

Semester II Course Code 206OSCM: Course Name : Supply Chain Management

Semester II 206OSCM: Supply Chain Management 3 Credits LTP: 2:1:1 Subject Core (SC) Course – Operations & Supply Chain Management Course Outcomes: On successful completion of the course the learner will be able to CO# COGNITIVE ABILITIES COURSE OUTCOMES



- CO206OSCM.1 REMEMBERING DESCRIBE the key concepts of Supply Chain Management and the –
- driving forces in contemporary Supply Chain Management.
- CO206OSCM.2 UNDERSTANDING EXPLAIN the structure of modern day supply chains.
- CO206OSCM.3 APPLYING IDENTIFY the various flows in real world supply chains.
- CO206OSCM.4 ANALYSING COMPARE and CONTRAST push and pull strategies in Supply Chain
- Management.
- CO206OSCM.5 EVALUATING EXPLAIN the key Operational Aspects in Supply Chain Management.
- CO206OSCM.6 CREATING DISCUSS the relationship between Customer Value and Supply Chain
- Management.

Unit 1



- Supply Chain Structure: Shift from enterprise to network, Structure of a SC, Push based SC, Pull based SC,
- Tradeoff between Push & Pull, Identifying appropriate Push & Pull Strategy for SC, Commodity & cost centric SC, Agile
- SC

Unit II



- Flows in SC: Forward & Reverse SC, Product, Services, Information, Funds, Demand, Forecast flows in Upstream
- & Downstream direction

Unit III



- Total SCM: Changing business landscape driving forces: Shift from Operations to Services, Impact of
- globalization & technological revolution, Shift from linear SC to collaborative networks, power shifts in the SC- demands
- for flexibility of partnerships, core competencies, growth in outsourcing, Increased complexity of processes

Unit IV



- SCM Building Blocks: Overview of customer focus & demand, resources & capacity management, procurement
- & supplier focus, inventory management, operations management, distribution management in SCM. Key Operational
- Aspects in SC: Creating the Lean SC JIT Purchasing, JIT Transportation and JIT Production. Kanban, VMI

Unit V



- 5. Customer Value: Empowered consumer, Customer focused Marketing & SC service outputs, customer service –
- availability, operational performance, reliability. Customer satisfaction – customer expectations, enhancing customer
- satisfactions, limitations of customer satisfaction. Customer success – achieving customer success, value added services,
- customer value requirement mapping, CRM



- Supply Chain Structure: Shift from enterprise to network, Structure of a SC, Push based SC, Pull based SC,
- Tradeoff between Push & Pull, Identifying appropriate Push & Pull Strategy for SC, Commodity & cost centric SC, Agile SC

SUPPLY CHAIN



- A supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer requirement.
- All facilities, functions, activities, associated with flow and transformation of goods and services from raw materials to customer, as well as the associated information flows.
- An integrated group of processes to "source," "make," and "deliver" products.





• Supply chain management (SCM) is the management of the flow of goods

 The goal or mission of supply chain management can be defined using Mr. Goldratt's words as "Increase throughput while simultaneously reducing both inventory and operating expense"

Supply Chain Management



• **Definition:**

Supply Chain Management is primarily concerned with the efficient integration of suppliers, factories, warehouses and stores so that merchandise is produced and distributed in the right quantities, to the right locations and at the right time, and so as to minimize total system cost subject to satisfying customer service requirements.

Continue



• Supply chain management has been defined as the "design, planning, execution, control, and monitoring of supply chain activities with the objective of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand and measuring performance globally.

Supply Chain Structure

DIMR







Benefits of SCM



Reduces uncertainty & risks in the supply chain. This positively affects inventory levels, cycle time, business processes & customer service.

Contributes to overall increase in profitability & competitive advantage.

SUPPLY CHAIN STAGES



- Customers
- Retailers
- Wholesalers/Distributors
- Manufacturers
- Component/ Raw material suppliers

 It is not compulsory that all the stages should be present in a supply chain

What Is Supply Chain Management (SCM)?



- 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 <u>costs</u> are minimized and
- <u>Service level</u> requirements are satisfied

History of Supply Chain Management



- 1960's Inventory Management Focus, Cost Control
- 1970's MRP & OM Operations Planning
- 1980's MRPII, JIT Materials Management, Logistics
- 1990's SCM ERP "Integrated" Purchasing, Financials, Manufacturing, Order Entry
- 2000's Optimized "Value Network" with Real-Time Decision Support; Synchronized & Collaborative Extended Network for SCM.

Objectives



- Satisfy the customer needs.
- Maximize the overall value generated.
- Increase supply chain surplus.
- High supply chain profitability.

SUPPLY CHAIN DECISIONS



- Design>planning> execution > control>monitoring.
- Ensure effective flow of goods and information
- Clusters of store near the distribution center.
- Collaboration with suppliers.
- Active efforts to steer customer at real time.
- Centralized manufacturing



- Worth of inventory.
- Manage cash flow
- Should be flexible.

DECISION PHASES IN SUPPLY

- 1. Supply chain strategy or design
- How to structure for next several years
- What is the chain configuration
- How resources allocated
- What process each stage will perform
- Out sourcing
- In house functions



- Locations and capacities of production and ware houses
- Mode of transportation
- Type of information system
- 2. Supply chain planning
- for several months.
- Forecast for the coming year
- Analyses demand in different markets
- Which market? Location?

- Sub contracting
- Inventory policies
- Timing
- Size of marketing
- Price promotions

3. Supply chain operations

- weekly or daily operation decisions
- Individual customer orders
- Allocation of inventory and production
- Set dates for activities





- Generate lists for warehouses
- Allocation of shipments
- Schedules of trucks.

PROCESS VIEWS OF SUPPLY

1. CYCLE VIEW

- Process divided in to series of cycles. Each cycle occurs at the interface between two successive stages of the supply chain.
- Customer order cycle
- Replenishment cycle
- Manufacturing cycle
- Procurement cycle

- define
- A cycle view of supply chain clearly define the process involved and the owners of each process.
- This view is very useful when considering operational decisions because it specifies the roles and responsibilities of each member of supply chain and the desired outcome of each process.

PUSH PULL VIEW OF SUPPLY

- Divided in to two categories..
- Executed in response to a customer order(pull process)
- 2. Executed in anticipation of customer orders(push process)

A push vs pull view of the SC operations



Examples:

- •Compaq: All processes except for those involved in customer order cycle are of "push" type.
- •Dell: Dell assembles its computers to order and therefore, all processes except for those involved in the procurement cycle are "pull".
- **Remark:** Generally, if possible, a "pull" organization of the supply chain provides tighter control of inventory costs and the ability to support higher levels of product customization.

Supply Chain Integration – Push Strategies

- Classical manufacturing supply chain strategy
- Manufacturing forecasts are long-range
 - Orders from retailers' warehouses
- Longer response time to react to marketplace changes
 - Unable to meet changing demand patterns
 - Supply chain inventory becomes obsolete as demand for certain products disappears
- Increased variability (Bullwhip effect) leading to:
 - Large inventory safety stocks
 - Larger and more variably sized production batches
 - Unacceptable service levels
 - Inventory obsolescence
- Inefficient use of production facilities (factories)
 - How is demand determined? Peak? Average?
- Examples: Auto moustly, large appliances, others?









Supply Chain Integration – Pull Strategies

- Production and distribution are demand-driven
 - Coordinated with true customer demand
- None or little inventory held
 - Only in response to specific orders
- Fast information flow mechanisms
 - POS data
- Decreased lead times
- Decreased retailer inventory
- Decreased variability in the supply chain and especially at manufacturers
- Decreased manufacturer inventory
- More efficient use of resources
- More difficult to take advantage of scale opportunities
- Examples: Dell, Amazon







Supply Chain Integration – Push/Pull Strategies

- Hybrid of "push" and "pull" strategies to overcome disadvantages of each
- Early stages of product assembly are done in a "push" manner
 - Partial assembly of product based on aggregate demand forecasts (which are more accurate than individual product demand forecasts)
 - Uncertainty is reduced so safety stock inventory is lower
- Final product assembly is done based on customer demand for specific product configurations
- Supply chain timeline determines "push-pull boundary"
 Product
 Push Strategy
 Pull
 Pull
 Pull
 End
 Consumer

c

Raw

Material

Supply Chain Timoling



Choosing Between Push/Pull Strategies





Characteristics of Push, Pull and Push/Pull Strategies



	PUSH	PULL
Objective	Minimize Cost	Maximize Service Level
Complexity	High	Low
Focus	Resource Allocation	Responsiveness
Lead Time	Long	Short
Processes	Supply Chain Planning	Order Fulfillment
Drivers of supply chain performance



- Aim.. responsiveness and efficiency at lowest possible cost.
- Drivers are set to improve the supply chain performance.
- Facilities
- Inventory
- Transportation
- Information
- Sourcing
- Pricing.

Outline



- Drivers of supply chain performance
- Adomessork for structuring drivers
- **Transportatio**
- Informatio
- Sourcing
- Pricing

Cross-functional drivers

Drivers of Supply Chain Performance



- Facilities
 - places where inventory is stored, assembled, or fabricated
 - production sites and storage sites (distribution facilies (DC))
 - Location, capacity, flexibility
 - Responsive several DC close to customer v.s. Efficiency- central few DCs
- Inventory
 - raw materials, WIP, finished goods within a supply chain
 - inventory policies
 - Responsiveness Large inventories, Efficiency low inventories
- Transportation
 - moving inventory from point to point in a supply chain
 - combinations of transportation modes and routes
 - Transportation choices make big impact on responsiveness

Drivers of Supply Chain Performance



- Information
 - data and analysis and sharing regarding inventory, transportation, facilities, costs, prices, supplier performance, demand forecast throughout the supply chain
 - potentially the biggest driver of supply chain performance, affects all other drivers directly.
- Sourcing
 - Sourcing functions that are outsourced, like production, storage, management of information etc.
 - Motorolla suffered from responsiveness after outsourcing production to contract manufacturers in china because of long distances, started flying in some of its cellular phones.
- Pricing
 - Price associated with goods and services provided by a firm to the supply chain
 - Affects the behavior of the buyer.
 - Transportation company charging based on lead time provided by customer. Efficiency customers will order early. If the price is not dependent on lead time early orders are very unlikely.

A Framework for Structuring



Cross Functional Drivers



Structuring Drivers; Wal-Mart example

- Competitive strategy; every-day-low-price, reliable product availability, wide-variety.
- Supply chain must be efficient with adequate level of responsiveness
- Inventory low levels of inventories, cross-ducking (no storage at DCs) (efficiency)
- Transportation owns its fleet of trucks(responsiveness)
- Facilities Centrally located DCs. Won't open stores until demand justifies several of them and a DC to support them.
- Information High investment on information technology, sharing sales data directly and timely with its suppliers
- Sourcing finding efficient suppliers, feeding them with large orders
- Pricing Every day low price (no sales season), assuring steady demand



- Agile Supply Chain
- An agile supply chain can be defined as a chain of supply that has the potential to respond to
- changing requirements in a way that accelerates the delivery of ordered goods to customers.
- In simple words, supply chain agility is a custom adopted by many companies for choosing
- a dealer. As we know, a supply chain with flexibility and the ability to quickly react to
- emergency requirements can help the business answer more efficiently to its customers.
- Apart from flexibility, speed and accuracy are also signature marks of this type of supply
- chain

Unit II



- Flows in SC: Forward & Reverse SC, Product, Services, Information, Funds, Demand, Forecast flows in Upstream
- & Downstream direction

Forward Supply Chain



 System whose constituent parts includes material suppliers, production facilities, distribution services and customers linked together by the feed forward flow of materials and feedback flow of information.



- 2. Characteristics:
 - A. Upstream-Convergent
 - **B.** Downstream-Divergent
 - C. Flow in forward direction
 - D. Value addition for the product takes place
 - E. Inventory is kept in most of the nodes
 - F. Customer demand drives the flow speed
 - G. Material handling and Transportation are done with utmost care.



• Functions:

- A. Meet the demand
- B. Value provider
- C. Image enhancer
- D. Provides competitiveness
- E. Support new product development
- F. Backbone of Marketing

Reverse supply chain



 Reverse supply chain or reverse logistics is the series of activities required to retrieve a used product from a customer and dispose of it properly or reuse after processing.

• 2. Characteristics:

- A. Convergent in nature from end-user to manufacturer
- B. Reverse flow of used products
- C. Supply driven
- D. Relatively slow movement
- E. Value declines with time while moving upstream
- F. Very small value addition in some cases
- G. MH and transportation are not with care
- H. Inventory available in different nodes



• 3. Functions:

- A. Environmental legislations
- B. Economic value from returns
- C. Green Image
- D. Material Resource constraints like lead and other precious resources

WHAT IS SUPPLY CHAIN MANAGEMEN DIME " Is the strategic management of activities involved in the acquisition and conversion of materials to finished products delivered to the customer" **Material Flow** Customer **Supplier** Information Flow Managemen Managemen t Stock **Schedule** Delivery Conversio

Leads to Business Process Integration

Resource

S

Deployment

Information flows in Supply Chain Management

- Information is overriding element
- Need for databases
- Master files: Information about customers, products, materials, suppliers, transportation, production and distribution data- do not require frequent processing
- Status files- heart of transaction processing- track orders and infrastructure status- updated daily.
- Essentially using the same information to make all plans right from structuring the network to processing every day supply chain tasks.



Global Supply Chains and the Internet

- Before Internet, supply chain coordination hampered by difficulties of using disparate internal supply chain systems
- Enterprise systems supply some integration of internal supply chain processes but not designed to deal with external supply chain processes
- Intranets and Extranets
 - Intranets: To improve coordination among internal supply chain processes
 - Extranets: To coordinate supply chain processes shared with their business partners





Supply chain objectives may differ from situation to situation.

For functional products, cost efficiency is the critical factor.

For innovative products, responsiveness is the important factor.



Demand chain is defined as the system by which organizations manage sales and distribution of products and services to end users.

Conceptually incorrect to look at demand chain separately

Upstream and Downstream are Relative



 An explanation of upstream and downstream is relative to location along the supply route. Using an assembly plant as the center of a chain helps to explain upstream and downstream activity more clearly. Sometimes the concept is referred to as the "downstream the supply chain" and "upstream the supply chain."



- Upstream Activity
- With the assembly plant as the focus of the supply chain, upstream activity includes suppliers of raw materials, such as aluminum and copper. Activities upstream could include a supplier mining these materials to fulfill orders. Suppose the materials are on order but not on hand. The focus of activity would likely be to mine the requested materials as quickly and efficiently as possible. Transporting or shipping to the plant is another example of upstream activity.



- Downstream Activity
- Downstream from the assembly plant are distributors, shipping partners, and point-of-sale stops along the way, such as wholesalers and retailers. One important downstream activity is inventory management. Distributors, wholesalers and retailers all strive to carry inventory in quantities needed to fulfill customer orders without overstocking. When operations are running smoothly, the distributors ship orders on time. When an order cannot be filled in a timely manner, this is called a "stock-out" and activity stalls. Another downstream activity is customer service in the retail store, when the product finally reaches the consumer.



- Vertically Integrated Activity
- **Regardless of whether materials are upstream or** products are downstream, the central focus of each business involved along the chain remains the same, to make sales and reap profits. In some operations, the same company may own multiple components of the supply chain. Called vertically integrated, this type of company can have upstream and downstream activities occurring simultaneously under the same upper management and occasionally at the same location.

Unit III



- Total SCM: Changing business landscape driving forces:
- Shift from Operations to Services, Impact of globalization & technological revolution, Shift from linear SC to collaborative networks, power shifts in the SC- demands for flexibility of partnerships, core competencies, growth in outsourcing, Increased complexity of processes

Changing business landscape



- Technology has always been accompanied by change. Some of this change is fairly small and affects only one specific sector, while other change is major and affects everyone.
- When it comes to changes in technology, more often than not it's on a fairly large scale. Look at the computer, for example—we're still seeing major ripples from changes in that technology.
- The business world is often hit especially hard by technology changes because they can result in the complete renovation of a process or even an entire industry. Here are eight different ways technology is changing the business landscape and how businesses have to adapt or be left behind.



- Facilitating Business Monetization
- Enabling Business Real-time Analytics
- Artificial Intelligence
- Internet of Things
- Blockchain

globalization



- arguably, globalization is the most frequently cited change factor by business leaders, and it has replaced the post=7orld 7ar 00 Cold 7ar as the dominant driving force in world economics. 'he
- concept of the global marketplace or the global economy has taken on new meaning for all
- enterprises 8profit and nonprofit/ small, medium, and large/ products or services9 and for
- individual consumers during the last two decades.



- Technology has had a major impact on supply chains as a facilitator of change as companies have transformed their processes.
- However, it is also a major force in changing the dynamics of the marketplace.
- Individuals and organizations are connected 24/7 and have access to information on the same basis via the Onternet.
- Search engines such as Google have made it possible to gather timely information quickly. We have become what some individuals describe as the "clicK here" generation

Organizational consolidation and power shifts



- After 7orld 7ar 00, product manufacturers became the driving force in supply chains. They developed, designed, produced, promoted, and distributed their products.
- Frequently, they were the largest organizations in the supply chain in terms of sales volume, employees, buying power, locations, and other factors.
- They typically exerted their influence throughout the supply chain to their specific economic advantage, especially in the distribution of their products.

The Empowered Consumer



- Understanding consumer behavior has been a focus of marketing analysis and strategy development for many years. Typically, such analyses examine consumers in total or in major
- groupings or segments to understand their needs and to respond to them with appropriate products and services.
- such analyses have implications for logistics and supply chain management, but they have been viewed in the past by logisticians as having somewhat indirect impacts. today, the
- impact of the consumer is much more direct for supply chains because the consumer has placed
- increased demands at the retail level for an expanded variety of products and services.

Government policy an, Regulation

- The fifth external change factor is the various levels of government 8federal, state, and local9 that
- establish and administer policies, regulations, and taxes that impact individual businesses and
- their supply chains. 'he deregulation of several important sectors of our economy that occurred in
- The 1980 and 1990s is a good example. these deregulated sectors include transportation,
- communications, and financial institutions, which are cornerstones of the infrastructure for most
- organizations.

linear supply chain



 A linear supply chain model. Supply Chain Management (SCM) adopts a systematic and integrative approach to managing the operations and relationships of various parties in a supply chain. The objective of the SCM is to reduce inventory costs and increase customer satisfaction levels

collaborative networks



- A reliable performance measurement is beneficial in evaluating the SCM effectiveness and efficiency. Supposing we have a good performance measurement; we can profoundly understand the current performance status of the SC network easily so as to effectively recognize our strengths, weaknesses, threats, and opportunities.
- However, it has been a challenge to establish an "appropriate" collaborative network for the SC network



- Collaboration is a key feature of a process when it involves more than one participant in durable and pervasive relationships.
- It is frequently used to mean working together in group(s) to achieve a common task or goal. This task or goal is often beyond the capabilities of the collaborating participants and collaboration is typically achieved through activities for coordination, decision-making and teamwork

demands for flexibility of partnership

- In the history of SCM , high speed and low cost supply chains have been important drivers for companies. Depending on the market the firm is in, these supply chains work perfectly in steady conditions since the entire supply chain is focused on economies of scale, delivering quick supply for the least amount of money.
- However, these supply chains are not able to react on sudden changes in demand. Several articles explain how current market conditions require supply chains that are capable of dealing with sudden changes of demand and strategies instead of a cost and/or speed oriented view solely.



 all operations related to the purchase of the system are uniquely included. Some operations are related to financing a partnership amongst suppliers. But, for some suppliers it is challenging to have a sustainable cooperation due to different ordering patterns and fluctuations between supply and demand
core competencies



- A larger amount of untreated customer information stored in database is wasteful unless useful knowledge has been extracted.
- Knowledge provides power in many manufacturing contexts enabling and facilitating the preservation of valuable heritage, new learning, solving intricate problems, creating core competencies and initiating new situations for both individuals and organizations now and in the future.
- Companies now focus on their own competencies and partner with other companies to create supply chain for fast moving market.

Outsourcing



- Relentless pressure on profit margin driven company should focus on their core competencies and Outsourcing supporting operations to business partners.
- supply chain operations are core competences for some companies and not for others.
- 20th century industrial model of massive in vertical integration depended on stable and unstable mass market in order to deliver economic of scale
- In volatile and unpredictable market of this century it is less risky for companies to outsource non for activity



- Problems in competitive strategic analysis include location-allocation decisions, demand planning, distribution channel planning, strategic alliances, new product development, outsourcing, supplier selection, information technology (IT) selection, pricing and network restructuring.
- Although most supply chain issues are strategic by nature, there are also some tactical problems.

Increased complexity of processes



- Supply chains are growing increasingly complex making them harder to manage,
- operate, and change in response to customer, competitive, and financial shifts

Increasing public city is the biggest challenge for supply chain



A changing world	Typical responses	Resulting Complex city
Input cost volatility	Global supply bases	increasing extended network
Shifting sources	increase supplies and partners	increasingly organization structure and
Evolving environmental & safety regulations	Right shoring	need to manage through multiple culture
Higher customer expectations	OMNI Channel fulfillment	decrease reality of direct and indirect cost
Shorter product life-cycles	additional Technology investment	need for continuous Change management great number of variables
Business model & technological disruption	delay integration	

Unit IV



- SCM Building Blocks: Overview of customer focus & demand, resources & capacity management, procurement
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 Supply chain management building block the building blocks of supply chain management and strategic planning procurement manufacturing their hosting order fulfillment and trans quotation business process



Building blocks of the Supply chain



Strategic planning process



- involved in strategic supply chain design and techniques Sourcing
- Strategic Supply Chain Design Process:
- Strategic Supply Chain Design is the design, evaluation, and optimization of the supply chain model used in the planning applications. Every part of the supply chain such as locations, transportation lanes, resources and products are modeled to execute planning based on this network.
- This helps to respond immediately
- and accurately to the new developments by tracking alert situations in the supply network.

Strategic Sourcing Process:



- Strategic Sourcing Process helps to identify a minimized set of core suppliers with whom to establish strategic relationships, and also done the parameters that drive procurement execution. Vendor analysis and purchasing statistics are used to evaluate potential suppliers.
- Performance management through spend and contract compliance analytics are also done for enabling the strategic sourcing process.



- Demand Planning process :
- Demand Planning process involves Forecasting, Lifecycle Planning, Promotion Planning and Consensus Demand Planning.
- Forecasting Process: Forecasting predicts future demand based on historical and judgmental data. Forecasts can be created in using different methods such as statistical methods, causal analysis, human judgment or combination of all the above. Forecast accuracy can be improved using statistics and the overall performance management can be analyzed through forecast accuracy analytics.



- Different statistical forecasting methods are available such as exponential smoothing, holt, winters, crouton, moving average, linear regression, and seasonal linear regression
- Lifecycle Planning Process : Life cycle planning involves planning the product life cycle. Lifecycle Planning simulates based on the forecasting data the launch, growth, maturity and discontinuation phases of different products.



- Promotion Planning Process: Promotion Planning Process enables to plan promotions or other special events separately from the rest of your forecast. Promotion effect is calculated using causal techniques to measure past promotional impact and projected into designated periods in the future. Promotion planning can be used to plan one of events such as the millennium, repeated events such as quarterly advertising campaigns, trade fairs, contests etc.
- Consensus Demand Planning Process : Consensus Demand Planning Process creates a consensus demand plan by integrating all available information. This is a result of combining various data such as Forecast, Promotions Budgets, Sales plans etc.



- 3. Supply Planning Process
- Supply Planning process involves Safety Stock Planning, Supply Network Planning, Outsourcing, Distribution Planning, Customer Collaboration and Supplier Collaboration.
- Safety Stock Planning Process: Safety Stock Planning Process arrive the appropriate level of safety stock inventory for all intermediate and finished products at their respective locations to meet a target service level.
- Supply Network Planning Process: Supply Network Planning process calculates quantities to be delivered to the locations to match customer demand and maintain desired service level.



- Outsourcing Process: Outsourcing process enables outsourcing of manufacturing facilities to a third party, known as the subcontractor.
- Distribution Planning: Distribution Planning process determine the best short term strategy to allocate available supply to meet demand and to replenish stocking locations



- Customer Collaboration Process: Customer Collaboration process allows vendor to assume responsibility for planning the levels of inventory at the customer location.
- Supplier Collaboration Process: Supplier Collaboration Process enables supplier to receive demand and stock information and performs replenishment planning tasks for manufacturer
- 4. Procurement Process

Procurement process involves Purchase Order Processing, Receipt Confirmation and Invoice Verification.

• Purchase Order Processing : Purchase Order Processing fulfills the direct procurement requirements through the sourcing, issuance, and confirmation of purchase orders.



- Receipt Confirmation processing: Receipt Confirmation processing informs other departments about the received and confirmed quantity of ordered goods.
- Invoice Verification process: Invoice Verification process receives, enters and checks vendor's invoice for correctness.



- 5. Manufacturing Process
- Manufacturing Process involves Production Planning / Detailed Scheduling, Manufacturing Execution.
- Production Planning / Detailed Scheduling process: Production Planning / Detailed Scheduling process supports the process of assigning production orders to resources in a specific sequence and time frame.
- Manufacturing Execution: Manufacturing Execution process supports the process of capturing actual production information from the shop floor to support production control and costing processes.



- Supply Chain Management Building Blocks
- 6. Warehousing Process
- Warehousing Process involves Inbound Processing, Outbound Processing, Cross Docking, Warehousing, Storage and Physical Inventory.
- Inbound Processing: Inbound Processing comprises all the steps of an external procurement process that occur when the goods are received.
- Outbound Processing: Outbound Processing prepares and ships goods to their destination



- Cross Docking: Cross Docking Processes merchandise in a distribution center or warehouse where the goods are brought from the goods receipt directly to goods issue without being stored.
- Warehousing & Storage: Warehousing & Storage Processes warehouse internal movements and storage of materials.
- Physical Inventory: Physical Inventory supports all activities for planning and executing the physical inventory



- 7. Order Fulfillment Process
- Order Fulfillment Process involves the sales order processing and billing business process.
- Sales Order Processing: Sales Order processing allows the order entry, pricing, and scheduling order for fulfillment.
- Billing Process: Billing process considers all activities from issuing the invoice to the incoming payment.



- 8. Transportation Process
- Transportation Process involves the transportation planning, transportation execution and freight costing processes.
- Transportation Planning Process: Transportation Planning process creates an optimized, executable transportation plan for the enterprise.
- Transportation Execution Process: Transportation Execution process covers the complete and integrated solution process to create, execute, and monitor shipments
- Freight Costing Process: Freight Costing process calculates and settles the freight costs.



- Key Operational
- Aspects in SC: Creating the Lean SC JIT Purchasing, JIT Transportation and JIT Production. Kanban, VMI
- An outcome of globalization and the proliferation of multinational companies, joint ventures, strategic alliances, and business partnerships, significant success factors were identified, complementing the earlier "just-in-time", lean manufacturing, and agile manufacturing practices



 Lean manufacturing: Lean manufacturing, lean enterprise, or lean production, often simply, "lean", is a production practice that considers the expenditure of resources for any goal other than the creation of value for the end customer to be wasteful, and thus a target for elimination. Working from the perspective of the customer who consumes a product or service, "value" is defined as any action or process that a customer would be willing to pay for.

Some commonly mentioned goals of lean manufacturing are:

- Improve quality: To stay competitive in today's marketplace, a company must understand its customers' wants and needs and design processes to meet their expectations and requirements.
- Eliminate waste: Waste is any activity that consumes time, resources, or space but does not add any value to the product or service. See Types of waste, above. Taking the first letter of each waste, the acronym "TIM WOOD" is formed. This is a common way to remember the wastes.
- Reduce time: Reducing the time it takes to finish an activity from start to finish is one of the most effective ways to eliminate waste and lower costs.
- Reduce total costs: To minimize cost, a company must produce only to customer demand. Overproduction increases a company's inventory costs because of storage needs.



Just-in-time (JIT) and Kanban



- Just in time (JIT) is a production strategy that strives to improve a business' return on investment by reducing in-process inventory and associated carrying costs.
- To meet JIT objectives, the process relies on signals or Kanban between different points, which are involved in the process, which tell production when to make the next part.
- Kanban are usually 'tickets' but can be simple visual signals, such as the presence or absence of a part on a shelf. Implemented correctly, JIT focuses on continuous



 improvement and can improve a manufacturing organization's return on investment, quality, and efficiency. To achieve continuous improvement key areas of focus could be flow, employee involvement and quality.



DIMR

Principles Of JITManufacturing

- Total quality Management
- *** Production Management**
- Supplier Management
- Inventory Management
- Human Resource Management







In McDonald's







In McDonald's

High holding costs are the nature of the fast food industries.

- ✤ Wastage.
- ✤ Time.







In McDonald's

* JIT system wherein McDonald's doesn't begin to cook its orders until a customer has placed a specific order.









Implementation of JIT

Sophisticated burger-making technology (including a record-breaking bun toaster)

*McDonald's is able to make food fast enough to wait until it's been ordered.

Reduction in wastage.



Implementing in JIT Production Systems



Criteria for success

- Service
- Quality
- ✤ People
- Food preparation
- Profitability

Supply ChainIntegration











**Customer service* - As the burger is made only after the order is placed, making special orders is not an issue.

Cost Reduction - Due to significant reduction inwastage as uncooked material has a higher shelf life.

Reduction in waiting – Customer's waiting time reduce 11 min. to just 1and halfmin.
Companies adoptedJIT







TOYOTA PRODUCTION SYSTEM



MATERIAL HANDLING

stronger together



Minimizing Waste: Group Technology (Part 1)

Note how the flow lines are going back and forth

DIMR

*Using *Departmental Specialization* for plant layout can cause a lot of unnecessary material movement



Minimizing Waste: Group Technology (Part2)



Revising by using Group Technology Cells can reduce movement and improve product flow.





Minimizing Waste: Just-In-TimeProduction

WHAT IT IS	WHAT IT DOES
 Management philosophy "Pull" system though the plant Hydraulic Push Systems 	 Attacks waste Exposes problems and bottlenecks Achieves streamlined production
WHAT IT REQUIRES	WHAT IT ASSUMES
 Employee participation Industrial engineering/basics Continuing improvement Total quality control Small lot sizes 	 Stable environment



Minimizing Waste: Kanban Production Control Systems





Determining the Number of Kanban Needed



- Setting up a kanban system requires determining the number of kanban cards (or containers) needed.
- * Each container represents the minimum production lot size.
- *An accurate estimate of the lead time required to produce a container is key to determining how many kanban are required.
- * Side Bar In Japan space is a very important consideration since there is so little of it. This process saves on space requirements.

Example of Kanban Card Determination: Problem Data



*A switch assembly is assembled in batches of 4 units from an "upstream" assembly area and delivered in a special container to a "downstream" control-panel assembly operation.

* The control-panel assembly area requires 5 switch assemblies per hour.

 The switch assembly area can produce a container of switch assemblies in 2 hours.

* Safety stock has been set at 10% of needed inventory.





 $k = \frac{\text{Expected demand during lead time+Safety stock}}{\text{Size of the container}}$

$=\frac{DL(1+S)}{C}=\frac{5(2)(1.1)}{4}=2.75, \text{ or } 3$

Always round up!





- * A.gunasekaran and J.lyu in their research implementation of just-intime in a small company has depicted its advantage in SMEs. he depicted that implementation of JIT in SMEs should start with layout revision, schedule stability and the development of long-term supplier-customer relationships.
- A new purchasing policy supporting frequent purchases of small lot sizes may help SMEs in implementing a JIT system.
- *Education and training of workers in SMEs about JIT concept and their high leverage opportunity would tremendously support the implementation of JIT system in SMEs.

Requirement for the implementation



Management And Labour Responsibilities.

✤ Training.

- Supplier Management.
- Production Layout And Work Flow.
- Long-term Planning.
- & Government Support.



DIMR

JIT Benefits

- Reduced Inventory
- Improved quality
- Lower costs
- Reduced space requirements
- Shorter lead-time
- Increased productivity
- Greater flexibility
- Improved vendor relations

JIT Benefits (contd.)

Simplified scheduling & control
Increased capacity
Better utilization of personnel
More product variety
Increased equipment utilization
Reduced paperwork
Valid production priorities
Work force participation



Disadvantages of JIT



- Danger of disrupted production due to non-arrival of supplies.
- Danger of lost sales.
- High dependence on suppliers.
- Less time for quality control on arrival of materials.
- Increased ordering and admin costs.
- May lose bulk-buying discounts.



JIT... Not For Everyone

*JIT concepts work best when goods can be produced in response to consumer demand(e.g. automobiles, etc.)

* JIT is less effective for the production of standardized consumer goods (e.g. basic clothing, food, soft drinks, toasters, etc.)

There are cases where JIT concepts apply to sub-processes of a make to stock environment. (e.g. computers etc.)

Unit 5



- 5. Customer Value: Empowered consumer, Customer focused Marketing & SC service outputs,
- customer service availability, operational performance, reliability. Customer satisfaction – customer expectations, enhancing customer satisfactions, limitations of customer satisfaction.
- Customer success achieving customer success, value added services, customer value requirement mapping, CRM

Empowered consumer



• *"The purpose of business is to create and keep a customer"*

Empowered consumer

Empowered Customers are Reshaping Businesses



86% use multiple channels

Multi channel buyers spend 4 to 5 times more than average

45% check with a friend before buying

78% of consumers trust peer recommendations



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31

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Customer Satisfaction



Customer satisfaction is an overall customer attitude towards a service provider, or an emotional reaction to the difference between what customers anticipate and what they receive, regarding the fulfillment of some need, goal or desire.

Satisfaction represents a veritable key of modeling the acquisition behavior of the customer, being supported by three groups of variables:

- Cognitive variables, based on the qualitative superiority of the products given by the performance.
- 2. Affective variables, based on the emotions produced to the customers.
- Conative variables, based on the interaction between the provider and the customer in the buying act.



Customers' Expectations and Perceptions of Services

Customers' Service Expectations



- In other words it is the belief about the service that the customers expect to receive
- Expectations act as the reference points or standards for the customers





Evnoctations

Ideal Level of Service

Normal level of

Service Experience

Based Expectation

Acceptable Level of

Expectation

Adequate Level of

- Ideal Level of Service
 - Highest level of service which can be delivered
 - Customers do not expect this level of service because it rarely takes place
- Normal Level of Service
 - It is the level of service that everyone is receiving
 - This level of service is fair treatment
- Experience Based Expectation
 - It is connected with the past experience of customers
- Acceptable Level of Expectation
 - This is the OK level of service.





- Adequate Level of Expectation
 - It is the minimum level of service
 - Service below this level causes negative impact
- Tolerable Level of Expectation
 - It is the most minimum level of service which one can tolerate for the 1st time

Broadly Service Expectations can be Classified as

- Desired Service Expectation
 - It is the level of service that the customers expect to receive
 - It is mental expectation of customers which he hopes and wishes to receive
- Adequate level of Service Expectation
 - This is the level of service that the customers will accept
 - It is the minimum tolerable expectation acceptable to the customer.

Zone of Tolerance



- The extent of variation the customers recognize and are willing to accept is called zone of tolerance
- In zone of tolerance the organization and customers play a win-win game
- Service above the desired level provides delight
- Service below adequate service level creates dissatisfaction





Sources of Desired Service Expectation

- Personal Needs
 - Personal needs can be physiological, social, psychological, etc.
 - Degree of need determines the desired level of service
 - E.g. a person with high degree of social and dependency need may have higher expectations for hotel's ancillary/auxiliary services

Personal Service Philosophy

- It refers to the customer underlying general attitude about the meaning of service and proper conduct of service providers
- E.g. belief that waiters should not keep customers waiting longer than 15 minutes to take their orders



Derived Service Expectations

- It refers to the expectations driven by other person or group of people
- E.g. for birthday celebration a person selects a restaurant which can service various menus that qualify for his/her friends

Sources of Adequate Service Expectations



- These sources have short-term influence and tend to fluctuate more than the factors that influence desired service
- Perceived Service Alternatives
 - It refers to other service providers from whom the customer can obtain service
 - Higher the perceived service alternatives higher will be the adequate service expectation and vice versa
- Situational Factors
 - Uncontrollable situational factors
 - Situational factors beyond control of service provider
 - Lower adequate service expectations

- Personal Situational Factors
 - Short-term, individual factors that makeims a customer more aware of the need for service
 - E.g. personal emergency situation; medical emergency raise the higher adequate service expectation from service provider

Predicted Service

- It refers to the level of service that customers believe they are likely to get for a particular time
- If customers predict good service, their levels of adequate service are likely to be higher than if they predict poor service

Sources of Both Desired and Predicted Service

Explicit Service Promises

- It involves the personal and non-personal statements about service made by the organization to customers
- Done through advertisements, brochures, pamphlets, etc.

Implicit Service Promises

- Cues, other than explicit promises, that lead to inferences about what the service should and will be alike
- Involves price and physical evidence

Word-of- mouth communication

 They are independent and unbiased communications made by parties other than the organization


- Past Experience
 - Previous experience of the customer influences the desired and predicted service expectation

Customer's Perceptions



- Perception is to realize, feel, understand or to experience
- It is the process of systematic organization and interpretation of an experience
- Perceptions are always considered relative to expectations
- It is called the quality of service received by the customer
- Service encounters or the "moments of truth" are the building blocks of customer perceptions

Customer Satisfaction



- Satisfaction is the consumer's fulfillment response. It is a judgement that a product or service feature, or product or service itself, provides a pleasurable level of consumption- related fulfillment.
- Satisfaction is the fulfillment of desire or expectation
- It refers to the customers positive evaluation towards organization, product or service
- Customer Satisfaction = f(Value and Cost)
- Satisfaction and quality are different; satisfaction is the effect, quality is the cause

Customer Perceptions of Service



Dimensions of Service Quality



- Reliability: ability to perform the promised service dependably and accurately
 - It means company delivers on its promises- about delivery, problem solving, pricing, etc.
- Responsiveness: willingness to help customers and provide prompt service
- Assurance: employees' knowledge and courtesy and their ability to inspire trust and confidence
 - Important in case of services of which embody high risk and uncertainty like Insurance, Brokerage, Legal Service, etc.



- Empathy: caring, individualized attention given to customers
 - Treating customers as individuals
- **Tangibles:** appearance of physical facilities, equipment personnel, and communication materials

Determinants of Customer Satisfaction



Customer value and cost

Product and service features

Consumer emotion

Customers judgement of causes or events

Perception of Equity or Fairness

Follow consumers/Group members behavior

Customer Value and Cost

Customer Value

- Product Value
- Service Value
- Personnel Value
- Image Value
- Mental Satisfaction
- Physical Pleasure
 Customer Cost
- Monetary Costs
- Time Costs
- Energy Costs
- Psychic Cost

Customer Delivered Value (CDV) = Total Customer Value Total Customer Cost If CV > CC, Higher Satisfaction If CV = CC, Satisfaction If CV < CC, Dissatisfaction



Outcomes of Customer Satisfaction



Quality of life of customer

Customer loyalty

Word-of-mouth

Support the growth and continuity of business

Market price

Better economic environment

Customer Segmentation







Geogra phy ≪ Market size ✓ Market density ✓ Climate

Demograp hics

- ✓ Gender
- ✓ Income
- ✓ Race/ ethnicity
- ✓ Household/ family life cycle









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Cross-functionality Visibility Buil

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Customer Success Timeline					www.slideteam.net	
Mont h	01	02	03	04	05	06
DAYS	Day 1-10 Learn the product	Day 31-40 Day 31-40	Day 61-70 Build an action plan	Day 91-120 Evaluate Optimize & optimize the processes	Day 91-120 Optimize the resources & work allocation	Day 121-150 Put metrics in place
	Day 11-30 Got to know the team	Day 41-30 talk to customers	Day 71-90 Present to you team			
MILESTON	1st Mont h Milest	2 nd Mont h Milest	3 rd Mont h Milest	4 th Mont h Milest	5 th Mont h Milest	6 th Mont h Milest
	You Understand the team and the product	You You understand your customers	One You are ready to present your plan broken down into short	ONE You have a grip over the processes and your style is	ONE Your idea time s beginning to take shape(you mav still have	ONE You are ready to show small wins the modified vearly

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Slide

Team

This slide is 100% editable. Adapt it to your needs and capture your audience's attention.

Identify and improve problem areas

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Segment & threat customers by lifecycle and persona

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Customer

Succes



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Reduce churn rate and increase customer retention

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Collect actionable feedback to improve your product

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Grow customer loyalty and encourage brand advocacy

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LIMITS OF CUSTOMER SATISFACTION

- Misguided attempts to improve satisfaction can lead to financial damage.
- There is not one way to improve satisfaction.
- Profiles of the companies leads to different strategies.
- For greater market share, customer satisfaction may not be high.

Customer Value Mapping



- Customer Value Maps reveal one reason why a sales force trained to sell to one type of customer cannot easily begin selling to a different one.
- The key barrier is the knowledge required for salespeople to be effective. Had this approach been used at Mega International, senior managers might have seen why sales results were poor.

Customer Value Mapping



- The Need for Customer Value Mapping
- Traditional approaches to defining customer <u>value</u> just aren't good enough in today's technologically complex, highly diversified marketplace. Here's why:
- Market research identifies trends that are too general to guide specific selling strategies.
- Focus groups don't necessarily probe the right issues or translate them into actionable steps for producing sales results.
- "Voice of the Customer" and "Quality Function Deployment" initiatives microscopically focus on the stitches of detailed product features and characteristics. They often fail to deal with the fabric – the business context driving the customer's desires, goals, and objectives.
- Features and benefits identify your company's idea of what is important about your products and services, but usually don't reflect much insight to your customers' point of view.



- Customer relationship management (CRM): 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.
- Characteristics of CRM : The modern environment requires one business to interact with another via the web. According to a Sweeney Group definition, CRM is —all the tools,
- technologies and procedures to manage, improve, or facilitate sales, support and related interactions with customers, prospects, and business partners throughout the enterprise. It assumes that CRM is involved in every B2B transaction



- Despite the general notion that
- CRM systems were created for the customer-centric businesses, they can also be applied
- to B2B environments to streamline and improve customer management conditions. B2C
- and B2B CRM systems are not created equally and different CRM software applies to
- B2B and B2C conditions. B2B relationships usually have longer maturity times than B2C
- relationships. For the best level of CRM operation in a B2B environment, the software
- must be personalized and delivered at individual levels.