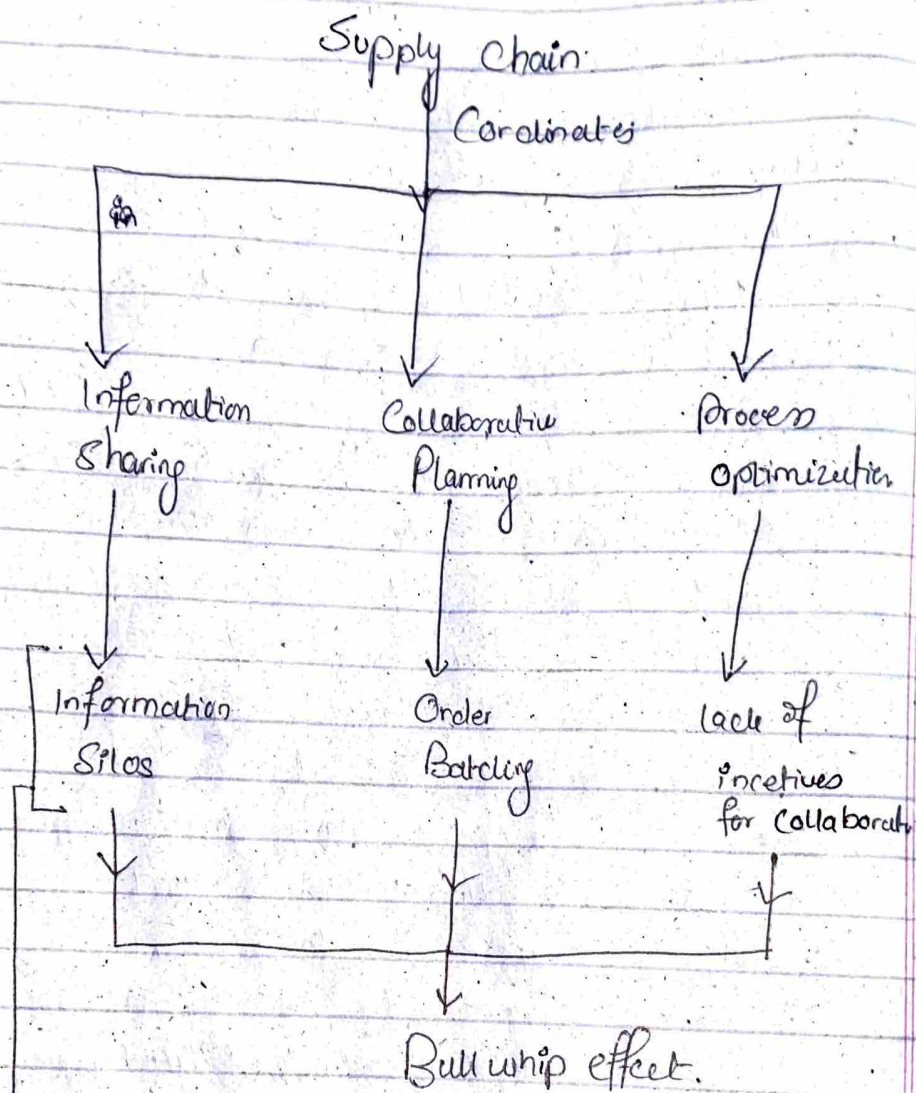


(Q6) What is the bullwhip effect and how does it relate to the lack of coordination in Supply chain

## 1. Introduction

Effective Supply chain management is crucial for any business success. However, different distortions can cause grave consequences for businesses. For instance, the bullwhip effect that is when small changes in customer demands translate into ~~amplified~~ magnified effects upstream in the supply chain. The bullwhip effect stems due to inaccuracy in demand forecasting, batch orders, price fluctuation and lead time variations. Although the supply chain is coordinated through information sharing, collaborative planning and process optimization different problems such as information silos, order batching and lack of incentives for collaboration leads to Bullwhip effect.

How distortion in different Supply Chain Coordinations, translates into bull whip effect.



↳ Reasons of Bullwhip.



## 2. Bullwhip Effect and its Causes:

### a. Demand forecasting Inaccuracy.

Most of the time ~~businesses~~ <sup>retailers</sup> rely on historical data, trends, or subjective estimates to forecast future demand. However, there can be ~~shift~~ sudden shifts in consumer behaviors may be due to ~~its~~ an endorsement by a celebrity, or due to sudden ~~ris~~ changes in climate due to climate change. Thus any overestimates or underestimates of the demand can lead to excessive inventory buildups or shortages, causing disruptions in supply chain.

### b. Order Batching Consolidation

Order Batching occurs when retailers consolidate or batch their orders to suppliers. They might place large orders infrequently instead of ordering smaller, more frequent quantities based on real-time demand. This practice distorts the actual demand signals sent to suppliers, creating spikes or inconsistencies in orders. As a result, suppliers further upstream may overproduce or underproduce, exacerbating inventory imbalances along the supply chain.



### c. Price fluctuations creating artificial demand.

Promotions, discounts, or price fluctuations initiated by retailers can significantly impact consumer buying behavior. These changes can lead to sudden increases or decreases in demand that are not reflective of actual consumer needs. For instance, temporary sales or discounts can cause a surge in purchases, creating artificial spikes in demand. This distorted demand pattern is transmitted up the supply chain, causing disruptions to production and inventory planning.

### 3.9. Supply chain Coordination

#### a. Information Sharing to make decisions aligned with actual market data.

Open and transparent communication among all stakeholders in supply chain is crucial. This involves sharing real-time data regarding demand, inventory levels, production capabilities, and potential disruptions. By having access to accurate and up-to-date information, each participant can make informed decisions aligned with actual market demand. Technology like collaborative platforms and integrated software systems facilitates this exchange of information.



## b. Planning Collaboratively to align strategies with actual demand.

Collaborative planning involves all entities in the supply chain working together to develop strategies that align with actual demand. This includes joint forecasting, demand planning, and inventory management.

By pooling resources and expertise, stakeholders can collectively plan production schedules, inventory levels and distribution strategies.

## c. Process Optimization to minimize delays and uncertainties.

Efficient and opti streamlined operations play a crucial role in minimizing delays and uncertainties. This involves optimizing various aspects of the supply chain, such as reducing lead times, improving production efficiency, and optimizing transport and logistics. Employing lean principles or technologies like automation and data analytics helps identify and eliminate bottlenecks, reducing the chances of disruptions that can trigger bullwhip effect.

## 4. How bullwhip effect Relates to lack of Coordination in supply chain.

a. Information Silos due to working in isolation  
When each participant in the supply chain operates in isolation and maintains separate databases or systems, it leads to information silos. This lack of integration



and shared access to data causes ~~dist~~ discrepancies and inconsistencies in information across the chain. Thus inaccurate or incomplete data amplifies the bullwhip effect as decisions based on such fragmented information often lead to exaggerated orders or inventory mismanagement.

b. Order batching disrupting the flow of products.

Retailers often aiming to reduce ordering costs or administrative efforts, engage in order batching where they place irregular, large orders to suppliers. Instead of aligning orders with actual customer demand, they stockpile inventory or place infrequent large orders. This practice disrupts the smooth flow of products within the supply chain. Such erratic ordering patterns create artificial demand spikes or dips, transmitting distorted signals upstream. Suppliers may overproduce or underproduce, exacerbating the Bullwhip effect by creating inventory imbalances.

c. Lack of Incentives for Collaboration

When supply chain entities perceive no tangible benefits or incentives in sharing information or collaborating, it hampers coordination efforts. Entities might prioritize individual gain over collective benefits leading to a lack of willingness to collaborate.



5.

## Conclusion

Effective coordination within the supply chain is pivotal in mitigating the Bullwhip effect. By fostering a collaborative environment and emphasizing shared objectives, supply chain partners can align their efforts towards information sharing, collaborative planning & process optimization. Ultimately, a coordinated supply chain, facilitated by open communication, collaborative planning, and optimized processes, can significantly reduce uncertainties, minimize inventory fluctuations, and enhance overall efficiency and responsiveness. This collaborative approach is essential in overcoming the challenges posed by Bullwhip effect, leading to a more resilient and efficient supply chain system.