SUPPLY CHAIN NETWORK DESIGN

Role of Distribution in Supply Chain – Factors influencing Distribution network design – Design options for Distribution Network Distribution Network in Practice-Role of network Design in Supply Chain – Framework for network Decisions.

Role of Distribution in Supply Chain

Distribution refers to the steps taken to move and store a product from the supplier stage to a customer stage in the supply chain.

Distribution occurs between every pair of stages in the supply chain. Raw materials and components are moved from suppliers to manufacturers, whereas finished products are moved from the manufacturer to the end consumer.

Distribution is a key driver of the overall profitability of a firm because it affects both the supply chain cost and the customer value directly.

Choice of distribution network can achieve supply chain objective from low cost to high responsiveness.

Examples: Wal-Mart and Seven-Eleven Japan, have built the success of their entire business around outstanding distribution design and operation.

Dell distributed its PCs directly to end consumers, whereas companies such as HP distributed through resellers.

Proctor & Gamble (P&G) has chosen to distribute directly to large supermarket chains while obligating smaller players to buy P&G products from distributors.

The process of designing a distribution network has two broad phases. In the first phase, the broad structure of the supply chain network is visualized. This stage includes decisions such as whether the product will be sold directly or go through an

intermediary. The second phase then takes the broad structure and converts it into specific locations and their capability, capacity, and demand allocation.

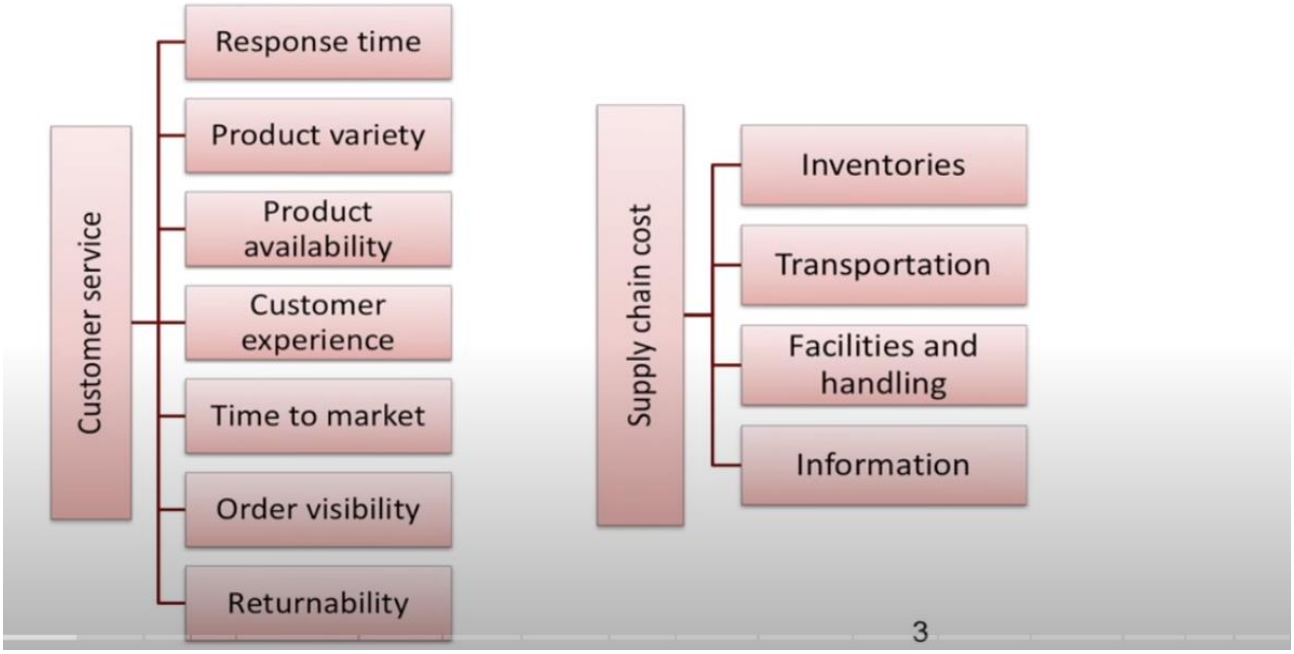
The appropriate choice of distribution network grows the supply chain surplus by satisfying customer needs at the lowest possible cost.

Factors influencing Distribution network design

Performance of a distribution network should be evaluated along two dimensions:

1. Customer needs that are met **(Service Factor)**
2. Cost of meeting customer needs **(Cost Factor)**

Meeting the customer's demands on time affect the revenues of the company at large, which along with the costs together affect the overall profitability of the network and the company as a whole. There are various components that affect both customer service and the distribution network at large.



1. Service Factors: The measures that are influenced by the structure of the distribution network are as follows

- **Response time** is the amount of time it takes for a customer to receive an order.

- **Product variety** is the number of different products/configurations that are offered by the distribution network.
- **Product availability** is the probability of having a product in stock when a customer order arrives.
- **Customer experience** includes the ease with which customers can place and receive orders as well as the extent to which this experience is customized.
- **Time to market** is the time it takes to bring a new product to the market.
- **Order visibility** is the ability of customers to track their orders from placement to delivery.
- **Returnability** is the ease with which a customer can return unsatisfactory merchandise and the ability of the network to handle such returns.

Customer do not always expects the highest level of performance along all these dimensions. Eg. Amazon Customers Vs Barnes & Noble Store.

Trade off: Faster response time for high levels of variety.

2. Cost Factors: Changing the distribution network design affects the following supply chain costs on

- Inventories
- Transportation
- Facilities and handling
- information

Relationship between desired response time and required number of Facilities

Firms that target customers who can tolerate a long response time require only a few locations that may be far from the customer. These companies can focus on increasing the capacity of each location. In contrast, firms that target customers who value short response times need to locate facilities close to them. These firms must have many facilities, each with a low capacity. Thus, a decrease in the response time customers desire increases the number of facilities required in the network, as shown in Figure 4-1.

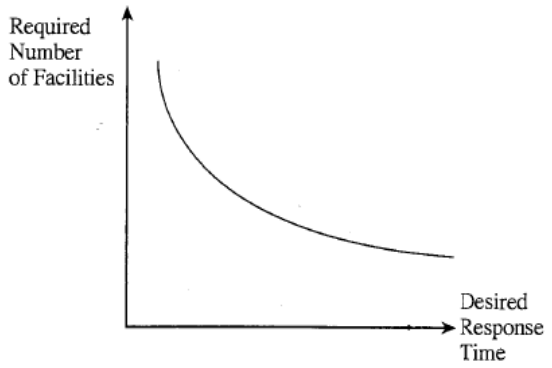


Fig 2.1 Relationship between desired response time and required number of Facilities

Relationship between No. of Facilities and Inventory Cost

To decrease inventory costs, firms try to consolidate and limit the number of facilities in their supply chain network. For example, with fewer facilities, Amazon is able to turn its inventory about 12 times a year, whereas Borders, with about 400 facilities, achieves only about two turns per year.

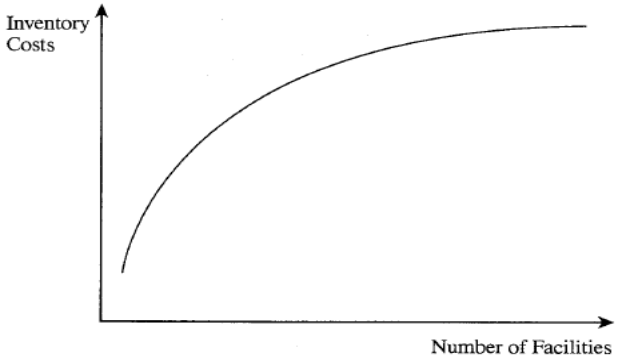


Fig 2.2 Relationship between No. of Facilities and Inventory Cost

Relationship between No. of Facilities and transportation cost

Transportation costs are of two types. These costs are called Inbound transportation costs and Outbound Transportation costs. Inbound transportation costs are those costs that are incurred while bringing the material into the company facility. On the other hand, outbound transportation costs are those that are incurred while sending the products outside the facility. It is observed that the inbound transportation costs are lesser than the outbound transportation ones because these include bringing of raw material that is in bulk, therefore the per unit transportation costs tend to

decrease. On the other hand, the outbound transportation costs are higher because products may need to be transported in smaller lots to different locations and the cost per unit tends to be higher than the inbound transportation costs.

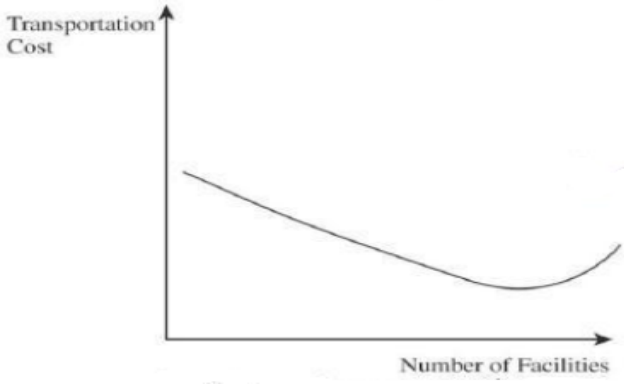


Fig 2.3 Relationship between No. of Facilities and Transportation Cost

Relationship between No. of Facilities and Facility cost

Facilities cost is nothing but the cost that is incurred in setting up a facility. Facility costs decrease as the number of facilities is reduced, as shown in Figure 2.4. Because a consolidation of facilities allows a firm to exploit economies of scale.

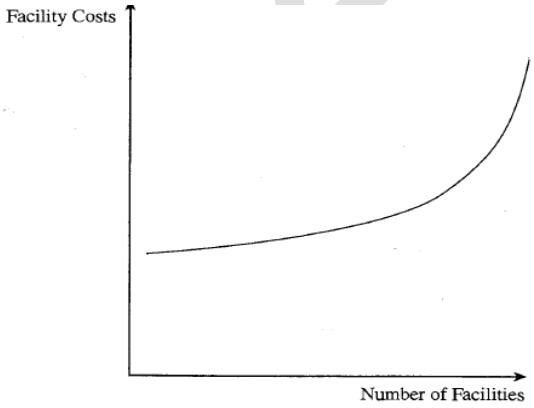


Fig 2.4 Relationship between No. of Facilities and Facility Cost

Relationship between No. of Facilities Response Time and Logistics Cost

Total Logistics Cost = Inventory Costs + Transportation Costs + Facility Costs. response time more effectively, then it may increase the number of facilities, which would also lead to an increase in the total logistics costs after the minimum point.

It is important to note that companies would like to exercise such increase in the number of facilities only if they are confident that the increase in revenues because of better responsiveness is more than the increase in the costs due to the additional facilities.

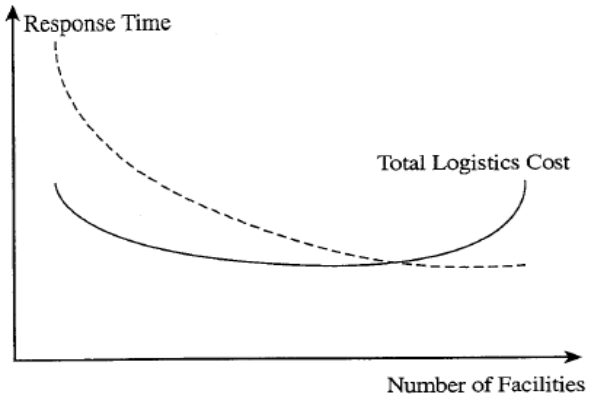


Fig 2.5 Relationship between No. of Facilities Response Time and Logistics Cost

Design options for Distribution Network

Distribution network choices from the manufacturer to the end consumer. Two key decisions used for designing a distribution network are

1. Will product be delivered to the customer location or picked up from a preordained site?
2. Will product flow through an intermediary (or) intermediate location?

Based on the choices for the two decisions, there are six classification of distribution network designs as follows.

1. Manufacturer storage with direct shipping
2. Manufacturer storage with direct shipping and in-transit merge
3. Distributor storage with package carrier delivery
4. Distributor storage with last-mile delivery
5. Manufacturer/distributor storage with costumer pickup
6. Retail storage with customer pickup

Manufacturer Storage with Direct Shipping: product is shipped directly from the manufacturer to the end customer, bypassing the retailer (who takes the order and initiates the delivery request). This option is also referred to as **drop shipping**. Ex: Dell, the manufacturer sells directly to the customer.

Advantage: Ability to centralize inventories at the manufacturer.

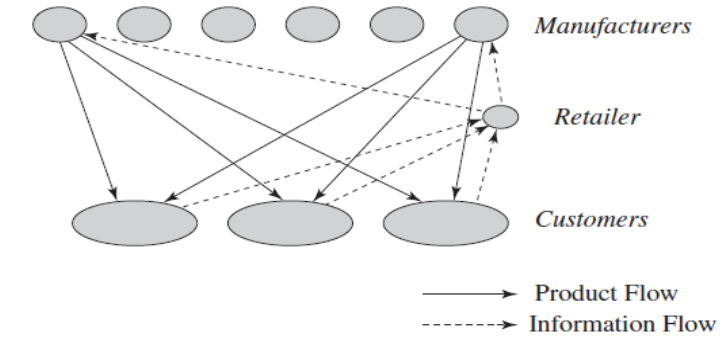


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Fig 2.6 Manufacturer Storage with Direct Shipping

Performance Characteristics of Manufacturer Storage with Direct Shipping Network

Cost Factor	Performance
Inventory	Lower costs because of aggregation. The biggest advantage of drop-shipping is the ability to centralize inventories at the manufacturer who can aggregate demand across all retailers that it supplies.
Transportation	Higher transportation costs because of increased distance and disaggregate shipping
Facilities and handling	Lower facility costs because of aggregation. Some saving on handling costs if manufacturer can manage small shipments or ship from production line
Information	Significant investment in information infrastructure to integrate manufacturer and retailer
Service Factor	**Performance**
Response time	Long response time of one to two weeks because of increased distance and two stages for order processing. Response time may vary by product, thus complicating receiving
Product variety	Easy to provide a high level of variety.
Product availability	Easy to provide a high level of product availability because of aggregation at manufacturer
Customer experience	Good in terms of home delivery but can suffer if order from several manufacturers is sent as partial shipments
Time to market	Fast, with the product available as soon as the first unit is produced

Order visibility	More difficult but also more important from a customer service perspective.
Returnability	Expensive and difficult to implement

Manufacturer storage with direct shipping and in-transit merge: It combines pieces of the order coming from different locations manufacturers, so that the customer gets a single delivery.

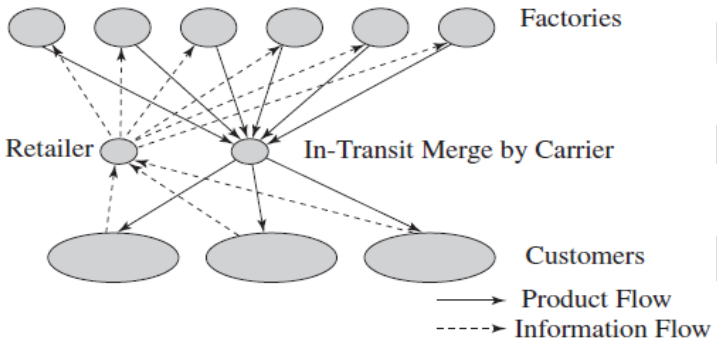

Fig 2.7 Manufacturer Storage with direct shipping and in-transit merge

In-transit merge design has been used by Dell and can be used by companies implementing drop-shipping. When a customer orders a PC from Dell along with a Sony monitor, the package carrier picks up the PC from the Dell factory and the monitor from the Sony factory; it then merges the two at a hub before making a single delivery to the customer.

Performance Characteristics of Manufacturer storage with direct shipping and in-transit merge

Cost Factor	**Performance**
Inventory	Similar to drop-shipping.
Transportation	Somewhat lower transportation costs than drop-shipping.
Facilities and handling	Handling costs higher than drop-shipping at carrier; receiving costs lower at customer.
Information	Investment is somewhat higher than for drop-shipping
Service Factor	**Performance**
Response time	Similar to drop-shipping; may be marginally higher
Product variety	Similar to drop-shipping
Product availability	Similar to drop-shipping

Customer experience	Better than drop-shipping because only a single delivery has to be received.
Time to market	Similar to drop-shipping
Order visibility	Similar to drop-shipping
Returnability	Similar to drop-shipping

Distributor storage with package carrier delivery: Under this option, inventory is not held by manufacturers at the factories but is held by distributors / retailers in intermediate warehouses and package carriers are used to transport products from the intermediate location to the final customer. Amazon.com as well as industrial distributors like W.W. Grainger and McMaster-Carr have used this approach combined with drop-shipping from a manufacturer (or distributor).

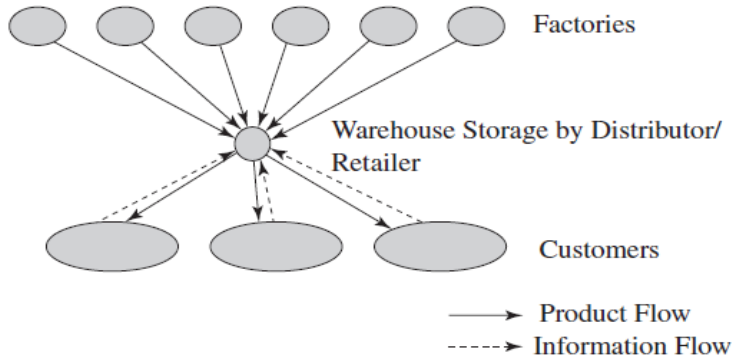

Fig 2.8 Distributor storage with package carrier delivery

Performance Characteristics of Distributor storage with package carrier delivery

Cost Factor	**Performance**
Inventory	Higher than manufacturer storage. Difference is not large for faster moving items but can be large for very slow-moving items.
Transportation	Lower than manufacturer storage. Reduction is highest for faster moving items.
Facilities and handling	Somewhat higher than manufacturer storage. The difference can be large for very slow-moving items.
Information	Simpler infrastructure compared to manufacturer storage
Service Factor	**Performance**
Response time	Faster than manufacturer storage
Product variety	Lower than manufacturer storage

Product availability	Higher cost to provide the same level of availability as manufacturer storage.
Customer experience	Better than manufacturer storage with drop-shipping.
Time to market	Higher than manufacturer storage
Order visibility	Easier than manufacturer storage
Returnability	Easier than manufacturer storage

Distributor storage with last mile delivery: By 'last mile delivery' we mean that the distributor or retailer provides delivery of the demanded product up to the customer's place.

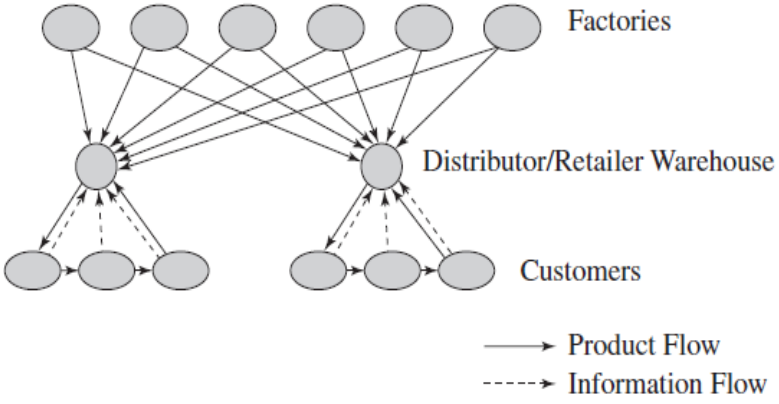

Fig 2.9 Distributor storage with last mile delivery

This delivery is made without using a carrier. It is very important to note that companies opting for the distributor storage with last mile delivery design option have their warehouses placed very close to the customer. Ex: Webvan, Peapod, and Albertsons have used last-mile delivery in the grocery industry.

Performance Characteristics of Distributor storage with last mile delivery

Cost Factor	**Performance**
Inventory	Higher than distributor storage with package carrier delivery
Transportation	Very high cost given minimal scale economies. Higher than any other distribution option.
Facilities and handling	Facility costs higher than manufacturer storage or distributor storage with package carrier delivery, but lower than a chain of retail stores.
Information	Similar to distributor storage with package carrier delivery
Service Factor	**Performance**

Response time	Very quick. Same day to next-day delivery
Product variety	Somewhat less than distributor storage with package carrier delivery but larger than retail stores
Product availability	More expensive to provide availability than any other option except retail stores..
Customer experience	Very good, particularly for bulky items.
Time to market	Slightly higher than distributor storage with package carrier delivery
Order visibility	Less of an issue and easier to implement than manufacturer storage or distributor storage with package carrier delivery.
Returnability	Easier to implement than other previous options. Harder and more expensive than a retail network

Manufacturer/ Distributor storage with customer pick-up: Inventory is stored at the manufacturer or distributor warehouse, but customers place their orders online or on the phone and then travel to designated pickup points to collect their merchandise. Orders are shipped from the storage site to the pickup points as needed.

Examples include 7dream.com and Otoriyose-bin, operated by Seven-Eleven Japan, which allow customers to pick up online orders at a designated store. A business-to-business (B2B) example is W.W. Grainger, whose customers can pick up their orders at one of the W.W.Grainger retail outlets.

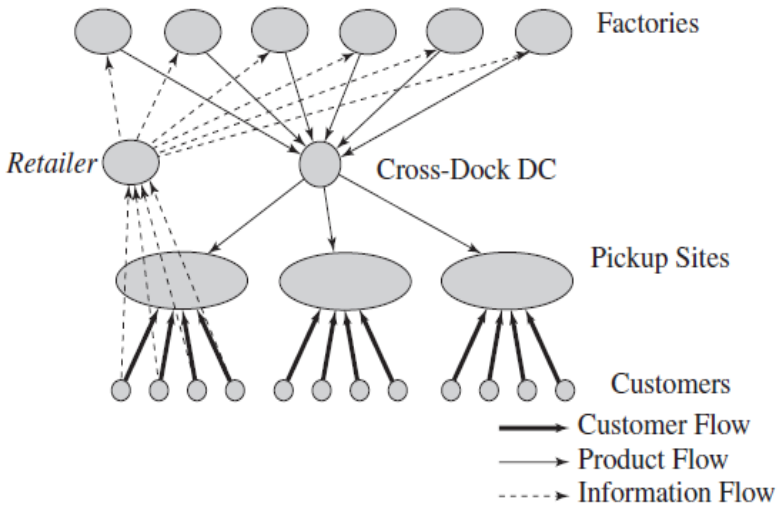

Fig 2.10 Manufacturer/ Distributor storage with customer pick-up

Performance Characteristics of Manufacturer/ Distributor storage with customer pick-up

Cost Factor	Performance
Inventory	Can match any other option, depending on the location of inventory
Transportation	Lower than the use of package carriers, especially if using an existing delivery network.
Facilities and handling	Facility costs can be high if new facilities have to be built. Costs are lower if existing facilities are used. The increase in handling cost at the pickup site can be significant..
Information	Significant investment in infrastructure required
Service Factor	**Performance**
Response time	Similar to package carrier delivery with manufacturer or distributor storage. Same-day delivery possible for items stored locally at pickup site
Product variety	Similar to other manufacturer or distributor storage options
Product availability	Similar to other manufacturer or distributor storage options
Customer experience	Lower than other options because of the lack of home delivery. Experience is sensitive to capability of pickup location.
Time to market	Similar to manufacturer storage options
Order visibility	Difficult but essential.
Returnability	Somewhat easier given that pickup location can handle returns

Retail storage with customer pick-up: Under the retail storage option, the inventory is stored at the retail outlets. Desirous customers may come to these retail outlets anytime and purchase the desired products. They may also apply online or call up any of the company's hot line numbers to place their orders and then pick it up from a retail store.

Ex: A B2B example is W.W. Grainger. Customers can order online, by phone, or in person and pick up their order at one of W.W. Grainger's retail outlets. Albertsons keeps its inventory at the pickup location itself. W.W. Grainger stores some items at the pickup locations, whereas others may come from a central location.

Performance Characteristics of Retail storage with customer pick-up

Cost Factor	Performance
Inventory	Higher than all other options
Transportation	Lower than all other options.
Facilities and handling	Higher than other options. The increase in handling cost at the pickup site can be significant for online and phone orders.
Information	Some investment in infrastructure required for online and phone orders
Service Factor	**Performance**
Response time	Same-day (immediate) pickup possible for items stored locally at pickup site.
Product variety	Lower than all other options
Product availability	More expensive to provide than all other options
Customer experience	Related to whether shopping is viewed as a positive or negative experience by customer
Time to market	Highest among distribution options
Order visibility	Trivial for in-store orders. Difficult, but essential, for online and phone orders.
Returnability	Easier than other options because retail store can provide a substitute.

Selecting a Network Design Options

When deciding on the appropriate delivery network, A network designer needs to consider the following points,

- product characteristics
- Network requirements

following table shall tell us which type of network design is best suited for a particular product.

	Retail Storage with Customer Pickup	*Manufacturer Storage with Direct Shipping*	*Manufacturer Storage with In-Transit Merge*	*Distributor Storage with Package Carrier Delivery*	*Distributor Storage with Last-Mile Delivery*	*Manufacturer Storage with Pickup*
Response time	1	4	4	3	2	4
Product variety	4	1	1	2	3	1
Product availability	4	1	1	2	3	1
Customer experience	Varies from 1 to 5	4	3	2	1	5
Time to market	4	1	1	2	3	1
Order visibility	1	5	4	3	2	6
Returnability	1	5	5	4	3	2
Inventory	4	1	1	2	3	1
Transportation	1	4	3	2	5	1
Facility and handling	6	1	2	3	4	5
Information	1	4	4	3	2	5

Key: 1 corresponds to the strongest performance and 6 the weakest performance.

Fig 2.11 Comparative performance of delivery network design

An excellent example of a hybrid network is that of W.W. Grainger, which combines all the aforementioned options in its distribution network. The network, however, is tailored to match the characteristics of the product and the needs of the customer. Fast-moving and emergency items are stocked locally, and customers can either pick them up or have them shipped, depending on the urgency.

Slower moving items are stocked at a national DC and shipped to the customer within a day or two. Very slow-moving items are typically drop-shipped from the manufacturer and carry a longer lead time. Another hybrid network is used by Amazon, which stocks fast-moving items at most of its warehouses, slower moving items at fewer warehouses, and very slow-moving items may be drop-shipped from distributors or publishers.

Distribution Networks in Practice

1. The ownership structure of the distribution network can have as big an impact as the type of distribution network: Distribution networks that have exactly the same physical flow but different ownership structures can have vastly different performance. Attempting to optimize over a distribution network with multiple enterprises requires great skill in coordinating the incentives of each of the players and in creating the right relationships.

2. The choice of a distribution network has very long-term consequences: The structure of the distribution network is one of the most difficult decisions to change. The impact often lasts for decades, amplifying the importance of the choice.

3. Consider whether an exclusive distribution strategy is advantageous: Another important choice is whether to distribute exclusively or not. For instance, a manufacturer of consumer electronics such as Sony could choose to have multiple or an exclusive distributer.

Multiple distributors: Sony would be interested in increasing the availability of its products to customers and would certainly not mind if its distributors competed with each other to sell Sony products to customers.

Exclusive distributor: An alternative is to form an exclusive relationship with a distributor. In this case, customers can buy this brand's products only from a single retailer. The retailer can garner higher margins, as it doesn't have to battle over price with nearby store. The manufacturer can often increase its sales significantly, because its exclusive distributor will be much more interested in marketing the manufacturer's goods, as there is a higher margin and less competition.

4. Product price, commoditization, and criticality affect the type of distribution system preferred by customers: Interactions between a buyer and a seller take time and resources. Many buyers would like to establish a relationship with a single enterprise that can deliver a full line of products. This can be accomplished by a manufacturer with a broad line of products. However, this is often accomplished more effectively by distributor carrying products from many manufacturers.

A customer's desire for a one-stop shop depends not just on the convenience of the relationship, but also on the type of product he or she is buying. For example, a customer may well be content to buy a PC directly from manufacturer. However, very few customers are willing to order pens direct from a pen manufacturer, and paper directly from a paper manufacturer. Most customers much prefer a stationary store that carries a very wide range of different manufacturers' products.

5. Integrate the Internet with the existing physical network: To extract maximum benefit from e-business, firms should integrate it with their existing supply chain networks. Separating the two networks often results in inefficiencies within the supply chain. This coupling of e-business with the existing physical network has been referred to as clicks-and-mortar.

Role of Network Design in a Supply Chain

Supply chain network design decisions include the assignment of facility role, location of manufacturing, storage, or transportation-related facilities, and the allocation of capacity and markets to each facility.

Supply chain network design decisions are classified as follows.

1. Facility role: What role should each facility play? What processes are performed at each facility?

2. Facility location: Where should facilities be located?

3. Capacity allocation: How much capacity should be allocated to each facility?

4. Market and supply allocation: What markets should each facility serve? Which supply sources should feed each facility?

Facility role: Decisions concerning the role of each facility are significant because they determine the amount of flexibility the supply chain has in changing the way it meets demand.

Facility location: Facility location decisions have a long-term impact on a supply chain's performance because it is very expensive to shut down a facility or move it to a different location.

Capacity allocation: Capacity allocation has a significant impact on the supply chain's performance. This is because capacity of any facility can be altered easily as compared to the location of the facility. However, even these decisions need to be made correctly, as proper allocation of capacity to a facility helps to maintain or reduce costs and thereby optimum utilization of the facility can be achieved. But, if more capacity is allocated to a facility or even less capacity is allocated, then it becomes difficult for a company to satisfy the demand of the customers that are closer or further from the facility.

Market and supply allocation: The allocation of the various supply sources and also the allocation of particular markets for a particular facility has a significant impact on the supply chain performance. This in turn it affects the production and transportation costs and also the inventory that a supply chain must serve in order to satisfy the customer demand.

Thus, this decision must be reviewed from time to time so that the allocation of capacity, markets and supply sources can be altered as and when the demand arises.

The whole supply chain configuration can be altered on the basis of the decisions made on the supply chain network design. These decisions also help to prepare restrictions within which the inventories, transportation and most importantly, information can be utilised to increase or decrease the supply chain responsiveness and the supply chain costs.

These decisions can help a company figure out which facility performs better, is cheaper for them or is more responsive to its customers and how these facilities will work for the future.

Framework for network Decisions

The goal when designing a supply chain network is to maximize the firm's profits while satisfying customer needs in terms of demand and responsiveness.
Global network design decisions are made in 4 phases.

- Phase I. Define a Supply Chain Strategy/Design
- Phase II. Define the Regional Facility Configuration
- Phase III. Select a Set of Desirable Potential Sites
- Phase IV. Location Choices

Phase I. Define a Supply Chain Strategy/Design:

Objective: is to define a firm's broad supply chain design. This includes determining the stages in the supply chain, and whether each supply chain function will be performed in-house or outsourced.

Clear definition of the firm's competitive strategy: Phase I starts with a clear definition of the firm's competitive strategy as the set of customer needs that the supply chain aims to satisfy. The supply chain strategy then specifies what capabilities the supply chain network must have to support the competitive strategy.

Forecast the likely evolution of global competition: Managers must forecast the likely evolution of global competition and whether competitors in each market will be local or global players.

Identify constraints on available capital: Managers must also identify constraints on available capital and whether growth will be accomplished by acquiring existing facilities, building new facilities, or partnering.

Determine growth strategy: Based on the competitive strategy of the firm, its resulting supply chain strategy, an analysis of the competition, any economies of scale or scope, and any constraints, managers must determine the supply chain design for the firm.

Phase II: Define the Regional Facility Configuration

Objective: is to identify regions where facilities will be located, their potential roles, and their approximate capacity.

Forecast of the demand by country or region: Such a forecast must include a measure of the size of the demand as well as a determination of
whether the customer requirements are homogenous or variable across different countries. Homogenous requirements favor large consolidated facilities, whereas requirements that vary across countries favor smaller, localized facilities.

Economies of scale or scope: economies of scale or scope can play a significant role in reducing costs, given available production technologies. If economies of scale or scope are significant, it may be better to have a few facilities serving many markets.

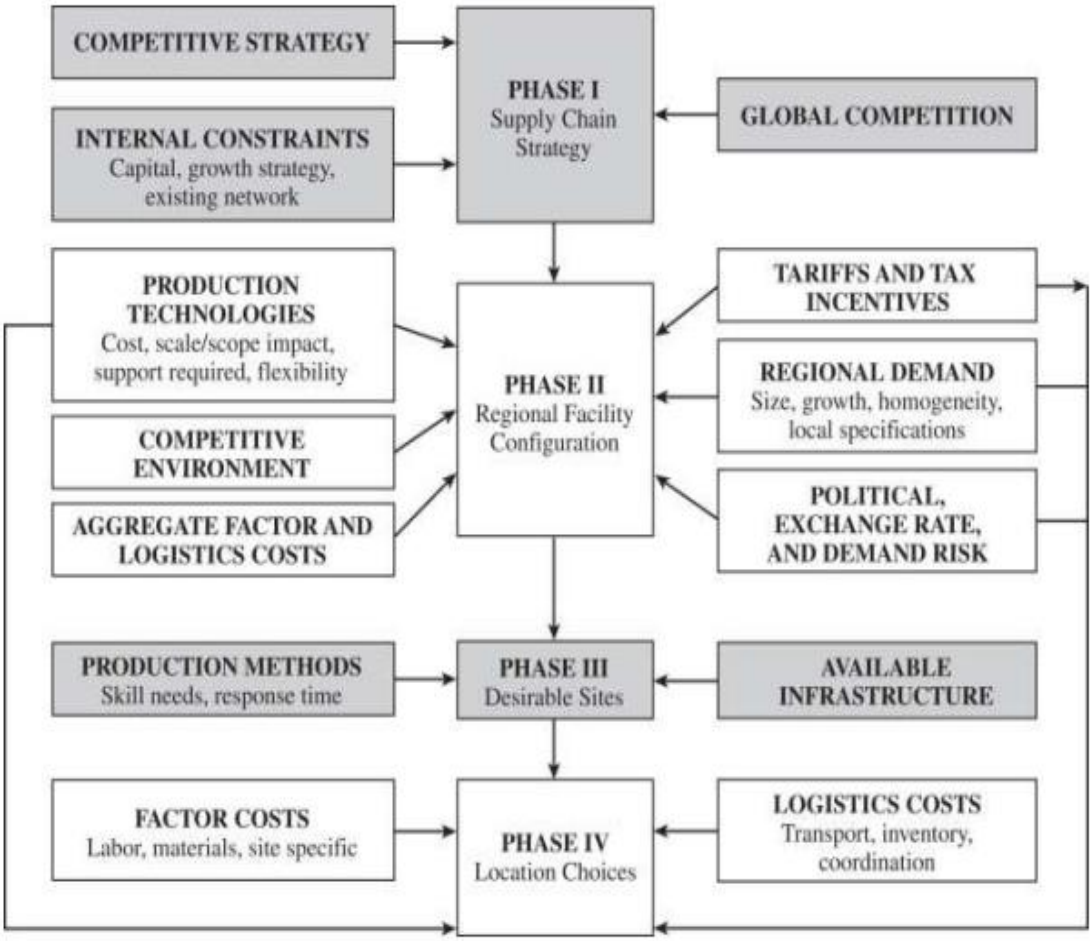

Fig 2.12 Framework for network Design Decisions

Risk: Identify demand risk, exchange-rate risk, political risk, tariffs, requirements for local production, tax incentives, and export or import restrictions

Identify competitors: Managers must identify competitors in each region and make a case for whether a facility needs to be located close to or far from a competitor's facility.

Phase III: Select a Set of Desirable Potential Sites

Objective: is to select a set of desirable potential sites within each region where facilities are to be located. Sites should be selected based on an analysis of infrastructure availability to support the desired production methodologies.

Hard infrastructure requirements: include the availability of suppliers, transportation services, communication, utilities, and warehousing infrastructure.

Soft infrastructure requirements: include the availability of skilled workforce, workforce turnover, and the community receptivity to business and industry.

Phase IV: Location Choices

Objective: is to select a precise location and capacity allocation for each facility. Attention is restricted to the desirable potential sites selected in Phase III.

The network is designed to maximize total profits taking into account the expected margin and demand in each market, various logistics and facility costs, and the taxes and tariffs at each location.

The Role of IT in Network Design

1. A good network design IT system makes the modeling of the network design problems much easier than in a general-purpose tool such as Excel. These applications have many built-in tools that facilitate an accurate description of a large supply chain network and incorporate realistic features that would be time consuming and difficult to build in Excel.

2. An IT system contains high-performance optimization technologies, which deliver a high-quality solution for large problems in a reasonable amount of time. Although Excel's solver can be upgraded, there are many cases in which the size and complexity of the optimization require a more sophisticated system that a network design application can provide.

3. A good network design application also allows for an analysis of various "what if" scenarios. Given the uncertainty associated with forecasts, the ability to evaluate network designs in a variety of scenarios is a very powerful tool for a designer. A network designer may find it much more appropriate to select a design that gives very good costs in many likely scenarios rather than a design that is optimal in one scenario but very poor in another. The ease of modeling and speed of solution allows a good network design application to facilitate what-if analysis to a far greater extent than a general-purpose tool such as Excel.

4. Finally, network design applications are structured to interface easily with the planning and operational software used by firms, which contain much of the actual data required for network design. The ease of interfacing with the data source speeds up the creation and solution of a network design model.

Additional Topics for Unit 2:

1. Develop a case study to measure the success of Blue Nile against Tiffany and Zales success in diamond retailing by comparing retail strategies and structures. Based on the strategy and structure of Blue Nile, Zales and Tiffany. Answer the following. (15 M)

(i)What are some key success factors in diamond retailing? How do Blue Nile, Zales, and Tiffany compare on those dimensions?
(ii) What do you think of Tiffany's decision to not sell diamonds engagement rings online?
(iii) What advice would you give to each of the three companies regarding its strategy and structure?
Answer pg no:102-107 in Sunil Chopra.

Answer:

What are some key success factors in diamond retailing? How do Blue Nile, Zales, and Tiffany compare on those dimensions? (5M)

Blue Nile has an obvious advantage in product variety and product availability since customers can "build their own ring" by choosing from an inventory of about 75,000 stones online.

The Tiffany brand is very strong and well established. It is associated with glamour, luxurious, trust, and customer service. So Tiffany can get higher margins than its competitors.

Nile's supply chain structure has major advantage in facility costs. Because items sold through the Blue Nile Web site are customized. So company can keep inventory longer and reducing safety inventory. Blue Nile has higher transportation costs than Tiffany or Zales. The outbound transportation time and costs are much higher because of aggregate inventory.

What do you think of Tiffany's decision to not sell diamonds engagement rings online? (5M)

I think that Tiffany's decision to not sell engagement rings online has a lot to do with wanting the customer to see the rings in-store when it comes to engagement in order

to get the full Tiffany's experience. Their engagement rings line up with their brand image of luxury and exclusivity, from the products they sell to their in-store salespeople. I think Blue Nile's growth into the non-engagement category again stems from their ability to hold more low holding cost inventory, allowing them to have a larger variety of inventory

What advice would you give to each of the three companies regarding its strategy and structure (5 M)

Blue Nile can take a positive position, emphasizing its lower prices with similar quality to very high-end diamond retailers. Although this is a bad news to sell in general, it may be easier in the difficult economic environment. Tiffany has to continue working hard to maintain its brand image. It cannot centralize its high-end stones because that would conflict with its brand image. Zales need to control its inventories. Like centralize the expensive diamond for stores. Help customers to choose higher-end diamonds by sample.

2. Explain the impact of the following online sales with respect to the Cost and service Factors of the Distribution network.

(i) Amazon Online sales of books compared to traditional method of sales

(ii) Neflix Online sale compared with traditional method of DVD sale.

Answer :

Impact of online sales on Netflix Performance

- Netflix is the world largest Subscription service for video streaming through a variety of devices.
- In ealy 20s, Neflix DVD sale is very effective. Customer received DVD's within 24 hours once the order is placed.
- Now Online Distribution of Video content increases the sale tremendously.
- The Performance is listed below in the table as follows

Cost Factor	**Impact for DVD**	**Impact for digital content**
Inventory	**+2**	**+2**
Transportation	**-2**	**0**
Facilities and handling	**+1**	**+1**

Information	**-1**	**-1**
Service Factor		
Response time	**-1**	**+2**
Product variety	**+2**	**+2**
Product availability	**+1**	**+2**
Customer experience	**+1**	**+2**
Time to market	**-1**	**-1**
Order visibility	**0**	**0**
Returnability	**-1**	**-2**

Note : +2 : higly positive, +1 : positive, 0:neutral, -1: negative, -2 highly negative

Impact of online sales on Amazon Ebooks and Traditional Book Selling Performance

- Internet E Book Sales offeres tremendous advantages compared to traditional bookselling.
- The Performance is listed below in the table as follows

Cost Factor	**Impact physical books**	**Impact for E-BOoK**
Inventory	**+1**	**+2**
Transportation	**-2**	**+1**
Facilities and handling	**+1**	**+1**
Information	**-1**	**-1**
Service Factor		
Response time	**-1**	**+1**
Product variety	**+2**	**+2**
Product availability	**+1**	**+2**
Customer experience	**+1**	**+1**
Time to market	**+1**	**+2**
Order visibility	**0**	**0**
Returnability	**-1**	**-2**

Note : +2 : higly positive, +1 : positive, 0:neutral, -1: negative, -2 highly negative