

Difference between Logistics and Supply Chain Management

Which one does your business needs?

Logistics

- Specific activities involved in the movement, storage and flow of goods and materials from the point of origin to point of consumption.
- Logistics focuses on efficient management of specific activities related to transportation, storage and inventory.
- Operates within shorter time frame typically dealing with day to day operations and tactical activities.
- Logistics contributes to customer satisfaction by ensuring that products are delivered on time and in good condition.

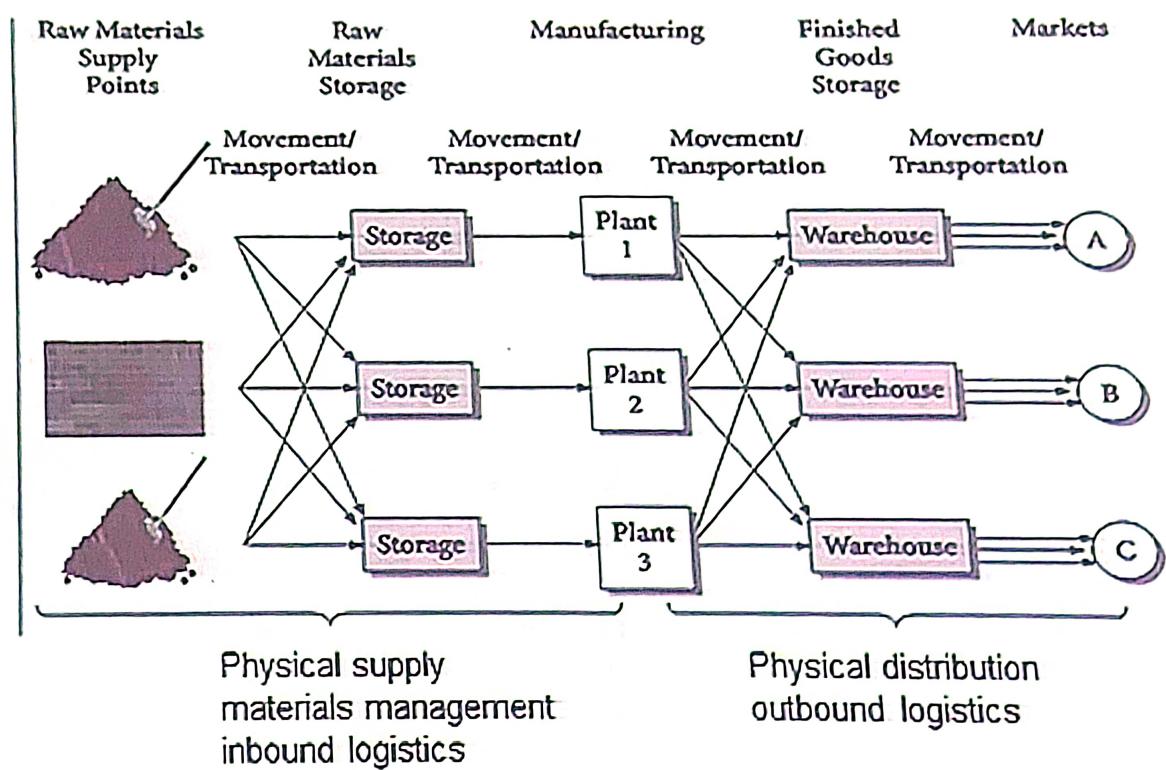
Supply Chain Management

- SCM encompasses end-to-end coordination and integration of all activities involved in sourcing, procurement, production and distribution of goods or services.
- SCM emphasizes on integration and coordination of various function and processes within and across the organizations.
- SCM takes a long term perspective and strategic decision making such as network design, supplier selection and demand forecasting.
- SCM places strong emphasis on understanding customer needs, demand patterns, and market dynamics.

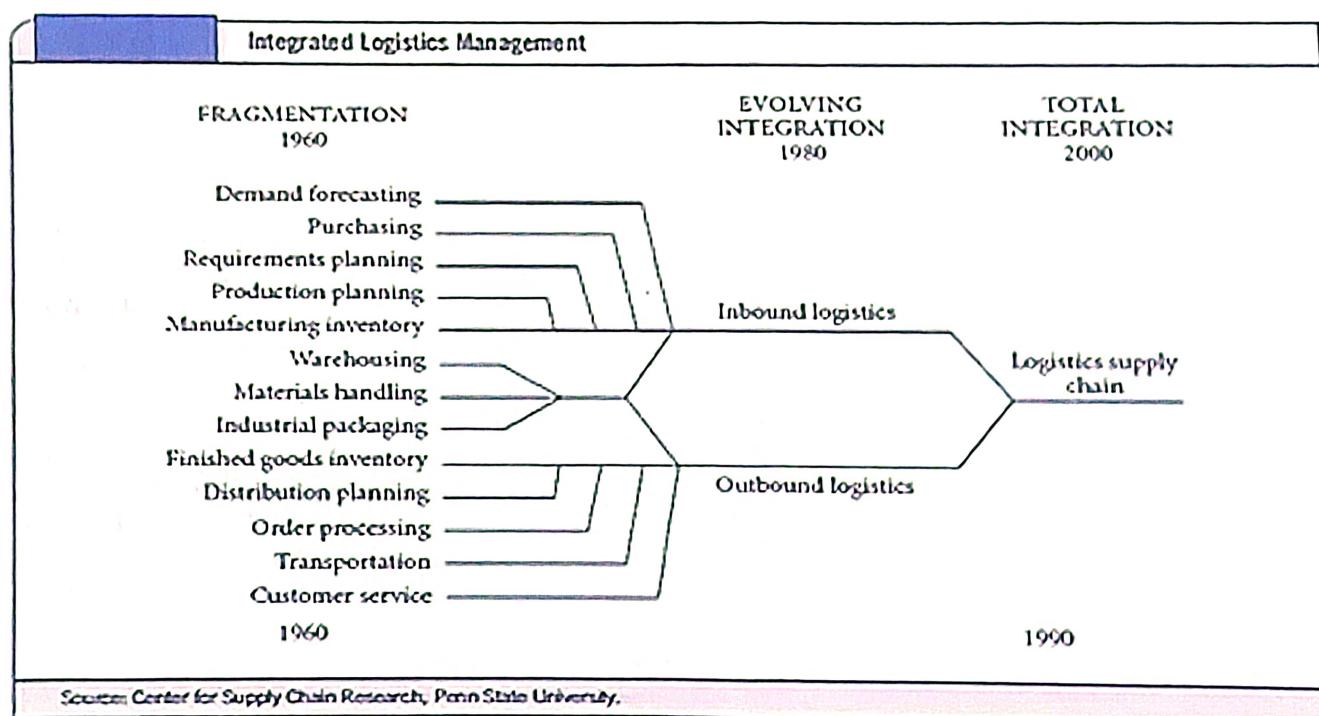
Customer Focus:

Logistics and SCM are vital components of modern business operations. By strategically managing flow of goods, services, and information, organizations can achieve cost efficiencies, enhance customer satisfaction, and gain a competitive edge. The ever evolving landscape of logistics and supply chain management require continuous adaptation to technological advancements and industry trends.

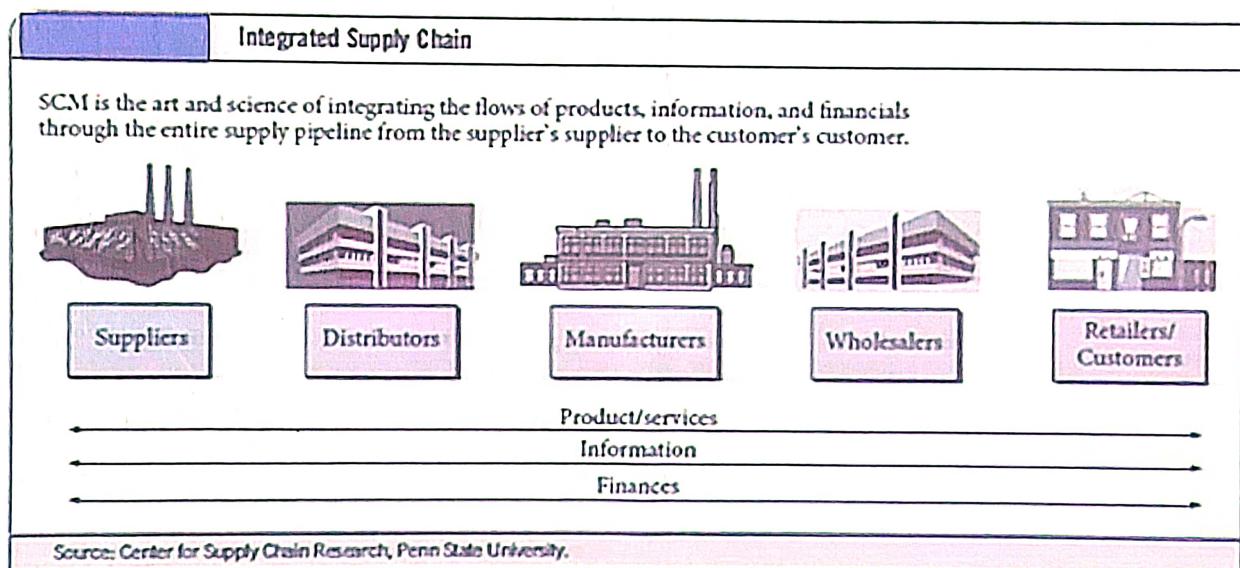
A View of Business Logistics in a Company



Integrated Logistics Management



Integrated Supply Chain



What is Logistics?

- Logistics management
- Business logistics management
- Integrated logistics management
- Materials management
- Physical distribution management
- Marketing logistics
- Industrial logistics
- Distribution

Logistics Definitions

- Inventory:
 - Management of materials in motion and at rest
- Customer:
 - Getting the right product, to the right customer, in the right quantity, in the right condition, at the right place, at the right time, and at the right cost (called the dictionary "seven Rs of logistics")
- International Society of Logistics:
 - The branch of military science having to do with procuring, maintaining, utility/ value and transporting material, personnel, and facilities
- Council of Supply Chain Management
 - The art and science of management, engineering, and technical activities concerned with requirements, design, and supplying and maintaining resources to support objectives, plans, and operations

Introduction

- Transportation involves the physical movement of goods between origin and destination points.
- The transportation system links geographically separated partners and facilities in a company's supply.
- Transportation facilitates the creation of time and place utility in the supply chain.
- Transportation also has a major economic impact on the financial performance of businesses.



Role of Transportation in Supply Chain Management

- Transportation provides the critical links between these organizations, permitting goods to flow between their facilities.
- Transportation service availability is critical to demand fulfillment in the supply chain.
- Transportation efficiency promotes the competitiveness of a supply chain

III. MODES OF TRANSPORTATION

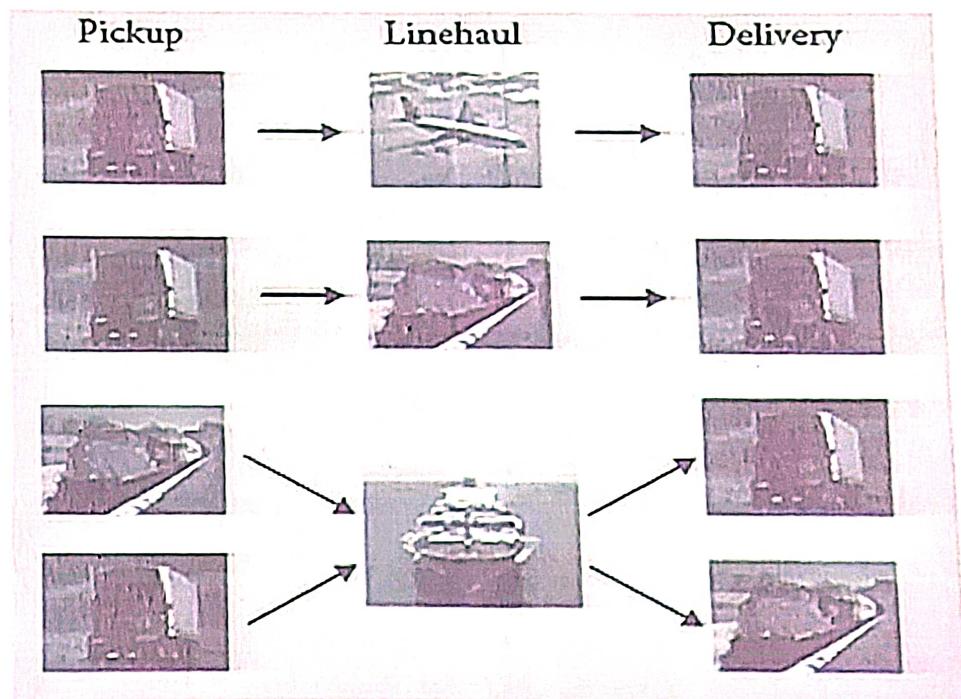
Types of Transportation Services

- Railroads
 - Activity levels have been achieved despite a lack of direct accessibility to all parts of the supply chain.
 - Railroads are “natural monopolies”.
 - Two carrier types:
 - Linehaul.
 - Shortline carriers
 - High fixed, low variable
- Air Carriers
- Water Carriers

- Water Carriers, *continued*
 - Two primary carrier types
 - Liner
 - Charter
 - Options include
 - Container ships
 - Bulk carriers
 - Tankers
 - General cargo ships
 - Roll-on, roll-off (RO-RO) vessels
- Pipelines
 - Unique mode of transportation as the equipment is fixed in place and the product moves through it in high volume

- Pipelines, *continued*
 - Three primary types
 - Gathering lines
 - Trunk lines
 - Refined product pipelines
 - High fixed versus low variable
- Intermodal
 - Use of two or more different modes in movement
 - Greater accessibility
 - Overall cost efficiency
 - Facilitates global trade
 - Development of standardized containers that are compatible with multiple modes.
- Intermodal, *continued*
 - Product-handling characteristics
 - Containerized freight
 - Transload freight

Widely Used Intermodal Combinations



Source: Brian J. Gibson, Ph.D.

The Role of Distribution Operations in SCM

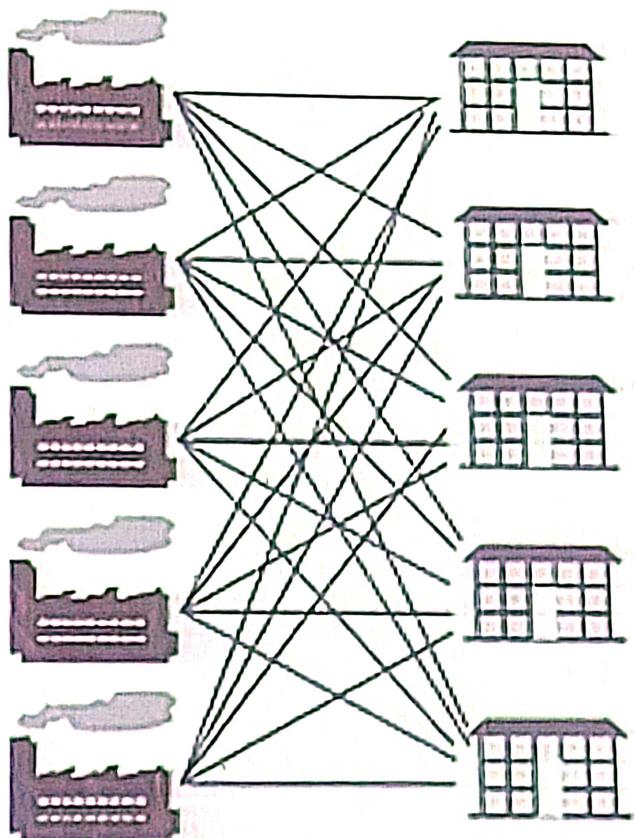
- Balancing supply and demand.
- Protecting against uncertainty.
- Allowing quantity purchase discounts.
- Supporting production requirements.
- Promoting transportation economies.

Distribution Facility Location

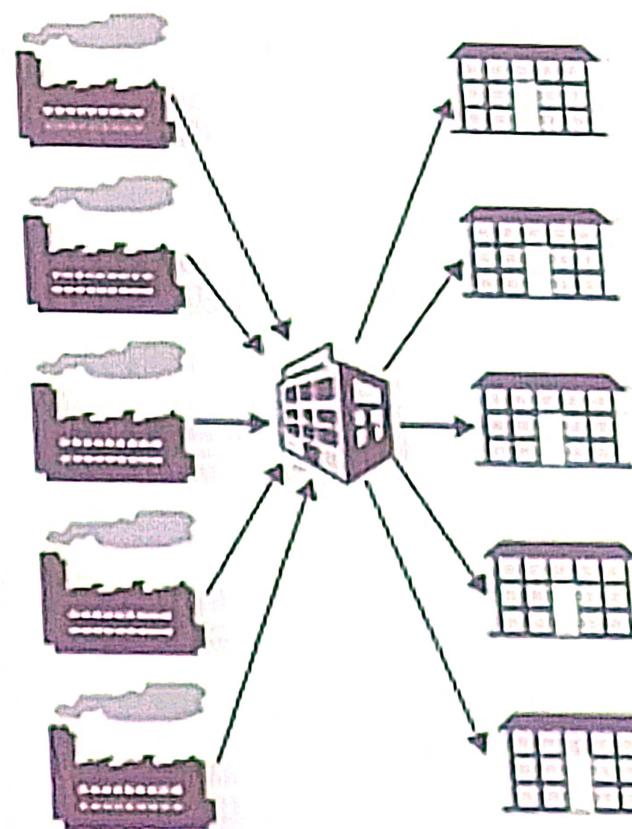
Facility Location Decision

- Distribution Facility Functionality
 - Accumulation
 - Sortation
 - Allocation
 - Assortment
- Distribution Tradeoffs
 - Cost of distribution centers and inventory vs. cost of transportation
 - Cost of additional facilities vs. level of customer service
 - Space vs. equipment
 - Equipment vs. people
 - People vs. space

The DC's Accumulation Role



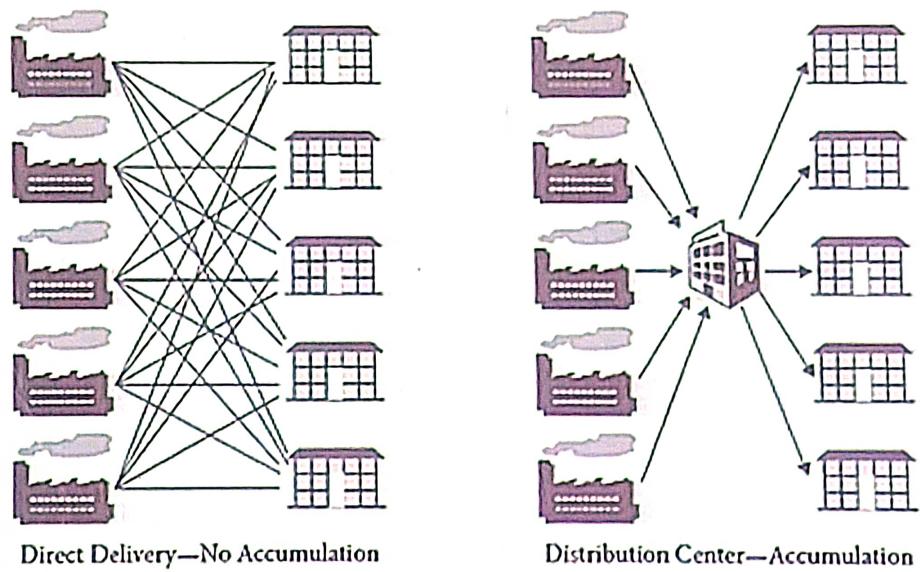
Direct Delivery—No Accumulation



Distribution Center—Accumulation

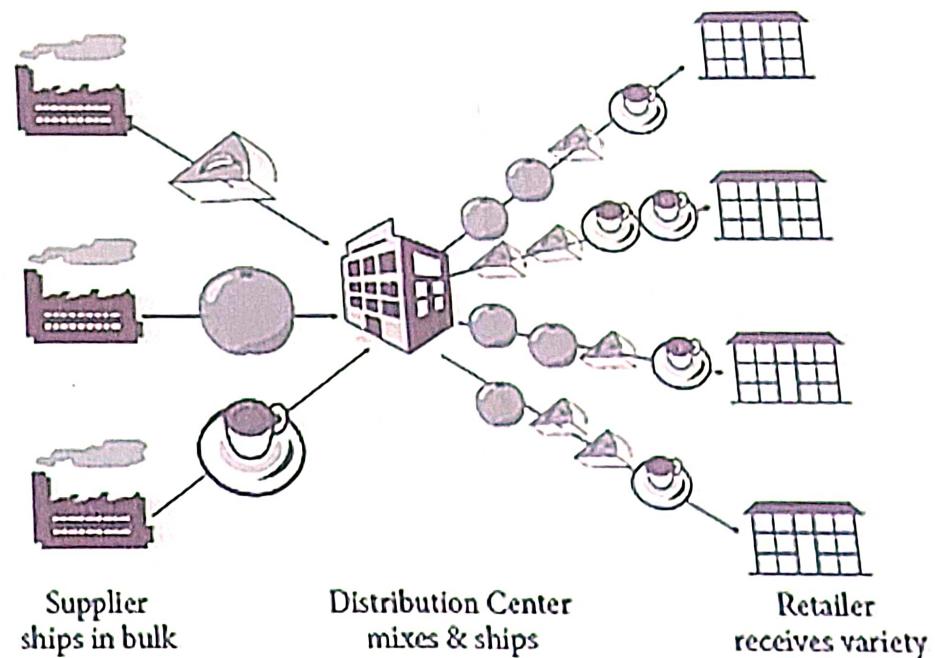
Source: Brian J. Gibson, Ph.D.

Figure 11.1
The DC's Accumulation Role



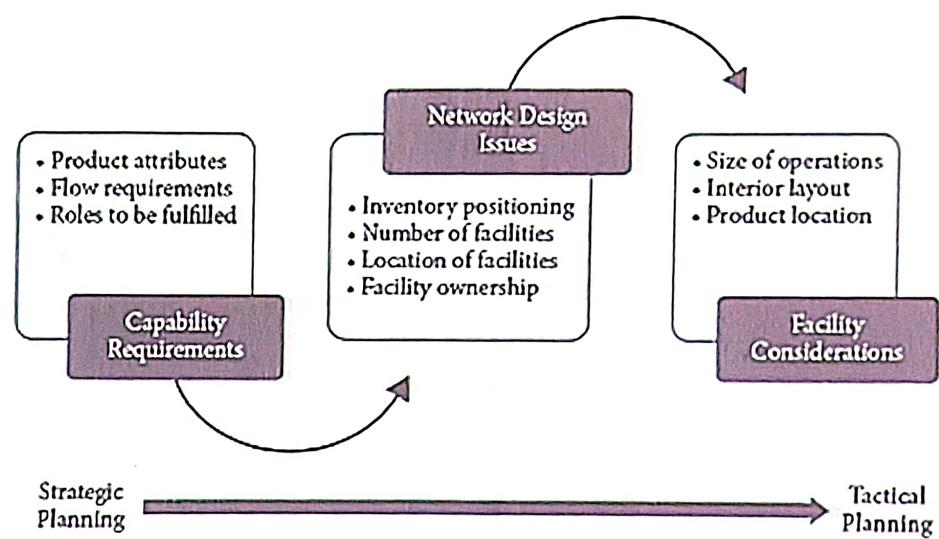
Source: Brian J. Gibson, Ph.D.

Figure 11.2
The DC's Mixing Capability



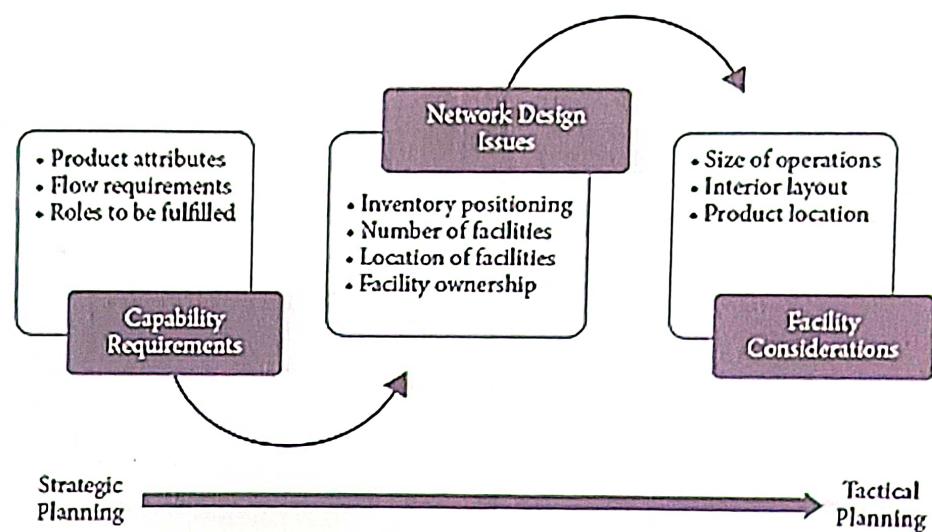
Source: Brian J. Gibson, Ph.D.

Figure 11.4
Strategic Distribution Decisions



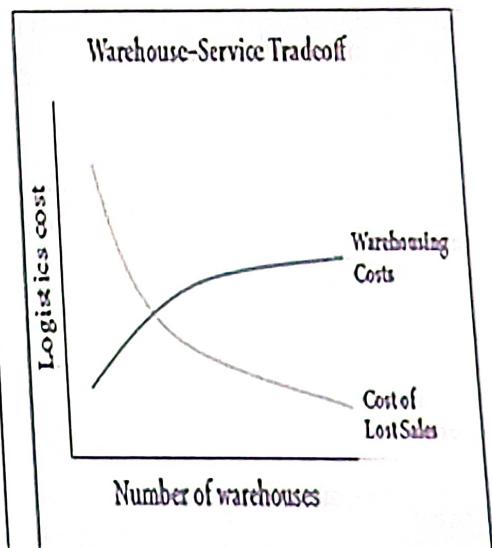
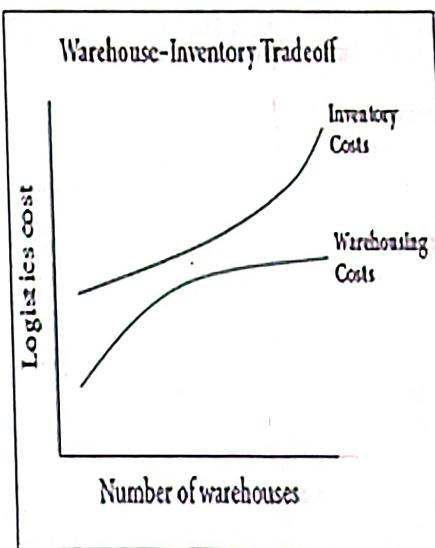
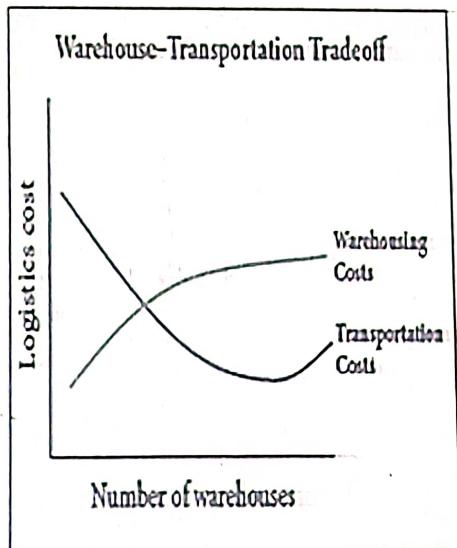
Source: Brian J. Gibson, Ph.D.

Figure 11.4
Strategic Distribution Decisions



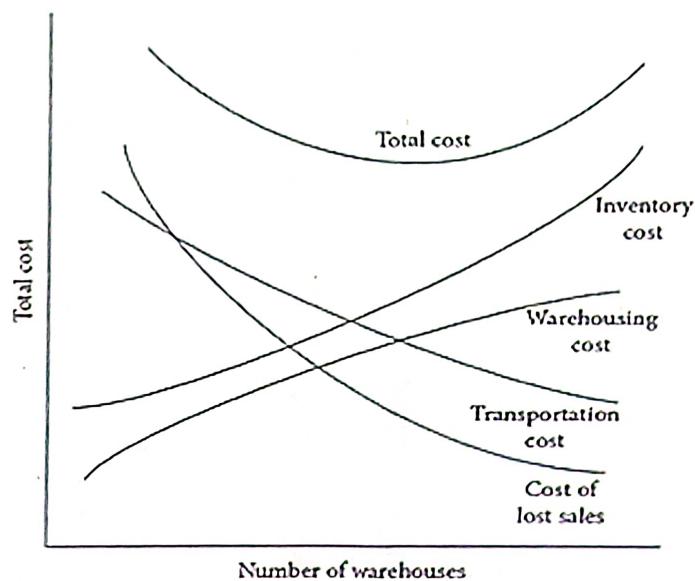
Source: Brian J. Gibson, Ph.D.

Functional Tradeoffs



Source: Brian J. Gibson, Ph.D.

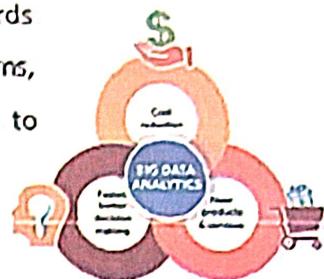
Figure 11.6
Distribution Cost Tradeoffs



Source: Edward J. Bard, Ph.D.

What is BIG Data Analytics?

Effective management of Data leading towards information (process of uncovering trends, patterns, and correlations in large amounts of raw data to help make data-informed decisions.)

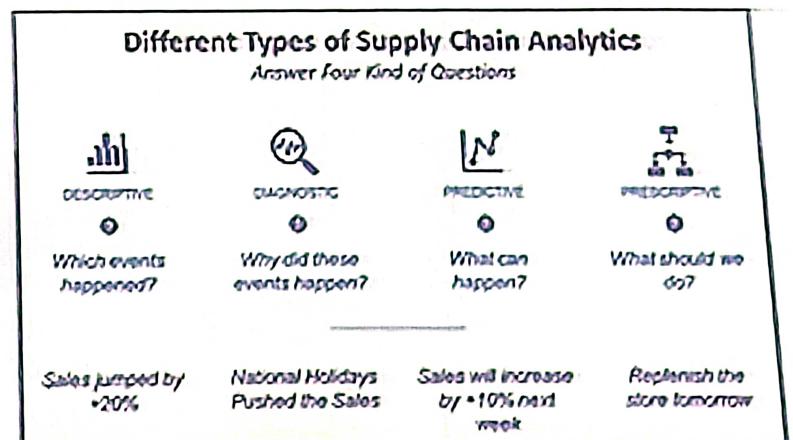


Data Analytics *per se*

- Descriptive (Visualization – plots/charts on Dashboards)
- Diagnostic (Exploratory/Causal - RCA, FMEA, HIRA, Statistical)
- Predictive (Modelling – Math/Stat/AI/ML/Soft Computing)
- Prescriptive (Optimization, Decision making)
- Cognitive (Human-like Intelligence – AI, ML, DL)
 - Generative AI (LLM - Analyst as GPT – automation)

What is Supply Chain Analytics?

It is the analysis of information companies use to gain insight and extract value from a number of applications tied to their supply chain, including supply chain execution systems for procurement, inventory management, order management, warehouse management and fulfillment, and transportation management.



Features of SCA: five “C”

- **Connected:** Any supply chain analytics effort starts with data, so it's critical that the solution has access to all pertinent sources of information. These data connections start with the ERP and extend to any other technology to collect information (ex. IoT devices).
- **Collaborative:** Supply chain partners are critical to success, and so they should collaborate with their suppliers and, if possible, customers (ex. Cloud based solutions) to exchange mutually beneficial ideas and information.
- **Cyberaware:** As businesses continue to add more software and connected devices, the risk of cyberattacks and the chances of a successful attack have increased. Companies need to lean on internal cybersecurity resources / outside experts to plug into their analytics with the necessary protections.
- **Cognitively enabled:** Cognitively enabled analytics help companies quickly understand the full effects of a disruption and prioritize their actions in response. Such a solution will open the door for additional automation over time.
- **Comprehensive:** Analytics software must provide extensive and thorough observations for an organization. The solutions need not have only extensive functionality, but the scalability to still provide immediate results as it handles increasing amounts of information.

Challenges – Organizational

(Arunachalam, Kumar, & Kawalek, 2017)

- **Time-consuming:** Factors such as the *volume of Big Data, complexity of Supply Chain* and *interpretation goals for datasets* contribute in making the analytics process time-consuming.
- **Insufficient resources:** For better results, availability of real-time data is crucial. Supply Chain being a platform that generates complex cross-functional data for interlinked entities, collection and storage of cross-functional data should be streamlined.
- **Privacy and security concerns:** Data sharing across a Supply Chain Network is a major factor in collecting data from various sources, analyzing it and giving insights. Although, regional or global Supply Chain Networks might face difficulties in sharing data across its different sources due to various Privacy Security laws concerned with sharing of data. Lack of shared data, in such cases, can affect the accuracy of the insights that BDA might generate.

Digital SC → Food SC → Chocolate SC (I4.0 - OPEX)

Chocolate Industry (world wide):

Global cocoa industry to grow to as much as USD 13.5 billion by 2026, at 3.4% CAGR. This statistic depicts the enormous size of the cocoa industry worldwide.

Dark side:

Engagement of child labor and even slave labor from farmer's family. Major chocolate brands such as Nestle and Hershey are aware of this problem but....

Challenges faced:

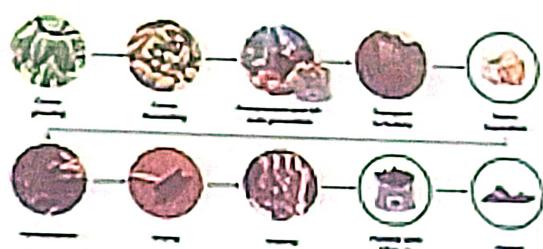
A very complicated supply chain with multiple vendors (pisteur, third party, exporters and finally cocoa traders) ensures that the farmer is unable to get a fair price for cocoa beans.

As a result, most farmers turn to child labor or modern-day slavery to make cocoa production more feasible. Studies show that around 30,000 children are trafficked annually to serve as child labor in cocoa fields. Besides, the farmers are unable to purchase modern machinery for growing cocoa which makes them increasingly dependent on the cheap but unethical child labor force.



Digital SC → Food SC → Chocolate SC (I4.0 - OPEX)

Cocoa Supply Chain



Process Steps:

1. Farming
2. Fermentation and Drying
3. Bean Sorting and Grading
4. Shipping to Chocolate Makers
5. Roasting and Grinding of Cocoa beans
6. Conching and Tempering
7. Cocoa farming and harvesting
8. Molding and Packaging

