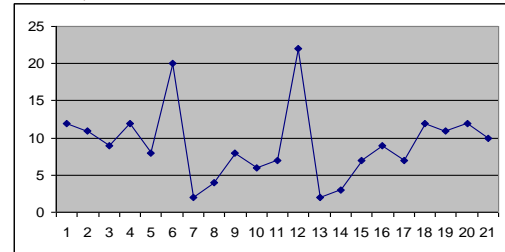
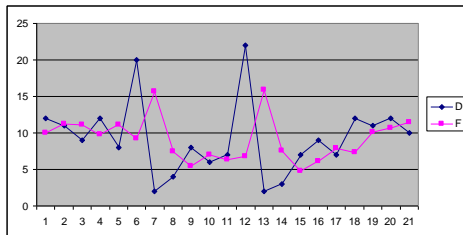


## DEMAND MANAGEMENT

### Often, Demand Patterns Lead to



Demand forecasting → the process that an organization takes to predict the level of demand. Demand forecasting takes demand pattern as a given.



### Problems with Volatile Demand

- High forecast errors
  - High inventory investments
  - Low service levels (shortages often occurred)
- High cost of adjusting the level of capacity
- Fluctuated resource utilization

### Demand Planning Vs Demand Management

- Demand Planning → that process that an organization takes to anticipate customer demand and ensure sufficient product is available – in the right place, in the right time, to the required level of service and at the lowest possible supply chain costs.
- Included here are :
  - ▣ Demand forecasting
  - ▣ Inventory management
  - ▣ Capacity planning
  - ▣ Production planning and scheduling
  - ▣ Materials requirement planning

### Impetus to Demand Management

- Demand is never truly exogenous, but often very much dependent on internal processes. Sales and marketing use promotion and other means to inflate sales. While this is good in terms of increasing sales volume, such an effort could result in a serious danger if not communicated properly to the related functions in the company as well as to other channels of the supply chain.
- Typical consequences:
  - Serious out of stock
  - Excessive inventory

## Demand Management

Actively seeks to ensure that the customer demand 'profile' as an input to the demand-planning process is as smooth as possible in order to make supply chain operations easier.

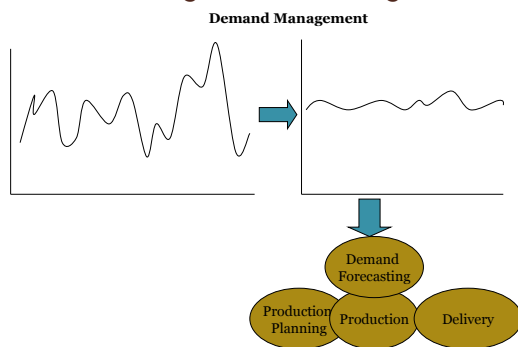
In other words, the company is not only passively process the given demand, but is trying to reduce demand volatility, or improving demand stability.

Thus, demand forecasting is REACTIVE, while demand management is PROACTIVE to customer demand.

## Component of Demand Management

- Forecasting Demand
- Communicating Demand
- Influencing Demand

## Demand Planning Vs Demand Management



## Instruments of Demand Management

- Pricing & Promotion: discounts, rebates, etc.
- Assortment & Shelf management
- Deal structure: terms and condition, price protection, return policies.

## EVENT MANAGEMENT

- Promotion
- Special offers
- Buy one get one
- Happy hour scheme
- End of season sale, etc

## Impacts of Demand Variability on SC Costs

Demand	
January	1600
February	3000
March	3200
April	3800
May	2200
June	2200

Sale price 40/unit  
 Starting inventory 1000  
 Starting workforce 80  
 Regular working hours 8/day  
 Maximum overtime 10 hrs/month  
 Inventory costs charged based on end of period inventory

Costs	
Material costs	10/unit
Holding cost	2/unit/mth
Stockout cost	5/unit/mth
Hiring & training	300/worker
Layoff	500/worker
Labor hours (hrs)	4/unit
Regular time	4/hour
Overtime	6/hour
Subcontracting	30/unit

### Optimal Solution, Maximizing Revenue

t	Ht	Lt	Wt	Ot	It	St	Ct	Pt
0	0	0	80	0	1000	0	0	0
1	0	15	65	0	1983	0	0	2583
2	0	0	65	0	1567	0	0	2583
3	0	0	65	0	950	0	0	2583
4	0	0	65	0	0	267	0	2583
5	0	0	65	0	117	0	0	2583
6	0	0	65	0	500	0	0	2583

### Financial Performance

- Total costs over the planning period: \$422,275
  - Material costs
  - Labor costs
  - Inventory holding costs
  - Stockout costs
  - Layoff costs
  - Hiring and training costs
  - Overtime costs
  - Subcontracting costs
- Revenue: \$640,000
- Profit: \$217,725

Demand Changes: Promotion in January, price \$39/unit : 10% increase in demand, 20% forward buying

Demand	
January	3000
February	2400
March	2560
April	3800
May	2200
June	2200

### Solution

t	Ht	Lt	Wt	Ot	It	St	Ct	Pt
0	0	0	80	0	1000	0	0	0
1	0	15	65	0	610	0	0	2610
2	0	0	65	0	820	0	0	2610
3	0	0	65	0	870	0	0	2610
4	0	0	65	0	0	320	0	2610
5	0	0	65	0	90	0	0	2610
6	0	0	65	0	500	0	0	2610

### Financial Performance

- Costs \$421,915
- Revenue \$643,400
- Profit \$221,485

Demand Changes: Promotion in April, price \$39/unit: 10% increase in demand, 20% forward buying

Demand	
January	1600
February	3000
March	3200
April	5060
May	1760
June	1760

## Solution

t	Ht	Lt	Wt	Ot	It	St	Ct	Pt
0	0	0	80	0	1000	0	0	0
1	0	14	66	0	2047	0	0	2647
2	0	0	66	0	1693	0	0	2647
3	0	0	66	0	1140	0	0	2647
4	0	0	66	0	0	1273	0	2647
5	0	0	66	0	0	387	0	2647
6	0	0	66	0	500	0	0	2647

## Financial Performance

- Costs \$438,857
- Revenue \$650,140
- Profit \$211,283

## Comparisons: What are your conclusions?

Reg. Price	Promotional Price	Promotional Period	Increase in Demand	Percent Forward Buy	Profit (\$)	Average Inv.
40	40	-	-	-	217725	895
40	39	January	10%	20	221485	523
40	39	April	10%	20	211283	938
40	39	January	100%	20	242810	208
40	39	April	100%	20	247320	1492

## Coordinated Demand Management

- Demand management should be well coordinated within the supply chain
  - Event potentially increase or decrease sales should be visible to other (especially upstream) channels.
- Market reaction to demand management should be closely monitored.
- Cross functional team → different interests among functions

ORA ET LABORA...