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Fundamentals of Supply Chain Management

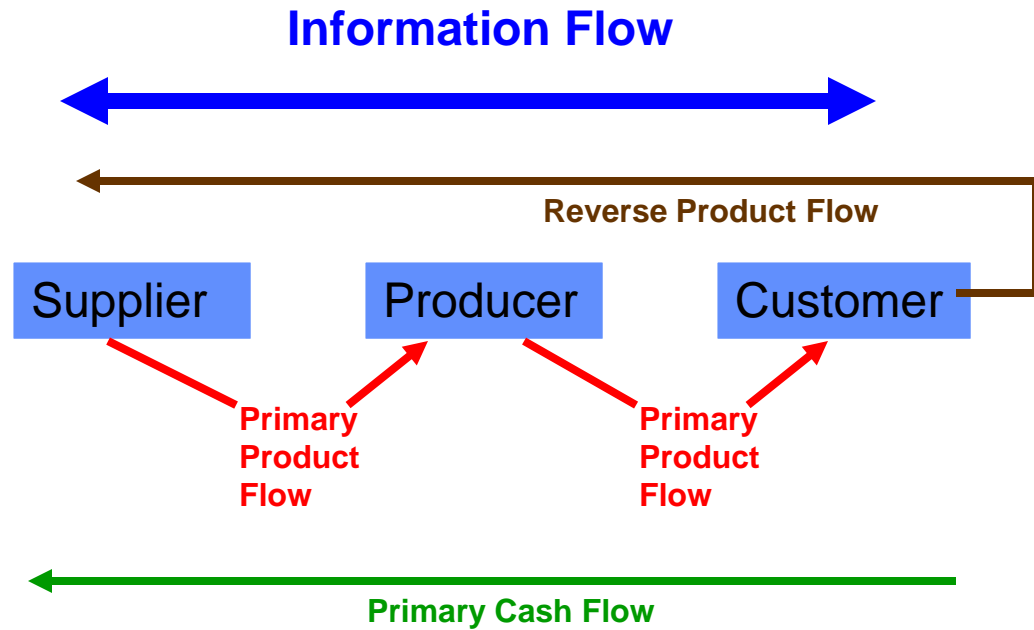
By Andrew Roman, CPIM, CSCP,
CSSBB

ASQ

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The Basic Supply Chain





What is a Supply Chain?

SUPPLY CHAIN:

- The sequence of organizations – their facilities, functions, and activities – that are involved in producing and delivering a product or service
- All stages, all steps and activities involved, directly or indirectly, in fulfilling a customer request



What is a Supply Chain? (Cont'd.)

This *flow* includes movement of products not only from suppliers to manufacturers to distributors, but also includes movement of information, funds, and goods in both directions.



The Total Systems View of Supply Chain Management:

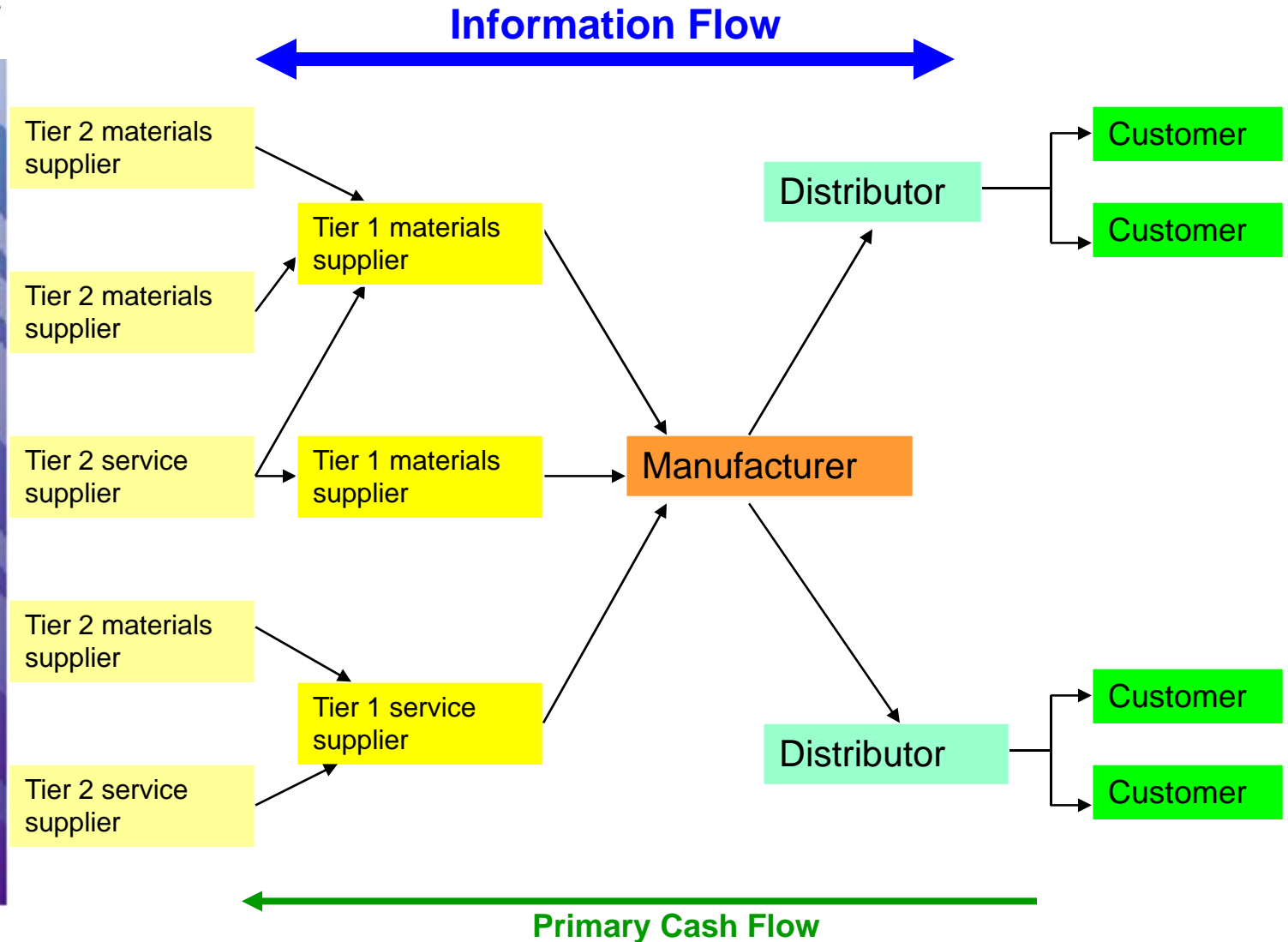
- Shortened Product Life Cycles
- Increasing Globalization of Markets.....

Requires

- A Total Systems View of the Entire SC



Manufacturing Supply Chain Model





The Network Model of Supply Chain Management

A Physical Goods SC can be viewed as a Network of Value-Added Material Processing Stages

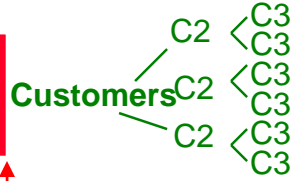
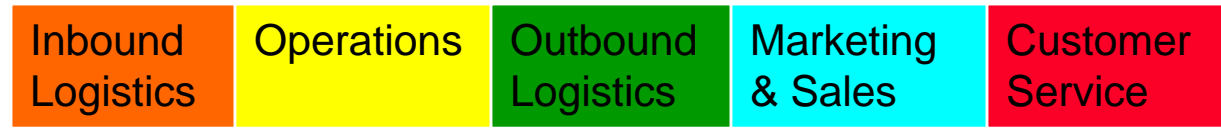
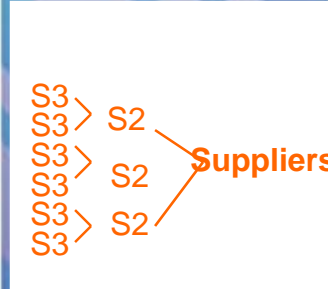
Each defined with:

- Supply (Material or Service) Input
- Material Transformation,
- Demand Output



The Place of the Supply Chain within the Value Chain

Value chain Support activities	The firm's infrastructure: Human resource management Technology development Procurement & Materials Management
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Materials/supply management

Physical distribution/
Channel management





What is a Supply Chain?

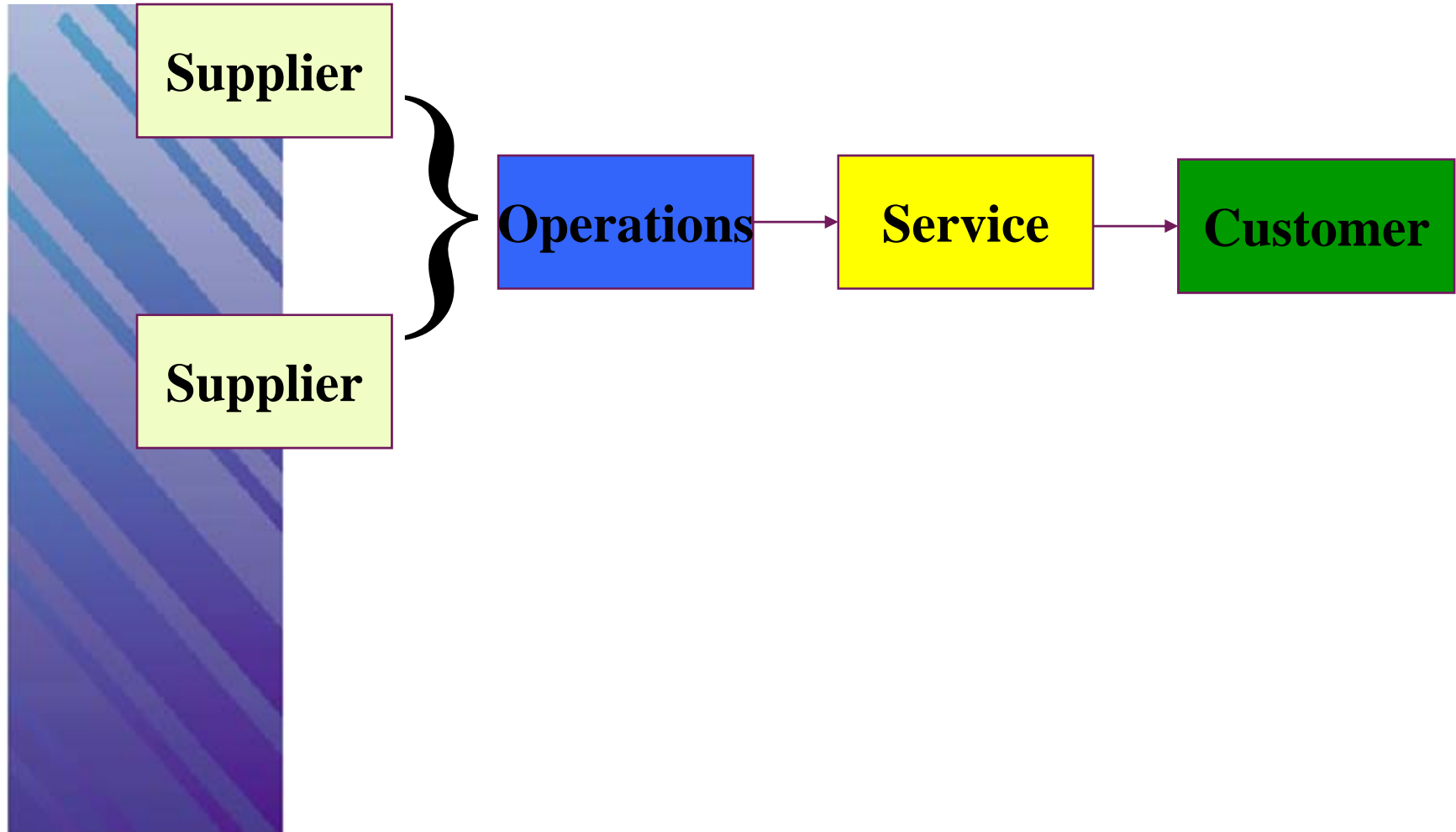
The customer is more than an integral part of the Supply Chain.

The *CUSTOMER* is the only reason the Supply Chain Exists!

Typical SC Stages (Going Backwards...)
Customers, Retailers, Distributors,
Manufacturers, Suppliers.



Typical Supply Chain for a Service





The Challenge of Supply Chain Management Is:

- To balance the requirements of reliable and prompt customer delivery with
- Manufacturing and Inventory Costs.



Objectives of the Supply Chain

Maximize overall **value** for all parties involved

Ultimate Goal of Supply Chain Management:

To deliver products and services that the **customer** values – *and is **willing** to pay for.*

The Elements of **Value** to a *Customer*:

Quality of Product or Service

Affordability

Availability



What Are The Supply Chain Dynamics?

Each firm in a SC depends on other firms for:

Services

Materials

Information

...needed to supply its immediate external customer in the Supply Chain

Problem: Firms are typically owned and managed ***independently***

Problem: Actions of downstream members affect the operations of upstream members



The Bullwhip Effect

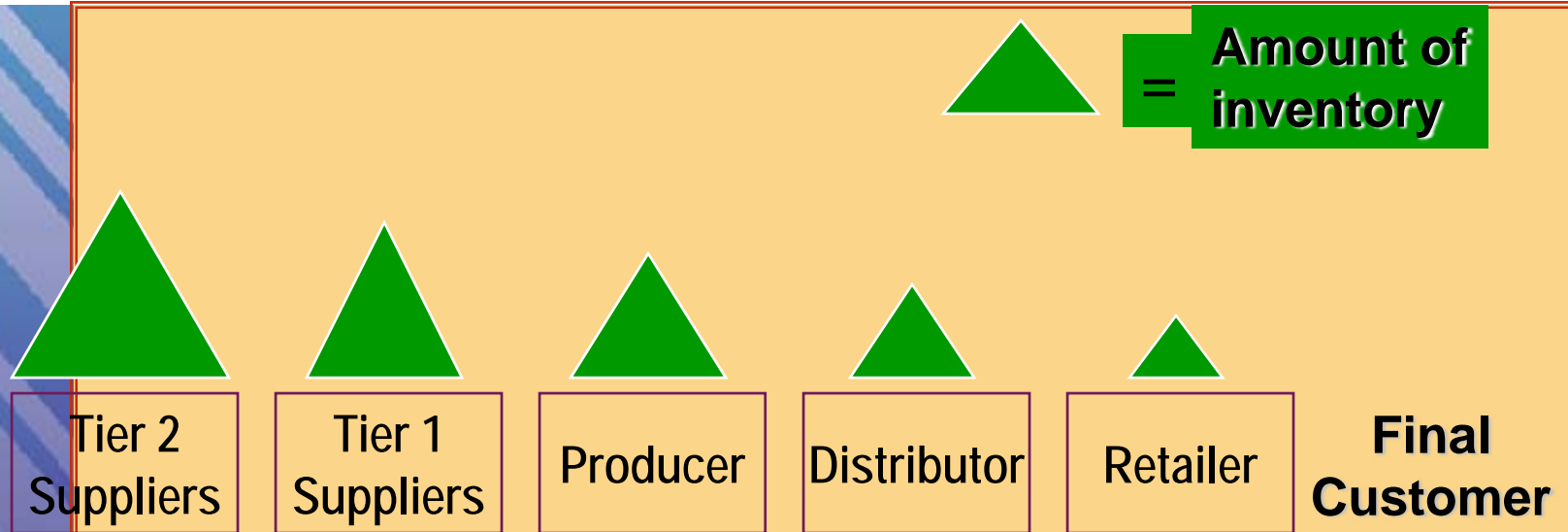
Bullwhip Effect: The phenomenon in Supply Chains whereby ordering patterns experience increasing variance as you proceed *upstream* in the Supply Chain.

Bullwhip Effect: An extreme change in the supply position *upstream* in a SC, generated by a small change in demand *downstream* in the Supply Chain.

APICS



Bullwhip Effect





Functions and Activities Within the SC

- Forecasting
- Purchasing and SRM
- Inventory Management
- Information Management
- Quality Assurance
- Scheduling
- Production and Delivery
- Customer Service and CRM



Elements of a Successful Supply Chain

- ***COLLABORATION*** and Cooperation
- ***TRUST*** among trading partners
- ***VISIBILITY*** in the Supply Chain
- ***Event-Management*** Capability
The ability to detect & respond to unplanned events
- ***Performance metrics***



The Facilities of a Supply Chain

- Factories
- Processing Centers
- Warehouses
- Distribution Centers
- Retail Outlets
- Offices





Challenges to Supply Chain Management

- Barriers to Integration of Organizations
- Getting Top Management On Board
- Dealing with Trade-offs
- Small Businesses
- Variability and Uncertainty
- Long Lead Times





Elements of Supply Chain Management

Element

Typical Issues

Customers

Determining what customers want

Forecasting

Predicting qty. & timing of demand

Design

Incorporating customer wants,

Processing

Controlling quality, scheduling, work

Inventory

Meet demand, managing costs

Purchasing

Evaluating suppliers & support operations

Suppliers

Monitor supplier quality, delivery, relations

Location

Determining location of facilities

Logistics

Deciding how to best move & store materials



Disruptions to the Supply Chain Flow

Typical **EXTERNAL** disruptions to the SC:

Volume Changes

Service and/or Product Mix Changes

Late Deliveries

Under-filled Shipments



Disruptions to the SC Flow, Cont'd.:

Typical **INTERNAL** disruptions to the SC:

Internally generated shortages

Engineering Changes to Products

New Product or Service Introductions

Product or Service Promotions

Information Errors



Need for Supply Chain Management

1. Increasing levels of outsourcing
2. Increasing transportation costs
3. Increasing globalization
4. Competitive pressures
5. Increasing importance of e-Commerce
6. Complexity of Supply Chains (SCs)
7. Need to manage inventories
8. Need to Improve Operations



Benefits of Supply Chain Management

- Lower Inventories
- Higher Productivity
- Greater Agility
- Shorter Lead Times
- Higher Profits
- Greater Customer Loyalty





Examples of Benefits of Supply Chain Management

Organization

Benefits

Campbell Soup
Hewlett-Packard
Sport Obermeyer

Doubled Inventory turnover
Cut Supply Costs by 75%
Increased sales by 60%
and doubled profits

National Bicycle

Increased market share
from 5% to 29%

Wal-Mart

Largest & most profitable
retailer in the world



Supply Chain Performance Drivers

- Quality
- Cost
- Flexibility
- Velocity
- Customer Service



Velocity in the Supply Chain

What do we mean by *Velocity*?

Information Velocity

The rate at which *information* is communicated in a Supply Chain

Inventory Velocity

The rate at which *inventory* (goods and services) goes through the Supply Chain



How Do You Create an Effective SC?

- Develop Strategic Objectives & Tactics
- Integrate and coordinate activities in your internal SC
- Coordinate activities with suppliers & customers
- Coordinate planning and execution across the Supply Chain
- Form Strategic Partnerships ... AND...

Collaborate --- Collaborate --- Collaborate



Stakeholders Outside the Basic SC

They can significantly affect SC functioning for Good or for ILL. These include:

Governments, because they:

May build infrastructures

Enforce Regulations

Levy (*or forgive*) TAXES

Create a business climate

Other stakeholders: Public at large, Universities
and Trade Associations, Competitors



e-Commerce as a Subset of e-Business

e-Business: A set of Internet and EDI driven practices that enable a customer focus rather than a product focus.

e-Commerce: as a subset of e-Business, the use of electronic technology to facilitate business transactions.

Applications include

- Internet buying and selling
- Exchanges & On-Line Marketplaces
- Portals for group buying
- Order and shipment tracking
- Electronic data interchange



Advantages of E-Commerce

Companies can:

- Have a global presence
- Improve competitiveness and quality
- Analyze customer interests
- Collect detailed information
- Shorten supply chain response times
- Realize substantial cost savings
- Create virtual companies
- Level the playing field for small companies



Disadvantages of E-Commerce

Customer expectations

- Order quickly -> fast delivery

Order fulfillment

- Order rate often exceeds ability to fulfill it

Inventory holding

- Outsourcing loss of control
- Internal holding costs





What is Logistics?

LOGISTICS

Refers to the *movement* of materials and information within a facility, and to *incoming* and *outgoing* shipments of good and materials in a Supply Chain

In an industrial context, **LOGISTICS** is the art and science of obtaining, producing, and distributing material and product in the proper place and in proper quantities.

APICS





Logistics

- Movement within the facility
- Incoming and Outgoing shipments
- Distribution
- JIT Deliveries

Tools of Logistics:

EDI

Auto/ID, RF/DC (Bar Coding)

RFID .. Active and passive



Collaborative Planning, Forecasting, and Replenishment (CPFR)

Collaborative Planning, Forecasting, and Replenishment (CPFR)

Focuses on information sharing among trading partners

Forecasts can be *frozen* and then converted into a Shipping Plan

Eliminates typical order processing costs & delays



CONCLUSION

- QUESTIONS?
- DISCUSSION?
- THANK YOU!!

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