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A LECTURE NOTES

ON

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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UNIT-I

Logistics and competitive strategy

Definition of logistics

Logistics is the **process** of strategically managing the **procurement**, **movement** and **storage** of materials, parts and finished inventory (and the related information flows), through the organization and its marketing channels, in such a way that current and future profitability are maximized through the cost-effective fulfillment of orders.

Firms can achieve competitive advantage through:

1. **Differentiation**, in the eyes of the customer, from its competition
2. By operating at a **lower cost** and hence at greater profit.

1.1 Logistics and competitive advantage

1. Productivity

2. Value

3. Lower cost Profile

4. Differential plus

There is substantial evidence to suggest that big is beautiful when it comes to cost advantage. This is partly due:

1. To economies of scale
2. To the impact of the "Experience Curve In this regard **Logistics management** can provide a multitude of ways to increase **efficiency** and **productivity** and hence contribute significantly to reduced unit costs.

1.2 Gaining competitive advantage through logistics: Competitive advantage cannot be understood by looking at a firm as a whole. It stems from the many discrete activities a firm performs.

In this case we can use the **value chain analysis** to disaggregates a firm in to its strategically relevant activities

Productivity advantage: Capacity utilization, inventory reduction, closer integration with suppliers.

Value advantage: Superior customer services

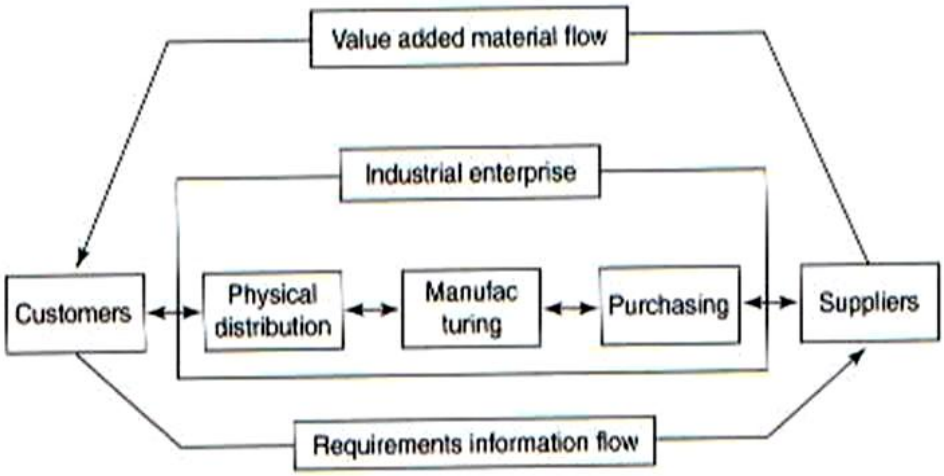


Figure 11.7 **Logistics management process**
Source: **Bowersox, D.J., Closs, D.J. and Helferich, O.K., *Logistical Management* 3rd edition, Macmillan Publishing Co, 1986**

Fundamentals of supply chain management:

1. Views the supply chain as a **single entity**
2. It calls for **strategic decision making** because of its impact on overall costs and market share.
3. Provides a **different perspective** on **inventories** which are used as a balancing mechanism of last not first resort.
4. Requires high level of **integration**

The supply chain is the **network** of organizations that are involved (through upstream and downstream linkages) in the different **processes** and **activities** that **produce value** (goods or/and services).

Recall the value system

Cutting short the pipeline (Unneeded inventory)

- **Improve the pipeline visibility** (Organizational barriers removals, better coordination)

- **Managing logistics as a system**

- Definition of logistics
- Logistics and competitive advantage (Productivity and Value advantage)
- Competitive advantage and value chain management
- The mission of logistics management
- The supply chain and competitive advantage
- The changing logistics environment
- The challenge of logistics management
- Identify the fundamentals of supply chain management, and how they do function.
- Explain the characteristics of the most challenging factors, in the area of logistics.
- How can we use logistics to add value and obtain competitive advantage

1.3 Integrating the supply chain:

What is Supply Chain Integration: The degree to which the firm can strategically collaborate with their supply chain partners and collaboratively manage the intra- and inter-organization processes to achieve the effective and efficient flows of

- Product and services
- Information
- Money
- Decisions

With the objective of providing the maximum value to the customer at low cost and high speed

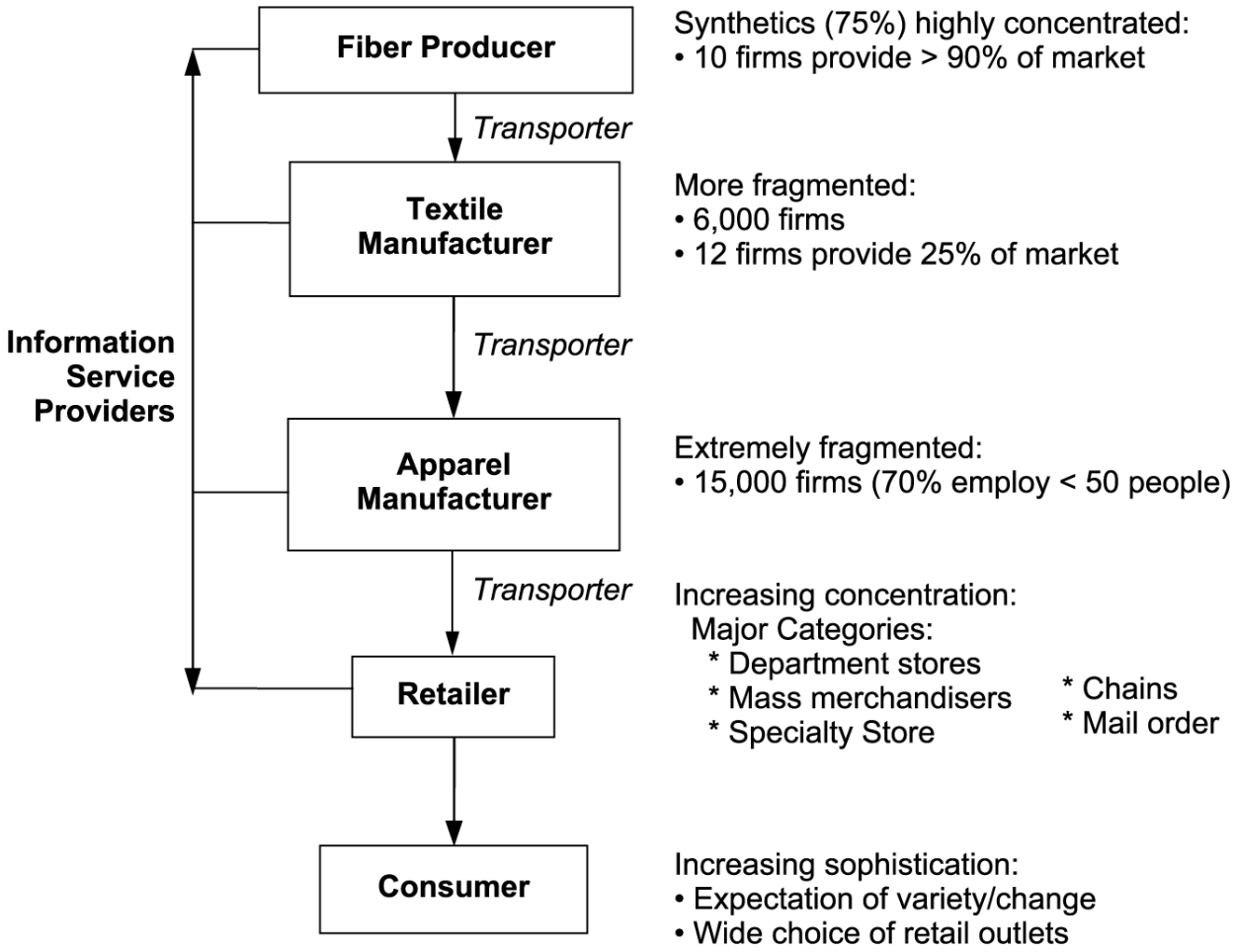
1.4 competitive performance /Measures of integration

- Access to planning system
- Sharing production plans
- Joint EDI access / networks
- Knowledge of inventory mix / levels
- Packaging customization
- Delivery frequencies
- Common logistical equipment / containers
- Common use of third-party logistics

1.8 Value Added Services

- DHL’s dedicated and shared user warehousing solutions are not just about holding stock. There are a wide range of additional services that we offer, as part of an overall solution that can improve the performance of your supply chain.
- From sub-assembly, packaging services, customization, postponement, kitting, sequencing to pre- retail activities across all industry sectors, we help you reduce costs, reduce inventories, and better match supply with demand.

- Co-locating these services alongside the storage of your products not only saves money but removes steps in the supply chain. The elimination of transportation time to a packaging facility means you can reduce your lead times and decrease your inventory. And by having DHL perform all these activities you receive the same visibility and operational excellence that you've grown to expect from the market leader in contract logistics.



Source: Hammond (1993, p. 187)

Managing supply chain relationships:

- **Factors in forming supply chain relationships**
  - The order winner
  - The method making sourcing decisions
  - The nature of electronic collaboration
  - The attitude to capacity planning
  - Call-off requirements
  - Price negotiations

- Managing product quality
- Managing research and development
- The level of pressure

- Pilot new supply chain solutions

1. Successful supply chain improvement including

2. Involvement of key stakeholders, suppliers, customers and employees

3. Selection of scope and environment, focusing on avoiding risk

4. Identification of the key questions that the pilot must answer

- **Develop measurement systems for supply chain performance**

1. On time in full, outbound
2. On time in full, inbound
3. Internal defect rates
4. New product introduction rate
5. Cost reduction
6. Stock turns
7. Order to delivery lead time
8. Fiscal flexibility

UNIT – II

Measuring Logistics costs and performance

2.1The concept of total cost analysis

Many problems at the operational level in logistics management arise because all the impacts of specific decisions, both direct and indirect, are not taken into account throughout the corporate system. Too often decisions taken in one area can lead to unforeseen results in other areas. Changes in policy on minimum order value, for example, may influence customer ordering patterns and lead to additional costs. Similarly, changes in production schedules that aim to improve production efficiency may lead to fluctuations in finished stock availability
and thus affect customer service. The problems associated with identifying the total system impact of distribution policies are immense. By its very nature logistics cuts across traditional company organization functions with cost impacts on most of those functions. Conventional accounting systems do not usually assist in the identification of these company-wide impacts, frequently absorbing logistics-related costs in other cost elements. The cost of processing orders, for example, is an amalgam of specific costs incurred in different functional areas of the business which generally prove extremely difficult to bring together. Figure 3.6 outlines the various
cost elements involved in the complete order processing cycle, each of these elements having a fixed and variable cost component which will lead to a different total cost per order.

Order placement and communication
Order entry
Credit check
Documentation
Order picking
Delivery

Invoicing and collection

2.2 Principles of logistics costing

It will be apparent from the previous comments that the problem of developing an appropriate logistics-oriented costing system is primarily one of focus. That is the ability to focus upon the output of the distribution system, in essence the provision of customer service, and to identify the unique costs associated with that output. Traditional accounting methods lack this focus, mainly because they were designed with something else in mind. One of the basic principles of logistics costing, it has been argued, is that the system should mirror the materials flow, i.e. it should be

capable of identifying the costs that result from providing customer service in the marketplace. A second principle is that it should be capable of enabling separate cost and revenue analyses to be made by customer type and by market segment or distribution channel. This latter requirement emerges because of the dangers inherent in dealing solely with averages, e.g. the average cost per delivery, since they can often conceal substantial variations either side of the mean.

To operationalize these principles requires an ‘output’ orientation to costing. In other words, we must first define the desired outputs of the logistics system and then seek to identify the costs associated with providing those outputs. A useful concept here is the idea of ‘mission’. In the context of logistics, a mission is a set of customer service goals to be achieved by the system within a specific product/market context. Missions can be defined in terms of the type of market served, by which products and within what constraints of service and cost. A mission by its very nature cuts across traditional company lines. illustrates the concept and demonstrates the difference between an ‘output’ orientation based upon missions and the ‘input’ orientation

based upon functions.

The successful achievement of defined mission goals involves inputs from a large number of functional areas and activity centres within the firm. Thus an effective logistics costing system must seek to determine the total systems cost of meeting desired logistic objectives (the 'output' of the system) and the costs of the various inputs involved in meeting these outputs. Interest has been growing in an approach to this problem, known as 'mission costing'.

2.3 Logistics and the bottom line

Today's turbulent business environment has produced an ever greater awareness amongst managers of the financial dimension of decision making. 'The bottom line' has become the driving force which, perhaps erroneously, determines the direction of the company. In some cases this has led to a limiting, and potentially dangerous, focus on the short term. Hence we find that investment in brands, in R&D and in capacity may well be curtailed if there is no prospect of an immediate payback. Just as powerful an influence on decision making and management horizons is cash flow. Strong positive cash flow has become as much a desired goal of management as profit.

The third financial dimension to decision making is resource utilization and specifically the use of fixed and working capital. The pressure in most organizations is to improve the productivity of capital – 'to make the assets sweat'. In this regard it is usual to utilize the concept of return on investment (ROI). Return on investment is the ratio between the net profit and the capital that was employed to produce that profit, thus:

$$\text{Profit ROI} = \frac{\text{Profit}}{\text{Capital employed}}$$

This ratio can be further expanded:

$$\text{ROI} = \frac{\text{Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital employed}}$$

It will be seen that ROI is the product of two ratios: the first, profit/sales, being commonly referred to as the margin and the second, sales/capital employed, termed capital turnover or asset turn. Thus to gain improvement on ROI one or other, or both, of these ratios must increase. Typically many companies will focus their main attention on the margin in their attempt to drive up ROI, yet it can often be more effective to use the leverage of improved

capital turnover to boost ROI. For example, many successful retailers have long since recognized that very small net margins can lead to excellent ROI if the productivity of capital is high, e.g. limited inventory, high sales per square foot, premises that are leased rather than owned and so on. Figure 3.1 illustrates the opportunities that exist for boosting ROI through either achieving better margins or higher assets turns or both. Each 'iso-curve' reflects the different ways the same ROI can be achieved through specific margin/asset turn combination. The challenge to logistics management is to find ways of moving the iso-curve to the right. 20% ROI 15% ROI 10% ROI Profit Sales (Margin) Sales Cap Emp (Asset turn) Fig. 3.1 The impact of margin and asset turn on ROI .The ways in which logistics management can impact on ROI are many and varied. highlights the major elements determining ROI and the

2.4 Impact of Logistics and shareholder value

One of the key measures of corporate performance today is shareholder value. In other words, what is the company worth to its owners? Increasingly senior management within the business is being driven by the goal of enhancing shareholder value. There are a number of complex issues involved in actually calculating shareholder value but at its simplest it is determined by the net present value of future cash flows. These cash flows may themselves be defined as:

Net operating income *less* **Taxes** *less* **Working capital investment** *less* **Fixed capital investment = After-tax free cash flow**

More recently there has been a further development in that the concept of economic value added (EVA) has become widely used and linked to the creation of shareholder value. The term EVA originated with the consulting firm Stern Stewart,2 although its origins go back to the economist Alfred Marshall who, over 100 years ago, developed the concept of 'economic income'. Essentially EVA is the difference between operating income after taxes less the true cost of capital employed to generate those profits. Thus:

Economic value added (EVA) = Profit after tax – True cost of capital employed

It will be apparent that it is possible for a company to generate a negative EVA. In other words, the cost of capital employed is greater than the profit after tax. The impact of a negative EVA, particularly if sustained over a period of time, is to erode shareholder value. Equally

improvements in EVA will lead to an enhancement of shareholder value. If the net present value of expected future EVAs were to be calculated this would generate a measure of wealth known as market value added (MVA), which is a true measure of what the business is worth to its shareholders. A simple definition of MVA is:

Stock price × Issued shares *less* **Book value of total capital invested = Market value added**

and, as we have already noted,(MVA)

MVA = Net present value of expected future EVA

Clearly, it will be recognized that there are a number of significant connections between logistics performance and shareholder value. Not only the impact that logistics service can have upon net operating income (profit) but also the impact on capital efficiency (asset turn). Many companies have come to realize the effect that lengthy pipelines and highly capital-intensive logistics facilities can have on EVA and hence shareholder value. As a result they have focused on finding ways in which pipelines can be shortened and, consequently, working capital requirements reduced. At the same time they have looked again at their fixed capital deployment of distribution facilities and vehicle fleets and in many cases have moved these assets off the balance sheet through the use of third-party logistics service providers.

2.5 Customer profitability analysis

One of the basic questions that conventional accounting procedures have difficulty answering is: 'How profitable is this customer compared to another?' Usually customer profitability is only calculated at the level of gross profit – in other words the net sales revenue generated by the customer in a period, less the cost of goods sold for the actual product mix purchased. However, there are still many other costs to take into account before the real profitability of an individual customer can be exposed. The same is true if we seek to identify the relative profitability of different market segments or distribution channels. The significance of these costs that occur as a result of servicing customers can be profound in terms of how logistics strategies should be developed. Firstly, customer profitability analysis will often reveal a proportion of customers who make a negative contribution. The reason for this is very simply that the costs of servicing a customer can vary considerably – even between two customers who may make equivalent purchases from us.

2.6 Direct product profitability

An application of logistics cost analysis that has gained widespread acceptance, particularly in the retail industry, is a known as direct product profitability – or more simply 'DPP'. In essence it is somewhat analogous to customer profitability analysis in that it attempts to identify all the costs that attach to a product or an order as it moves through the distribution channel. The idea behind DPP is that in many transactions the customer will incur costs other than the immediate purchase price of the product. Often this is termed the *total cost of ownership*. Sometimes these costs will be hidden and often they can be substantial – certainly big enough to reduce or even eliminate net profit on a particular item. For the supplier it is important to understand DPP inasmuch as his ability to be a low-cost supplier is clearly influenced by the costs that are incurred as that product moves through his logistics system. Similarly, as distributors and retailers are now very much more conscious of an item's DPP, it is to the advantage of the supplier equally to understand the cost drivers that impact upon DPP so as to seek to influence it favourably.

Describes the steps to be followed in moving from a crude gross margin measure to a more precise DPP.

Direct product profit (DPP)

The net profit contribution from the sales of a product after allowances are added and all costs that can be rationally allocated or assigned to an individual product are subtracted = direct product profit.

Sales – Cost of goods sold = Gross margin + Allowances and discounts = Adjusted gross margin – Warehouse costs , Labour (labour model – case, cube, weight) Occupancy (space and cube) Inventory (average inventory)

– Transportation costs (cube) – Retail costs Stocking labour Front end labour Occupancy Inventory = Direct product profit

2.7 Cost drivers and activity-based costing

There is a general ignorance of the true costs of servicing different customer types/channels/market segments.

1. Costs are captured at too high a level of aggregation.

2. Full cost allocation still reigns supreme.
3. Conventional accounting systems are functional in their orientation rather than output oriented.
4. Companies understand product costs but not customer costs.

There are four stages in the implementation of an effective mission costing process:

1. *Define the customer service segment*

Use the methodology described in Chapter 2 to identify the different service needs of different customer types. The basic principle is that because not all customers share the same service requirements and characteristics they should be treated differently.

2. *Identify the factors that produce variations in the cost of service* This step involves the determination of the service elements that will directly or indirectly impact upon the costs of service, e.g. the product mix, the delivery characteristics such as drop size and frequency or incidence of direct deliveries, merchandising support, special packs and so on.

3. *Identify the specific resources used to support customer segments* This is the point at which the principles of activity-based costing and mission costing coincide. The basic tenet of ABC is that the activities that generate cost should be defined and the specific cost drivers involved identified. These may be the number of lines on an order, the people involved, the inventory support or the delivery frequency.

4. *Attribute activity costs by customer type or segment*

Using the principle of 'avoidability' the incremental costs incurred through the application of a specific resource to meeting service needs are attributed to customers. It must be emphasized that this is not cost allocation but cost attribution. In other words it is because customers use resources that the appropriate share of cost is attributed to them.

2.8 Activity-Based Costing

Costing Products:

1. **Direct materials and direct labor costs are easy to trace**
2. **Overhead cannot be traced easily and must be assigned with estimates**

Traditional Costing Methods:

1. Spreads overhead cost over entire customer base

2. Each order "appears" to cost the same
3. Orders with high profit margins subsidize orders with low profit margins

A single or plantwide rate called a predetermined overhead rate is used:

Job Order = Direct Labor Costs

Process Cost = Machine Hours

Amount of direct labor used in many industries has decreased

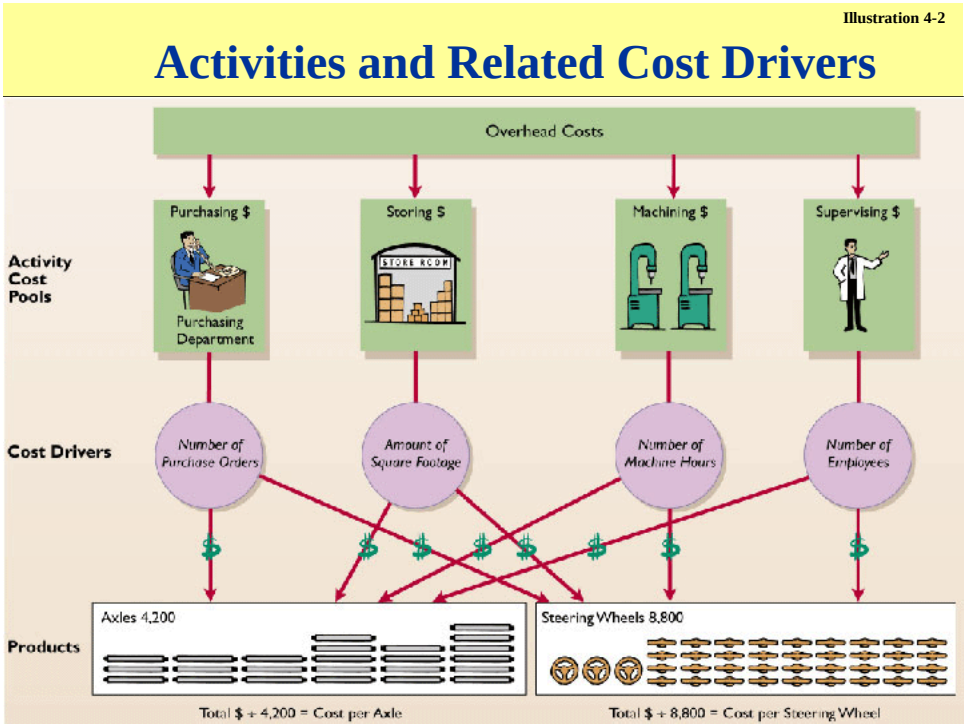
Total overhead from depreciation on equipment, utilities, repairs, maintenance has increased

Activity-Based Costing (ABC:

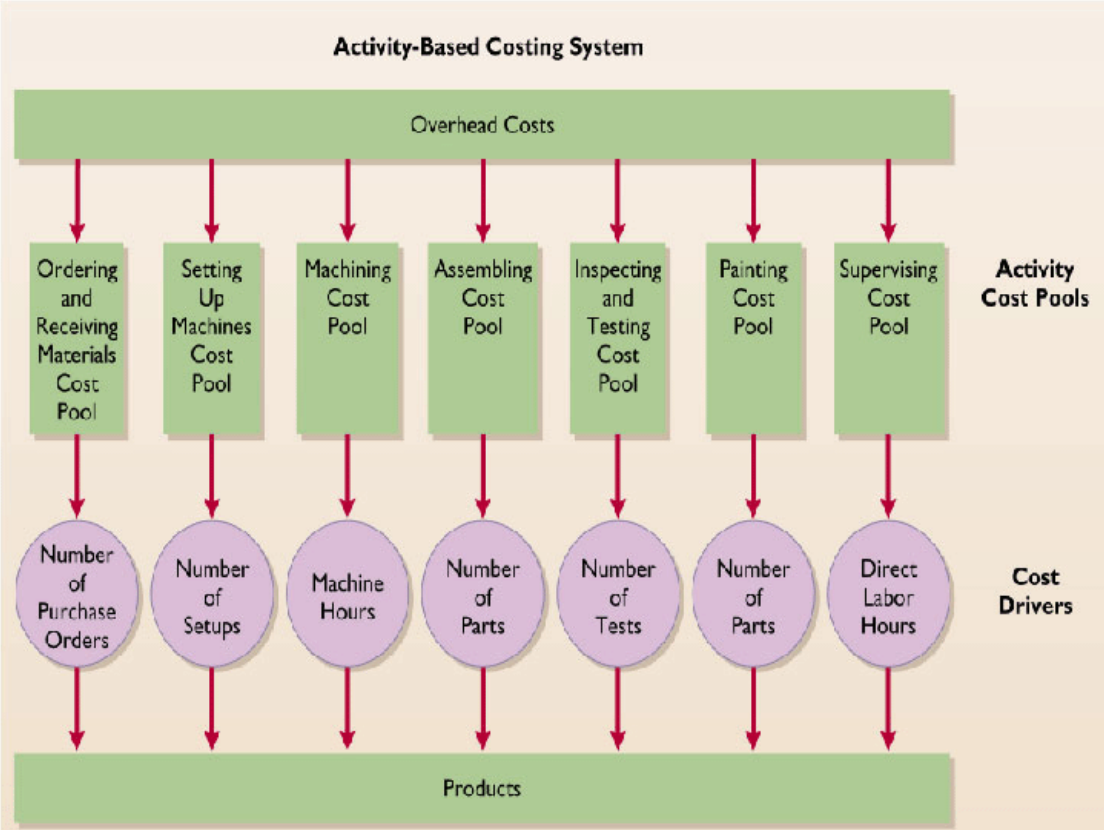
An overhead cost allocation system that allocates overhead to multiple activity cost pools and assigns the activity cost pools to products or services by means of cost drivers that represent the activities used.

Any event, action, transaction, or work sequence that causes a cost to be incurred in producing a product or providing a service.

Activity Cost Pool: The overhead cost allocated to a distinct type of activity or related activities.



Cost Driver: Any factor or activity that has a direct cause-effect relationship with the resources consumed. In ABC cost drivers are used to assign activity cost pools to products or services.



Activity-Based Costing (ABC):

Calculate unit cost

- Identify activities
- Identify cost driver
- Compute overhead rate
- Assign overhead costs

Benefits of Activity-Based Costing:

1. More accurate product costing which necessitates:
2. More cost pools used to assign overhead
3. Enhanced control over overhead
4. Better management decisions

2.9 Ford Motor Company- Six Sigma Initiatives streamline operations.

Summary : Ford Motor Company, one of the world's largest automotive manufacturers, has worked with Penske on several Six Sigma initiatives. As its lead logistics provider (LLP), Penske's quality team of associates are trained in Six Sigma practices and work closely with Ford to streamline operations and create and maintain a more centralized logistics network. Together, they uncovered several areas for real cost savings as a result of reducing inbound carrier discrepancies, eliminating unnecessary premium costs and reducing shipment overages. Plus, Penske implemented accountability procedures and advanced logistics management technologies to gain more visibility of its overall supply network.

Challenges

- To develop, implement and operate a centralized logistics network for Ford
- To streamline supplier and carrier operations for improved performance and accountability
- To provide Ford with real-time supply chain and financial visibility

Solutions / Results

- Penske established 10 Origin Distribution Centers (ODCs) and consolidated shipments to plants. Approximately 1,200 trailers now ship to and from Ford's ODCs per day, with most trucks at 95 percent capacity. Penske has reduced plant inventory by 15 percent.
- Penske trained more than 1,500 suppliers on a uniform set of procedures and logistics technologies. Stringent carrier requirements and a Carrier Rating System were implemented to measure carrier performance.
- Penske implemented strict accountability procedures and advanced logistics management technologies to gain real-time visibility of delivery status, routing schedules and productivity. A new freight billing system was designed to immediately capture logistics costs.

Getting Started

Penske Logistics began its relationship with Ford as lead logistics provider (LLP) for Ford's assembly plant in Norfolk, Va. At the time, each of Ford's 20 North American assembly plants managed its own logistics operations. A decentralized approach provided total control of logistics at the plant level, but presented costly redundancies in materials handling and transportation.

Ford conducted studies to determine the benefits of transitioning the company's decentralized logistic operations to a centralized approach. The decision was quickly apparent—centralization of the company's logistics operations would increase both velocity and visibility throughout the network, as well as reduce supply chain costs.

Shortly thereafter, Ford selected Penske as its North American LLP. Under the contract, Penske would centralize and manage all inbound materials handling for 19 assembly plants and seven stamping plants.

Consolidating Logistics Operations

Penske immediately developed an aggressive logistics transition program with Ford. Penske would provide Ford with a single point of contact for all logistics operations.

By working with individual plants and corporate management, Penske established a baseline of current operations and outlined the proposed solutions. The new logistics program would establish a Penske Logistics Center that included the following core functions:

- **Network Design Optimization—**implement a more efficient inbound materials strategy through Origin Distribution Centers (ODCs)
- **Carrier and Premium Freight Management—**manage all carriers and logistics companies, while reducing premium freight costs
- **Information Technology System Integration—**achieve real-time visibility of supply chain shipments, schedules and orders

- **Finance Management—**improve freight bill payment, claim processing and resolution throughout the supply chain

Upon development of this new plan, the Penske/Ford team began evaluating Ford's existing network design. Under the plant-centric approach, suppliers would make multiple deliveries of the same parts to different plants. A supplier would pick up a small load, deliver it to one plant, pick up another small load of the same parts and deliver it to another plant. Carriers with half-empty trucks would often cross routes with each other en route to the same plant. Aside from being highly inefficient, this design allowed for excessive inventory and storage costs at the plant level.

To centralize transportation and distribution operations, Penske implemented a new network design consisting of 10 new ODCs. The ODCs would be a central delivery point for suppliers. Different supplier shipments going to the same plant would now be cross-docked into trailers at the ODC. Loads would be consolidated and delivered on a scheduled basis to reduce the amount of milkruns, less than truckload shipments (LTL) and premium freight charges. To meet Penske's new transportation and distribution standards, more than 1,500 suppliers were trained on new uniform procedures.

For carrier and premium freight management, Penske's goal was simply stated: maximize carrier service, minimize carrier costs. Penske refined Ford's carrier bidding process by placing more stringent requirements on carrier partners. Carriers were now required to meet specific safety, equipment and technological specifications; provide experienced and certified drivers; and show proven experience of on-time delivery/pickups.

Penske's new procedures required carriers to meet established route pick-up and delivery windows within 15 minutes of the scheduled time. Additionally, carriers would supervise loading and unloading operations to verify order accuracy, adequate packaging and labeling, and freight damage. With new stringent carrier requirements in place, Penske closed the accountability loop by implementing a Carrier Rating System. All incidents would be recorded and reported. Carriers would issue corrective action reports for actions that negatively impacted Ford's operations. If a carrier accumulated an excessive amount of incidents on their "scorecard,"

Penske would issue a low carrier rating, thus jeopardizing the carrier's ability to participate in future bids.

Penske also implemented several information technology solutions throughout the logistics network, including its proprietary Logistics Management System and RouteAssist, an advanced routing tool. Other programs included a Web-based metric reporting system and order tracking software. Drivers were provided with PDA scanners and an electronic driver log. Carriers were now required to have satellite communications and engine monitoring systems on all trucks for load tracking. ODCs were provided with integrated RF cross-dock scanners that tracked the delivery of individual parts.

Prior to implementing a centralized approach, Ford was unable to gain a clear view of the financial status of logistics operations. With approximately 1,500 suppliers handling more than 20,000 shipments per week, freight billing was complicated. As part of its carrier management system, Penske would now provide drivers with a single set of paperwork procedures to ensure delivery documentation was collected and submitted to accounting. Penske developed a new freight billing system that would capture freight costs and allocate those costs by plant. As a result, Ford could see which plants had the highest and lowest freight costs and which carriers were most cost effective.

Unit III

Logistics and Supply chain relationships

3.1Benchmarking the logistics

Benchmarking is the on-going process of measuring products, services, practices & processes against the best that can be identified in order to:

- Learn about & improve best practice.
- Achieve realistic targets.
- Integrate improvements into your strategy.
- Use best practice as inspiration for innovation.
- Be externally focused.
- Be purposeful about improvement.
- Measure improvement.

A control process is:

  - Involving employees in the process of evaluation and change.
  - Philosophy one of self control rather than imposed control, where the person most closely associated with the task is involved in the cross measurement and assessment of practice.
  - Places personnel in a position where their unquestioned beliefs (paradigm) may be challenged, creating opportunities for innovation and learning.

- What to Benchmark?
  - Supply Chain Council suggests:

- SCOR (Supply Chain operations reference) Christopher, M. 1998 pp 106):
- Plan, Source, Make & Deliver. SCOR is designed to provide a common framework to facilitate cross organisational benchmarking.

- Who to Benchmark with?
  - Competitors
  - Significant opportunities for firms in non competing industries

Benchmarking the Logistic processes:

- One method to measure and compare the output. A form of reactive control.
- Alternative to concentrate on the processes which requires a number of steps:
  - Understand the process. Use those most closely involved and develop flowcharts
  - Identify critical points

3.2 SCM Operations:

A network of facilities including:

- Material flow from suppliers and their 'upstream' suppliers at all levels,
- Transformation of materials into semi-finished and finished products (internal process)
- Distribution of products to customers and their 'downstream' customers at all levels.

There are three kinds of flows in a supply chain:

Material, information and capital.

- Downstream

  -Material: Products, Parts

  -Information: Capacity, Delivery schedules

-Finances: Invoices, Pricing, Credit terms

- Upstream

-Material: Returns, Repairs, after-sales services

-Information: Orders, point-of-sale Data

-Finance: Payments

3.3 Mapping the supply chain processes

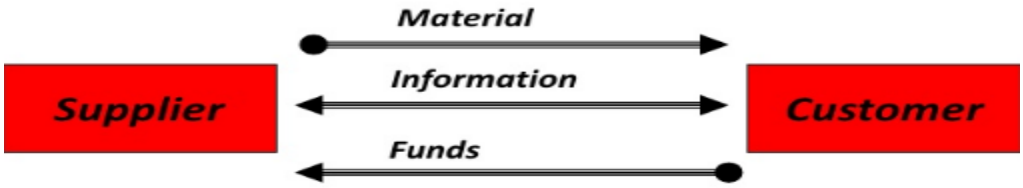
Supply chain map is defined as a visual representation of goods, information, processes, and money flows that occur throughout a supply chain, both upstream and downstream.

Characteristics of Supply Chain Maps:

- Can focus on:
  - Particular use or user
  - Theme
  - Processes, flows, facilities, organizations, geographic relationships
- Easy to distribute
- Easy to interpret
- Designed to support corporate strategy

3.4 Supplier and Distributer

The flow in a supply chain is represented as:



Supplier is considered as producers (Manufacturers) and importers in the marketplace. Distributor is considered as the industrial distributor. The industrial distributor is a specific type of agent middleman who distributes products in the market.

3.5 Benchmarking

Benchmarking is the on-going process of measuring products, services, practices & processes against the best that can be identified in order to:

- Learn about & improve best practice.
- Achieve realistic targets.
- Integrate improvements into your strategy.
- Use best practice as inspiration for innovation.
- Be externally focused.
- Be purposeful about improvement.
- Measure improvement.

Benchmarking has three main features:
- Continuous method of measuring and comparing a firm's business processes against those of another firm.

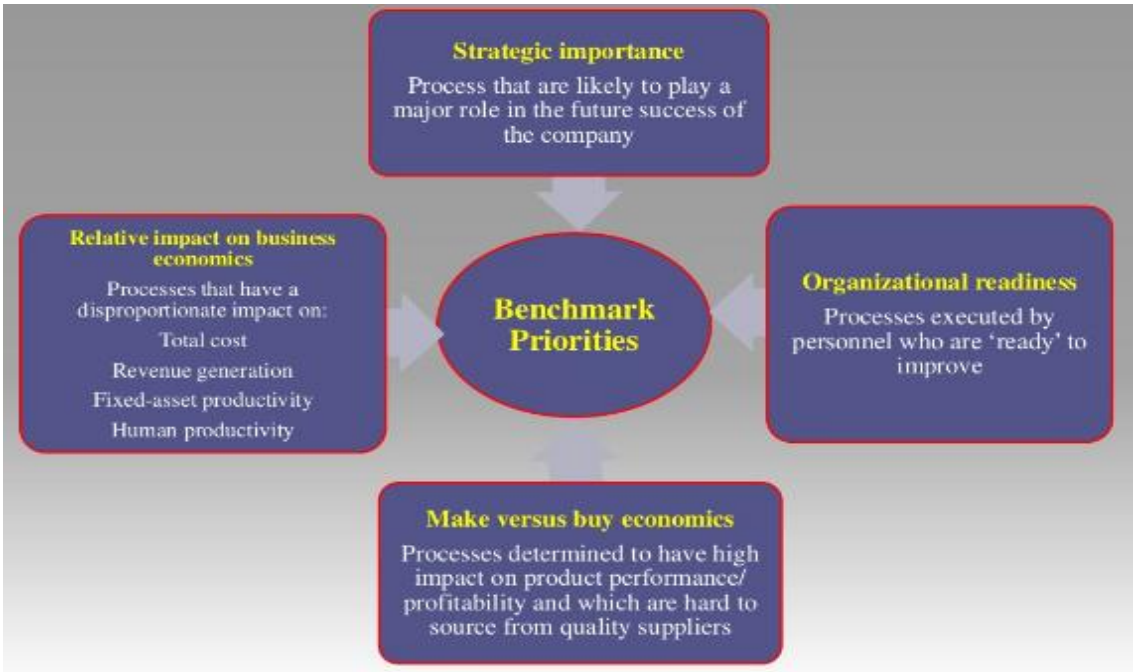
-Discover performance gaps between one's own processes and those of leading firms.

- Incorporate leading firm's processes into one's own strategy to fill the gaps and improve performance.

3.6 Setting benchmarking priorities

Setting benchmarking priorities for:

- Processes and entities in the supply chain are of strategic importance.
- Processes and entities have a high relative impact on the business economics (costs, revenue, asset performance, and human productivity)
- Where there is a choice between 'make' and 'buy' (processes of high impact on performance/productivity and hard to source from suppliers)
- Where there is internal readiness to change



3.7 Identifying logistics performance indicators

A set of quantifiable measures that a company or industry uses to gauge or compare performance in terms of meeting their strategic and operational goals. Key Performance Indicators vary between companies and industries, depending on their priorities or performance criteria.

Objectives of Key Performance Indicators:

- Improve personnel's understanding of KPI's
- Improve personnel's awareness of maintenance performance.
- KPI's are measurements that define and track specific business goals and objectives.
- The larger or smaller organizational strategies require monitoring, improvement, and evaluation.
- Once an organization has analyzed its mission, identified all its stakeholders, and defined its goals, it needs a way to measure progress toward those goals.
- KPI's are utilized to track or measure actual performance against key success factors.
- Key Success Factors (KSFs) only change if there is a fundamental shift in business objectives.
- Key Performance Indicators (KPIs) change as objectives are met, or management focus shifts.

3.8 Channel structure economics of distribution

1. Formulating Channel Strategy: The importance of channel strategy is likely to depend upon the existence of one or more of the following conditions:
   a) Target markets demand a strong emphasis on distribution.
   b) Competitive parity exists in other marketing mix variables, with the need for channel strategy to provide some differential advantage.
   c) Competitive vulnerability exists because of distribution neglect.
   d) Opportunities for synergy exist through channel strategy.

2. Designing the channel structure

3. Selecting the channel members:
   Considerations need to be given to:
   a) Economic criteria
   b) Control criteria

c) Adaptive criteria
d) End user considerations
e) Product characteristics
f) Manufacturer's capability and resources

4. Training the channel members

3.9 Channel relationships –logistics service alliances

Marketing channel is a set of independent organizations that ease the transfer of ownership as products move from producer to business user or consumer.

Marketing channel functions:

- Specialization and division of labor
- Overcoming discrepancies
- Providing contact efficiency

Strategic alliances are voluntary independent relationships, collaborations and partnerships of firms to develop and enhance business operations for competitive advantage.

Reasons for alliances becoming the norm:

- Source of competitiveness and firm growth paths strategy
- Efficiency in management
- Innovation driver
- Knowledge pool for industry
- Valuable resource availability
- Market entry and penetration mechanism

Basic forms of alliances:

1. Horizontal industry level alliances
2. Vertical firm level industry alliances

Alliances can be a key strategic tool, if:

1. They are well cut out and engineered with the right focus.
2. If the step approach is adopted to ensure clarity.
3. If partners are committed to the outcomes.
4. If the governance structure is spelt out.
5. If the partners benefit mutually from the alliance.
6. If resource and organizational knowledge is spread across the partners.
7. If the equity and fairness in the processes involved in setting up the alliance.

3.10 Case 3: General Motors de Mexico – Driving efficiency

Penske Logistics has a long history as a supplier to General Motors (GM). With a reach that extends to more than 60 countries, logistics is no small challenge for GM. General Motors de Mexico (GMM) is GM's Mexican subsidiary and a vital part of GM's North American operations. GMM selected Penske to be its lead logistics provider (LLP) to help drive efficiency throughout all aspects of its distribution network. Within the first six months of the partnership, transportation costs had already been significantly reduced. And, more improvements were underway, including the implementation of proprietary software to provide instant access to real-time updates from every supply chain participant.

Challenges

- To reduce costs and inefficiencies in GMM's growing inbound transportation network
- To increase overall visibility throughout GMM's supply chain
- To establish accountability procedures and measures for GMM's suppliers and carriers

Solutions

• Within six months, Penske had reduced transportation costs by 15 percent

• Penske implemented its proprietary Logistics Management System software to provide instant access to real-time updates from every supply chain participant, enabling proactive resolution of supplier and carrier issues

• Penske reduced GMM's carrier base from 100 carriers to 20 within the first year. The rate of on-time supplier pickups has increased to 98 percent, while delivery rates are at 99 percent

UNIT 4

Sourcing, Transporting and Pricing Products

4.1 Sourcing decisions

- The Role of Sourcing in a Supply Chain
- Supplier Scoring and Assessment
- Supplier Selection and Contracts
- Design Collaboration
- The Procurement Process
- Sourcing Planning and Analysis
- Making Sourcing Decisions in Practice
- Summary of Learning Objectives

The Role of Sourcing in a Supply Chain:

- Sourcing is the set of business processes required to purchase goods and services
  Sourcing processes include:
  - Supplier scoring and assessment
  - Supplier selection and contract negotiation
  - Design collaboration
  - Procurement
  - Sourcing planning and analysis

Benefits of Effective Sourcing Decisions:

1. Better economies of scale can be achieved if orders are aggregated
2. More efficient procurement transactions can significantly reduce the overall cost of purchasing
3. Design collaboration can result in products that are easier to manufacture and distribute, resulting in lower overall costs
4. Good procurement processes can facilitate coordination with suppliers
5. Appropriate supplier contracts can allow for the sharing of risk

6. Firms can achieve a lower purchase price by increasing competition through the use of auctions

Supplier Assessment Factors:

1. Replenishment Lead Time
2. On-Time Performance
3. Supply Flexibility
4. Delivery Frequency / Minimum Lot Size
5. Supply Quality
6. Inbound Transportation Cost
7. Pricing Terms
8. Information Coordination Capability
9. Design Collaboration Capability
10. Exchange Rates, Taxes, Duties
11. Supplier Viability

Contracts and Supply Chain Performance:

1. Contracts for Product Availability and Supply Chain Profits
   Buyback Contracts, Revenue-Sharing Contracts, Quantity Flexibility Contracts
2. Contracts to Coordinate Supply Chain Costs
3. Contracts to Increase Agent Effort
4. Contracts to Induce Performance Improvement
5. Contracts for Product Availability and Supply Chain Profits: Many shortcomings in supply chain performance occur because the buyer and supplier are separate organizations and each tries to optimize its own profit
6. Total supply chain profits might therefore be lower than if the supply chain coordinated actions to have a common objective of maximizing total supply chain profits

Contracts for Product Availability and Supply Chain Profits: Buyback Contracts:

1. Allows a retailer to return unsold inventory up to a specified amount at an agreed upon price

2. Increases the optimal order quantity for the retailer, resulting in higher product availability and higher profits for both the retailer and the supplier
3. Most effective for products with low variable cost, such as music, software, books, magazines, and newspapers
4. Downside is that buyback contract results in surplus inventory that must be disposed of, which increases supply chain costs
5. Can also increase information distortion through the supply chain because the supply chain reacts to retail orders, not actual customer demand

The Procurement Process:

1. The process in which the supplier sends product in response to orders placed by the buyer
2. Goal is to enable orders to be placed and delivered on schedule at the lowest possible overall cost
3. Two main categories of purchased goods:
    a. Direct materials: components used to make finished goods
    b. Indirect materials: goods used to support the operations of a firm
    c. Differences between direct and indirect materials listed in Table 13.2
4. Focus for direct materials should be on improving coordination and visibility with supplier
5. Focus for indirect materials should be on decreasing the transaction cost for each order
6. Procurement for both should consolidate orders where possible to take advantage of economies of scale and quantity discounts

Making Sourcing Decisions in Practice:

1. Use multifunction teams
2. Ensure appropriate coordination across regions and business units
3. Always evaluate the total cost of ownership
4. Build long-term relationships with key suppliers

Learning Objectives of sourcing decisions:

1. What is the role of sourcing in a supply chain?
2. What dimensions of supplier performance affect total cost?
3. What is the effect of supply contracts on supplier performance and information distortion?
4. What are different categories of purchased products and services? What is the desired focus for procurement for each of these categories?

4.2 Transportation in Supply Chain

- Transport Eras
- Transport Rates
- World Transportation Patterns
- Summary
- Supply chain is the system by which organizations source, make and deliver their products or services according to market demand.
- Supply chain management operations and decisions are ultimately triggered by demand signals at the ultimate consumer level.
- Supply chain as defined by experienced practitioners extends from suppliers' suppliers to customers' customers.

Supply chain includes :

1. Material flows
2. Information flows
3. Financial flow

4.3 Impact of lack of coordination

The bullwhip effect that negatively influences the supply chain performance. This effect is experienced by various industries, from fast moving consumer goods to IT products. The consequences for the supply chain members are the following: increased costs, lower profitability, longer lead times and lower product availability. The main factors that generate this effect are the types of incentives provided by suppliers to the downstream customers, the

information distortion, the order placing practices, the pricing policies encouraging the forward buying and the specific behavior of the supply chain members focused on local optimization. The only way in which supply chain members may eradicate the bullwhip effect is to enhance coordination among the subsequent stages. Some of the strategies to be considered are the alignment of goals and objectives, data sharing among members, single stage control of replenishment, strategies for the improvement of the operational performance, stabilizing orders with appropriate pricing strategies and building strategic partnerships and trust. The incidence and amplitude of the bullwhip effect may be reduced by strategies and decisions that are harmonized along the stages of the supply chain. The key words in the endeavor to diminish the bullwhip effect are cooperation, coordination, communication and trust.

4.4 Lack of coordination and Bullwhip Effect

4.5 Impact of lack of coordination

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4.6 CRM –Internal supply chain management

1. Customer relationship management (CRM) is a model for managing a company's interactions with current and future customers. It involves using technology to organize, automate, and synchronize sales, marketing, customer service, and technical support.
2. "The focus is on creating value for the customer and the company over the longer term" . When customer value the customer service that they receive from suppliers, they are less likely to look to alternative suppliers for their needs . CRM enables organisations to gain 'competitive advantage' over competitors that supply similar products or services .
3. "Customer relationship management focuses on strategically significant markets. Not all customers are equally important". Therefore, relationships should be built with customers that are likely to provide value for services. Building relationships with customers that will provide little value could result in a loss of time, staff and financial resources.
4. Data flow environment
5. CRM also helps a company identify and reward its most loyal customers to retain and expand their business via targeted marketing .Hence retaining customers becomes easier. Retain CRM tools help keep customers happy by providing superior service from a responsive team of sales and service specialists. Enhance CRM software tools can help businesses acquire new customers by improving efficiency in contact management, sales prospecting, selling and direct marketing. Acquire
6. Sales force automation. SFA uses software to streamline the sales process. The core of SFA is a contact management system for tracking and recording every stage in the sales process for each prospective client, from initial contact to final disposition. Many SFA applications also include insights into opportunities, territories, sales forecasts and workflow automation. Appointments, Appointment CRMs automatically provide suitable appointment times to customers via e-mail or the web, which are then synchronized with the representative or agent's calendar.
7. Marketing- CRM systems for marketing track and measure campaigns over multiple channels, such as email, search, social media, telephone and direct mail. These systems track clicks, responses, leads, deals, and revenue. Customer service and support CRMs can be used to create, assign and manage requests made by customers, such as call center

software which help direct customers to agents. CRM software can also be used to identify and reward loyal customers.

8. Social media Some CRMs coordinate with social media sites like Twitter, LinkedIn, Face book and Google Plus to track and communicate with customers who share opinions and experiences about their company, products and services. Small business, For small businesses a CRM may simply consist of a contact manager system which integrates emails, documents, jobs, faxes, and scheduling for individual accounts.
9. When introducing or developing CRM, a strategic review of the organization's current position should be undertaken. Organizations need to address four issues: 1.What is our core business and how will it evolve in the future? 2. What form of CRM is appropriate for our business now and in the future? 3. What IT infrastructure do we have and what do we need to support the future organization needs? 4. What vendors and partners do we need to choose?
10. Reduced costs, because the right things are being done, (i.e.., effective and efficient operation) increased customer satisfaction, because they are getting, exactly what they want (i.e.. meeting and exceeding expectations) ensuring that the focus of the organization is external. growth in numbers of customers, maximization of opportunities (e.g.. increased, services, referrals, etc.) increased access to a source of market and competitor, information highlighting poor operational processes, long term profitability and sustainability.
11. Social CRMϖ Social media marketing remains on an uptrend and companies are paying attention. Consumers are empowered by social networking sites to influence product or brand image and perception. Negative feedback no longer simply routes a call to customer service; businesses can expect feedback to reach potential markets before they do. 2. Centralized Dataϖ By centralizing customer data through CRM, businesses will be able to target and engage customers more effectively. CRM data won't end with generating leads for the sales team but will be a continuing process that also includes maintaining relationships with a growing customer base. (For related reading, see Using Product Management Features in a CRM Solution.) 3. Mobilityϖ Customers are no longer bound to PCs and are constantly accessing data on the go. Frontline employees and customer service resources will increasingly be empowered by mobile devices for

support. On the other side of the coin, customer perception will also be shaped not only by real-world involvement, but also by online and mobile experiences.

12. Flexibilityϖ Flexibility for CRM users is key because it allows them to customize the software to meet their needs. Ease of integration and multichannel publishing are key corporate considerations. As a result, a flexible and accessible CRM platform is becoming increasingly important for users. 5. Crowd sourcingϖ With customers gaining voice through social media, enterprises are increasingly able take advantage of crowd sourcing for business improvements. Tapping current customers for fresh ideas, solutions and expectations can help employees across an organization provide the innovation and interactive relationship that a growing number of customers now expect. This means that CRM will no longer be just for lead generation and marketing, it will also provide a source for new innovation.
13. Supply chain is a "process umbrella" under which products are created and delivered to customers. It includes suppliers, manufacturers, distributors, retailers and customers. It also includes transporters and warehouses. In essence, it consists of all parties involved, directly or indirectly, in fulfilling a customer's request. AS HI S MI TR A, IT DE PT, B. CO M ST. XA VI
14. Suppliers Manufacturers Warehouses & Distribution Centers Customers Material Costs Transportation Costs Transportation Costs Transportation Costs ,Inventory Costs Manufacturing Costs The Supply Chain
15. A set of approaches used to efficiently integrate, Suppliers, Manufacturers, Warehouses , Distribution centers . So that the product is produced and distributed , In the right quantities. To the right locations , And at the right time , System-wide costs are minimized and Service level requirements are satisfied
16. To gain efficiencies from procurement, distribution and logistics ,To make outsourcing more efficient, To meet competitive pressures from shorter development times, more new products, and demand for more customization ,To meet the challenge of globalization and longer supply chains ,To meet the new challenges from e-commerce, To manage the complexities of supply chains
17. Dealing with uncertain environments – matching supply and demand • Boeing announced a $2.6 billion write-off in 1997 due to "raw materials shortages, internal and supplier

parts shortages and productivity inefficiencies" • IBM sold out its supply of its new Aptiva PC in 1994 costing it millions in potential revenue The growth of technologies such as the Internet enable greater collaboration between supply chain trading partners • If you don't do it, your competitor will • Major buyers such as Wal-Mart demand a level of "supply chain maturity" of its suppliers

18. Information links all aspects of supply chain » E-business >replacement of physical business processes with electronic ones » Electronic data interchange (EDI) a computer-to- computer exchange of business documents » Bar code and point-of-sale data creates an instantaneous computer record of a sale » Radio frequency identification (RFID) >technology can send product data from an item to a reader via radio waves Internet >allows companies to communicate with suppliers, customers, shippe rs and other businesses around the world, instantaneously
19. Uncertainty is inherent to every supply chain > Travel times > Breakdowns of machines and vehicles Weather, natural catastrophe, war > Local politics, labor conditions, border issues » The complexity of the problem to globally optimize a supply chain is significant Minimize internal costs ,Minimize uncertainty, Deal with remaining uncertainty
20. A 1997 PRTM Integrated Supply Chain Benchmarking Survey of 331 firms found significant benefits to integrating the supply chain Delivery Performance 16%-28% Improvement Inventory Reduction 25%-60% Improvement Fulfillment Cycle Time 30%-50% Improvement Forecast Accuracy 25%-80% Improvement Overall Productivity 10%-16% Improvement Lower Supply-Chain Costs 25%-50% Improvement Fill Rates 20%-30% Improvement Improved Capacity Realization 10%-20% Improvement Source: Cohen & Roussel
21. View the supply chain as a strategic asset and a differentiator , Wal-Mart's partnership with Proctor & Gamble to automatically replenish inventory , Dell's innovative direct-to-consumer sales and build-to-order manufacturing » Create unique supply chain configurations that align with your company's strategic objectives , Operations strategy, Outsourcing strategy, Channel strategy, Customer service strategy, Asset network » Reduce uncertainty, Forecasting , Collaboration , Integration Supply chain configuration components

22. Globalization ϖ Increased cross border sourcing ϖ Collaboration for parts of value chain with ϖ low-cost providers Shared service centers for logistical and ϖ administrative functions Increasingly global operations, which ϖ require increasingly global coordination and planning to achieve global optimums
23. Customer relationship management (CRM) is a model for managing a company's interactions with current and future customers. It involves using technology to organize, automate, and synchronize sales, marketing, customer service, and technical support.
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39. Dealing with uncertain environments – matching supply and demand • Boeing announced a $2.6 billion write-off in 1997 due to “raw materials shortages, internal and supplier parts shortages and productivity inefficiencies” • IBM sold out its supply of its new Aptiva PC in 1994 costing it millions in potential revenue The growth of technologies such as the Internet enable greater collaboration between supply chain trading partners • If you don’t do it, your competitor will • Major buyers such as Wal-Mart demand a level of “supply chain maturity” of its suppliers
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4.7 Case 4: Keeping the Good Times rolling at crown premiums

Crown Premiums is one of North America's leading purveyors of high-quality miniatures and collectibles. Since its humble beginnings in 1981, the Illinois based company has assembled a loyal following among collectors and premium buyers for its popular line of die-cast muscle cars and custom orders ranging from scale motorcycles to miniature tool chests. Supplying clients such as ConocoPhillips, Snap-On Tools and Lennox Industries, Crown Premiums has earned a reputation for quality. So when the company's executives considered UPS for a comprehensive international shipping solution, they knew they needed a credible carrier on par with the level of service their customers demand. Client Challenge Although most of its customers are based in North America, Crown Premiums relies on suppliers in China for manufacturing. This places significant emphasis on finding a solution for ocean freight and package shipments that is dependable and efficient. They also wanted to consolidate its supply chain process and eliminate using multiple providers. Noreen Gedmin, vice president of operations for Crown Premiums, says, "We had previously used another company for our LTL [less-than-truckload], and that aspect of our shipping process alone took a long time — up to an entire month. Things would get dropped along the way, and there was a lot of added paperwork." Frustrated with the administrative hassles and lengthy transit times, Crown Premiums let UPS help them find a better way.

The UPS Solution

With its door-to-door, one-to-many model, UPS Trade DirectSM Ocean alleviated the company's concerns about its administrative load while providing complete end-to-end visibility. Since brokerage services are integrated directly into Trade Direct's architecture, customs clearance headaches were eliminated, along with most of the associated paperwork. And Crown Premiums uses UPS Trade Direct SM Cross Border to continue its seamless package and LTL deliveries to customers in Canada. All this gives the company freedom to track milestones and focus on other aspects of their business. "We palletize our Canada-bound LTL product and ship it out all at once. UPS clears it through Customs, and the individual deliveries go directly into the UPS system in Canada. I only have to create one commercial invoice as opposed to, say, 70 for

each shipment, so we can now handle bigger shipments with fewer personnel. Tracking our LTL shipments with our previous carriers was much harder and took a lot longer. With UPS, I can use Flex® Global View to track all of this information on the Web," explained Gedmin. Today, accounting at Crown Premiums is automated and more efficient. "Because we don't have to re-key everything manually, our accuracy is 99%," confirmed Gedmin. "With UPS Trade Direct, all the data we need to update inventory is easily populated into our system." But what's the biggest advantage for a vice president of operations? Trade Direct's impact on the bottom line. "We figure that using Trade Direct saves us about three weeks of transit time," Gedmin said. "That means we can invoice our customers sooner. That's a very good thing."

The Results

Along with streamlining its supply chain and reducing shipping cycles, Crown Premiums enjoys a final benefit from UPS Trade Direct — improved customer satisfaction. "Customers buy our products as collector items, so even the boxes they come in add to their value. They want everything in pristine condition," said Gedmin. Because the fragile goods are managed by UPS from origin to end, with fewer hand-offs, Crown Premiums is able to meet client expectations with ease. "My phone number is on every shipment, and I can tell you that we haven't had customers complaining about damaged product since using UPS," Gedmin added which makes for a very happy day at the toy factory

4.8 Case 5: LUSH Showers U.S. Market with Enhanced Service

LUSH Fresh Handmade Cosmetics is the Vancouver, British Columbia, subsidiary of a U.K. cosmetics chain. They produce handmade, luxury bath and beauty products for a thriving catalog and e-commerce market. The company hired UPS to add speed and efficiency to order fulfillment for its e-commerce clientele.

Client Challenge

LUSH bath and body products are made by hand and in limited quantities from fresh fruits and vegetables and the finest essential oils. The company uses as few preservatives as possible and aims to provide customers with the "freshest products in the history of cosmetics." Speedy delivery and order accuracy are crucial to ensure freshness and build customer loyalty. At its Vancouver headquarters, LUSH produces cosmetics for LUSH retail outlets and fulfill catalog and e-commerce orders from individual customers. LUSH products have made a big splash in the United States, where every week devotees log onto lush.com. The U.S. market accounts for the majority of LUSH's online business and continues to expand. The surge in volume from south of the border prompted LUSH to seek a third-party logistics provider. The goal was to

streamline and speed up order processing and fulfillment, to ensure that U.S. customers received the best service possible without incurring unnecessary shipping expenses. “It was a tall order,” said Sam Azad, LUSH’s Web and Mail Order Development Manager. “We considered proposals from other logistics companies, but only UPS offered us a complete solution.”

Our Solution

UPS looked at LUSH’s entire fulfillment process, from taking an order through final delivery. LUSH prepared the shipping and customs documents for each order manually. The individual shipments were then sent directly from Vancouver to their U.S. destinations at an international shipping rate plus a customs brokerage fee. When a customer called to check the status of an order, LUSH personnel would have to phone the shipping company to find out the order’s tracking number and shipping status, then call the customer back to provide the information.

UPS implemented a UPS Trade Direct℠ Cross Border solution which consolidates multiple orders at a UPS Supply Chain Solutions℠ facility in Canada, then moves bulk shipments to the border, reducing LUSH’s transportation costs. UPS Supply Chain Solutions then clears the bulk shipment through customs as a single entry, saving LUSH more money by eliminating multiple brokerage fees. The bulk shipment is received at a UPS Supply Chain Solutions logistics facility in the United States where it is broken down into individual orders and delivered to individual customers at domestic rates, leveraging the UPS transportation network. In addition to reducing costs, the simplified process accelerated order fulfillment and gave LUSH greater control over its inventory, minimizing the consequences of overstocking or running out of popular items. The entire process is so fast and seamless, LUSH’s U.S. customers rarely notice that they are ordering products from another country, he added. “We know that we have the quality products that consumers want. And now, thanks to UPS, we know that we can deliver efficiently.” LUSH also opted to integrate UPS technology with their own order processing and fulfillment functions. When a customer places an order online, a tracking number is automatically generated. Both LUSH staff and customers can log onto UPS.com® anytime, day or night, to track their orders. “We’ve reduced staff time spent tracking customer orders by 90 percent,” Azad said.

Global SCM Factors:

- **Costs**
  - Local labor rates
  - International freight tariffs
  - Currency exchange rates
- **Customs Duty**
  - Duty rates differ by commodity and level of assembly
  - Impact of GATT/WTO: Changes over time

Global SCM Factors Continued:

- **Taxes on Corporate Income**

1. Different markups by country
2. Tax havens and not havens
3. Make vs. buy effect
4. Offset Trade and Local Content
5. Local content requirement for government purchases
6. Content for preferential duty rates

Wal-Mart in South America:

- What reason does Wal-Mart have for opening stores globally?
- Why is Wal-Mart not as successful in Latin America as they are in the US?
- What mistakes did Wal-Mart make?
- If you were running Wal-Mart, what would you have done differently?

Wal-Mart in South America

- Product differences
  - Are there global products?
  - Is this a trend?
  - What is the balance between local tastes, global products?

- Dealing with established competition, aggressive competitors
- Developing market knowledge
- Lack of critical mass
- Different infrastructure/ business environment
    - distribution problems
    - different equipment standards cultural differences
    - postdated checks
- Issues with foreign governments
- Deep pockets for success

Factors in Global Supply Chain:

- Substantial geographic distances
- Foreign market forecasting difficulties
- Exchange rate fluctuations
- Infrastructural inadequacies
- Explosion in product variety in global markets

Major Differences Between Different Regions

	First World	**Emerging World**	**Third World**
Infrastructure	**Highly developed**	**Under development**	**Insufficient to support advanced logistics**
Supplier Operating Standards	**High**	**Variable**	**Typically not considered**

Information system availability	**Generally available**	**Support systems not available**	**Not available** **(slightly available?)**
Human Resources	**Available**	**Available with some searching**	**Often difficult to find**

Taxonomy of International Supply Chains:

1. International distribution
2. International suppliers
3. Off-shore manufacturing
4. Fully integrated global supply chain

Forces Driving Globalization:

- Global Market Forces
- Technological Forces
- Global Cost Forces
- Political and Economic Forces

Global Market Forces:

- Foreign competition in local markets
- Growth in foreign demand
  - Domestic consumption from 40% to <30% of world consumption since 1970
  - Foreign sales fuel growth
- Global presence as a defensive tool

  - Nestle's and Kellogg's
- Presence in state-of-the-art markets
  - Japan -- consumer electronics
  - Germany -- machine tools
  - US: SUV's

Technological Forces

- Diffusion of knowledge
  - Many high tech components developed overseas
  - Need close relationships with foreign suppliers
  - For example, Canon has 80% of laser engines
- Technology sharing/collaborations
  - Access to technology/markets
- Global location of R&D facilities
  - Close to production (as cycles get shorter)
  - Close to expertise (Indian programmers?)

Political and Economic Forces

- Exchange rate fluctuations and operating flexibility
- Regional trade agreements (Europe, North America, Pacific Rim)
  - Value of being in a country in one of these regions
  - Implications for supply network design
  - Reevaluation of foreign facilities (Production processes designed to avoid tariffs)

Political and Economic Forces

- Trade protection mechanisms
  - Tariffs
  - Quotas
  - Voluntary export restrictions
    - Japanese automakers in US

  - Local content requirements
    - TI/Intel factories in Europe
    - Japanese automakers in the EU
  - Health/environmental regulations
    - Japanese refused to import US skis for many years (different snow)
  - Government procurement policies
    - Up to 50% advantage for American companies on US Defense contracts

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Added Complexities

- Substantial geographic distances
- Added forecasting difficulties
- Infrastructural Inadequacies
  - Worker skill, performance expectations
  - Supplier availability, reliability, contracts
  - Lack of local technologies
  - Inadequacies in transportation, communications infrastructure

Additional Issues In Global SCM

- Regional vs. International Products
  - Cars vs. Coca-cola
- Local Autonomy vs. Central Control
  - SmithKline introducing Contact to Japan
  - Short term expectations
- Collaborators become competitors
  - China
  - Toshiba copiers, Hitachi microprocessors

Exchange Rates

- Transaction Exposure
  - The results of transactions denominated in foreign currencies change (cash deposits, debt obligations)
- Translation Exposure
  - Result of translating foreign financial statements into the currency of the parent company
- Financial instruments used to hedge these

Operating Exposure

- Changes a firm's competitive position and future cash flows
- In the short run, changes in currency rates don't necessarily reflect changes in inflation rates
- Regional operations become relatively more or less expensive

Effect of Operating Exposure

- Depends on
  - Customer reactions
  - Competitor reactions

        - market share
        - profit
    - Supplier reactions
    - Government reaction

Examples:

- Company which manufactures and sells exclusively domestically
- Company which imports and sells domestically
- Company which manufactures and sells globally

- Operational Strategies

  To Address These Risks : Speculative Strategy
    - Bet on a single scenario
    - Japanese auto manufacturing in Japan
- Hedged Strategy
    - Losses in one area offset by gains in another
    - VW in US, Brazil, Mexico, Germany
- Flexible Strategy

Operational Flexibility:

1. Flexibility to take advantages of operational exposure
2. Requires a flexible supply chain
    a. multiple suppliers
    b. flexible facilities
    c. excess capacity
    d. various distribution channels
3. Can be expensive to implement
    a. coordination mechanisms
    b. capital investments

    c. loss of economies of scale
4. Production/sourcing shifts are key to strategy
    a. This has many switching/startup costs
5. Distribution channels must be flexibility so sourcing is invisible to end customers
6. Other benefits include:
    a. improved information availability
    b. global coordination
    c. political leverage

UNIT- V

Managing Global logistics and global supply chains

5.1 Global Logistics:

- Global logistics defined as the design and management of a system that controls the flow of materials into, through and out of the international corporation.
- Scheduling the arrival of materials and other inputs
- Warehousing and inventory control
- Strategic choice of international warehousing facilities
- Scheduling production
- Packaging, transportation and final delivery
- Analysis of transportation costs

5.2 Global supply chain:

- Supply chains are linkages of partially discrete, yet interdependent entities that collectively transform raw materials into finished products.
- Supply chains connect the functions of inbound activities (such as purchasing) with outbound activities (such as logistics and “place” activities).

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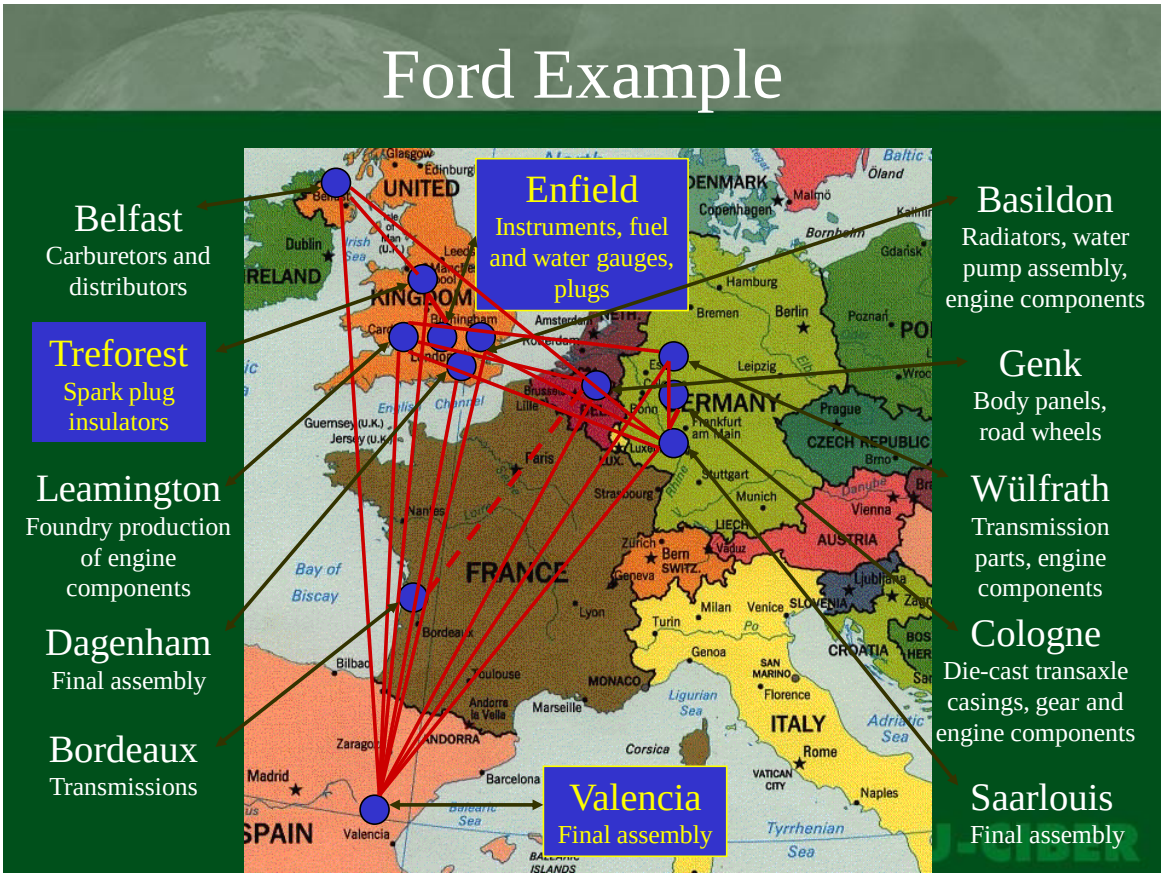
5.4 Global Supply chain business process:



- A supply chain organization is a relatively enduring interfirm cooperative that uses resources from international participants to accomplish shared and independent goals of its members.

5.5 Global purchase:

- Support Activities: Support Activities provide inputs or infrastructure in support of primary activities. These supporting activities stretch across the entire value chain since they impact each primary activity.
  - Procurement is obtaining purchased inputs, such as raw material, parts, equipment, etc.

- Five continuous and interactive steps are involved in developing a global supply chain strategy along the value chain:

    a. Identify the separable links (R&D, manufacturing, and marketing) in the company's global value chain.
    b. In the context of those links, determine the global location of the company's competitive advantages, considering both economies of scale and scope.
    c. Ascertain the level of transaction costs (e.g., cost of negotiation, cost of monitoring activities, and uncertainty resulting from contracts) between links in the global value chain, both internal and external, and select the lowest cost mode that provides the most value.

    Global Logistics:

    d. Determine the comparative advantages of countries (including the company's home country) relative to each link in the value chain and to relevant transaction costs.
    e. Develop adequate flexibility in corporate decision making and organizational design so as to permit the company to respond to changes in both its competitive advantages and the comparative advantages of countries

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Major phases of movement of materials

1. Materials management
2. Physical distributions

5.3 Global Supply Chain Management:

The activities involved in Supply chain are

i. Purchasing
ii. Manufacturing
iii. Logistics
iv. Distribution
v. Transportation and
vi. Marketing

The International Supply Chain/Global Supply Chain:

- Covers both logistics and operations
- Includes activities such as sourcing, procurement, order processing, manufacturing, warehousing, inventory control, servicing and warranty, customs clearing, wholesaling and distribution

Areas to be considered while moving from domestic to International supply chain:

1. Substantial geographical distances
2. Forecasting problems/difficulties in foreign markets
3. Fluctuations in exchange rates for different currencies
4. Demand for great variety of products
5. Inadequate infrastructures such as
6. labor skills,
7. availability of supply
8. Supplier quality
9. Lack of local process equipments and technologies
10. Inadequate transportation facilities and
11. Inadequate telecommunication facilities

Components Global logistics: Mainly depends upon Materials Management, Physical management Logistical management,

Material Management : Demand forecasting, Purchasing, Requirement planning, Production planning, Physical Management: Manufacturing inventory, Warehousing, Material handling, Industrial packaging ,Finished goods inventory ,Distribution planning, Order processing.

Logistical Management: Transportation, Customer service, Strategic planning, Information technology, Marketing ,Sales .

5.7 Global Strategic alliances

When to go for Global alliances: Adding value to products, Improving market access, Strengthening operations, Adding technological strength, Enhancing strategic growth, Enhancing organizational skills ,Building financial strength

5.8Issues and challenges in Global supply chains:

i. Transport Mode

ii. Inventories

iii. Agents

iv. Financial risk

v. Cargo risk

vi. Government agencies

vii. Administration

viii. Communication

ix. Insurance

x. Packaging

xi. Payment

1. Multifaceted, goal-oriented, long-term partnerships between two companies
2. Both risks and rewards are shared.
3. Typically lead to long-term strategic benefits for both partners

5.9 Managing the supply chain for globally integrated products -An Excel case study

Today many of the products that we consume have been brought to us through globally integrated distribution systems. Striking examples are the fruit and vegetables that we purchase in our local supermarket that arrive fresh from far flung corners of the globe, and the motor vehicles that we drive around in which contain components from many different countries. We tend to take the delivery of these products for granted without realising the real complexity of the planning that is involved in making sure, that for example, all of the components for a modern VW Beetle arrive at their final assembly point at just the right time. This case study, therefore, introduces you to some of the processes that go on behind the scenesbyexaminingsupplychainmanagement.
Supply chain management requires specialist skills and is all about efficiently bringing together all of the links and stages involved in creating a high quality supply chain. In this case we show how Exel manages the supply chains for many of the world's leading businesses. Exel is a global leader in supply chain management, providing customer focused solutions to a wide range of manufacturing and retailing industries. Exel's comprehensive range of innovative logistics solutions encompasses the complete supply chain from design and consulting through freight forwarding, warehousing and distribution services to integrated information management and e-commerce. Exel now has contract logistics operations in 31 countries accounting for 84% of world GDP. Combined with Freight Management activities that cover over 120 countries around the world, Exel has unrivalled global coverage.

Based on years of experience and application of state of the art technology, Exel is able to design improved supply chain systems for originations which add more value for consumers. Creating an effective supply chain involves not only increasing the speed of delivery, but also the quality of delivery – so that the end-consumer will benefit from more desirable and hence more valuable end-products.

With Exel managing the supply chain for a business like Volkswagen or Ford the company is able to concentrate on its core business. Meanwhile, Exel provides in

on its core business. Meanwhile, Exel provides innovative solutions as to how to reduce costs and accelerate the movement of products locally, regionally and globally. As well as providing the systems and solutions Exel also manages freight by providing airfreight and sea-freight backed by an extensive transportation network. Customers can track the movement of their goods through an extensive internet based tracking system. Because Exel manages the movement of freight for many companies it is a major purchaser of transportation and is thus able to pass-on the benefits of economies of scale, substantially reducing transport costs for customers that do not have the same purchasing power. In addition Exel organises the warehousing and distribution of goods along the supply chain. With considerable experience in this field it is able to design large-scale distribution outlets which are often shared between various customers who again benefit from economies of scale in storage and distribution.

In recent years Exel has also enabled a range of businesses to take advantage of business-to-business and business-to-consumer e-commerce activities. For example, a company selling goods to customers using the web is then able to deliver speedily to the end consumer using Exel's supply chain network. Exel has helped many leading companies across the globe to build effective supply chains including Pepsi-Cola, Unilever and Ford, and plays a key part in many industries such as:

i. chemicals where safe delivery is essential
ii. healthcare where prompt delivery and temperature controlled conditions are important
iii. retailing where cost effective and waste eliminating systems are essential
iv. high-tech where instant and regular delivery is essential.

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