2010

SUPPLY CHAIN

TYBMS A

NARSEE MONJEE COLLEGE OF COMMERCE AND ECONOMICS

SUBMITTED BY

SHIVANI AGARWAL
03

FARAH BULSARA
09

ALNOOR DANANI
15

SHREYA KAPADIA
23

BHAGAT MAKHIJANI
31

INTRODUCTION TO SUPPLY CHAIN MANAGEMENT

If you can not describe what you are doing as a process, you do not know what you are doing

W. Edwards Deming

DEFINITIONS:

Supply Chain Management is the design and management of seamless, value-added process across organizational boundaries to meet the real needs of the end customer. **Institute for Supply Management**

Supply Chain Management involves managing supply and demand, sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, and delivery to the customer. **The Supply Chain Council**

Supply chain management (SCM) in other words is a process used by companies to ensure that their supply chain is efficient and cost-effective. A supply chain is the collection of steps that a company takes to transform raw components into the final product.

It is basically an oversight of materials, information, and finances as they move in a process from supplier to manufacturer to wholesaler to retailer to consumer. It involves coordinating and integrating these flows both within and among companies.

The ultimate goal of any effective supply chain management system is to reduce inventory (with the assumption that products are available when needed).

Supply chain management encompasses the planning and management of all activities involved in sourcing, procurement, conversion, and logistics management.

It also includes the crucial components of coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers.

In essence, supply chain management integrates supply and demand management within and across companies.

It is the management of a network of interconnected businesses involved in the ultimate provision of product and service packages required by end customers. It spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point of origin to point of consumption (supply chain).

It is concerned with all the facilities, functions, activities, associated with flow and transformation of goods and services from raw materials to customer, as well as the associated information flows. It is an integrated group of processes to “source,” “make,” and “deliver” products.

STAGES IN SUPPLY CHAIN MANAGEMENT

Typically, supply chain management is comprised of five stages: **plan, develop, make, deliver and return.**

- **Plan:** The first stage in supply chain management is known as plan. A plan or strategy must be developed to address how a given good or service will meet the needs of the customers. A significant portion of the strategy should focus on planning a profitable supply chain.

- **Develop**: It is the next stage in supply chain management. It involves building a strong relationship with suppliers of the raw materials needed in making the product the company delivers. This phase involves not only identifying reliable suppliers but also planning methods for shipping, delivery and payment.

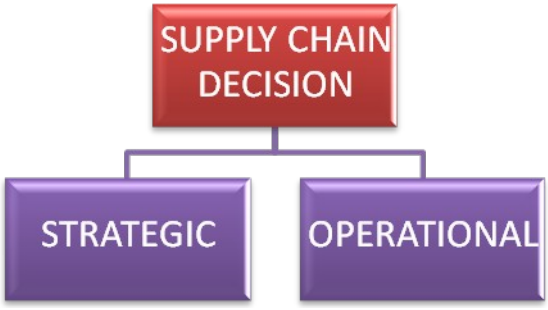
- **Make:** At the third stage, the product is manufactured, tested, packaged, and scheduled for delivery.

- **Deliver:** Then, at the logistics phase, customer orders are received and delivery of the goods is planned. This fourth stage of supply chain management stage is aptly named deliver.

- **Return:** The final stage of supply chain management is called return. As the name suggests, during this stage, customers may return defective products. The company will also address customer questions in this stage.

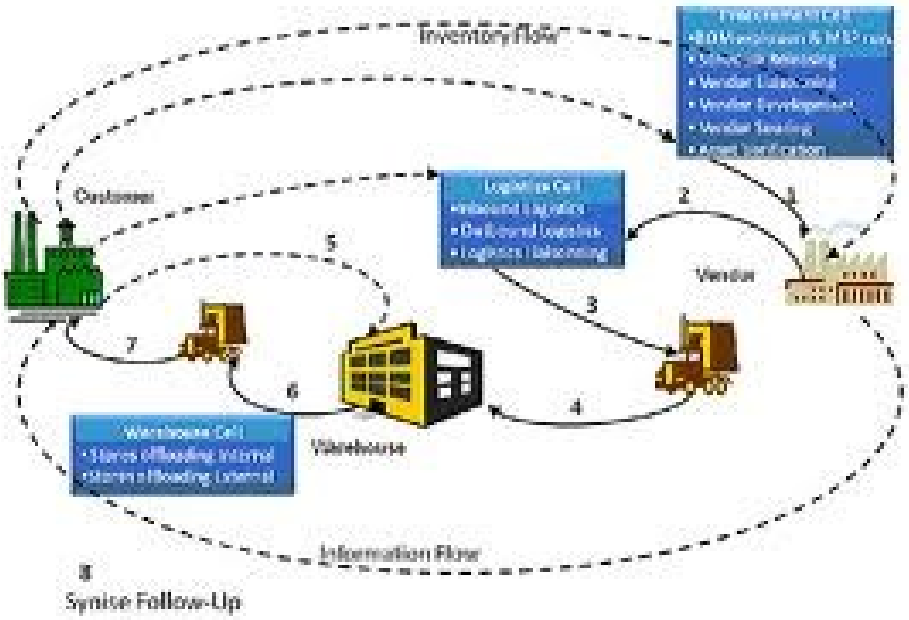
SUPPLY CHAIN DECISIONS

We classify the decisions for supply chain management into two broad categories -- strategic and operational._



As the term implies, strategic decisions are made typically over a longer time horizon. These are closely linked to the corporate strategy , and guide supply chain policies from a design perspective. On the other hand, operational decisions are short term, and focus on activities over a day-to-day basis. The effort in these type of decisions is to effectively and efficiently manage the product flow in the "strategically" planned supply chain.

There are four major decision areas in supply chain management: 1) location, 2) production, 3) inventory, and 4) transportation (distribution), and there are both strategic and operational elements in each of these decision areas.



Location Decisions

The geographic placement of production facilities, stocking points, and sourcing points is the natural first step in creating a supply chain. The location of facilities involves a commitment of resources to a long-term plan. Once the size, number, and location of these are determined, so are the possible paths by which the product flows through to the final customer. These decisions are of great significance to a firm since they represent the basic strategy for accessing customer markets, and will have a considerable impact on revenue, cost, and level of service. These decisions should be determined by an optimization routine that considers production costs, taxes, duties and duty drawback, tariffs, local content, distribution costs, production limitations, etc. Although location decisions are primarily strategic, they also have implications on an operational level.

Production Decisions

The strategic decisions include what products to produce, and which plants to produce them in, allocation of suppliers to plants, plants to DC's, and DC's to customer markets. As before, these decisions have a big impact on the revenues, costs and customer service levels of the firm. These decisions assume the existence of the facilities, but determine the exact path(s) through which a product flows to and from these facilities. Another critical issue is the capacity of the manufacturing facilities--and this largely depends the degree of vertical integration within the firm. Operational decisions focus on detailed production scheduling. These decisions include the construction of the master production schedules, scheduling production on machines, and equipment maintenance. Other considerations include workload balancing, and quality control measures at a production facility.

Inventory Decisions

These refer to means by which inventories are managed. Inventories exist at every stage of the supply chain as either raw materials, semi-finished or finished goods. They can also be in-process between locations. Their primary purpose to buffer against any uncertainty that might exist in the supply chain. Since holding of inventories can cost anywhere between 20 to 40 percent of their value, their efficient management is critical in supply chain operations. It is strategic in the sense that top management sets goals. However, most researchers have approached the management of inventory from an operational perspective. These include deployment strategies (push versus pull), control policies --- the determination of the optimal levels of order quantities and reorder points, and setting safety stock levels, at each stocking location. These levels are critical, since they are primary determinants of customer service levels.

Transportation Decisions

The mode choice aspect of these decisions are the more strategic ones. These are closely linked to the inventory decisions, since the best choice of mode is often found by trading-off the cost of using the particular mode of transport with the indirect cost of inventory associated with that mode. While air shipments may be fast, reliable, and warrant lesser safety stocks, they are expensive. Meanwhile shipping by sea or rail may be much cheaper, but they necessitate holding relatively large amounts of inventory to buffer against the inherent uncertainty associated with them. Therefore customer service levels, and geographic location play vital roles in such decisions. Since transportation is more than 30 percent of the logistics costs, operating efficiently makes good economic sense. Shipment sizes (consolidated bulk shipments versus Lot-for-Lot), routing and scheduling of equipment are key in effective management of the firm's transport strategy.

IMPORTANCE OF SUPPLY CHAIN MANAGEMENT

Supply Chain Management has become important to today's manufacturing industry due to the following reasons:-

- **Competitive Edge Through Core Competencies:**

  In creating the competitive edge, companies need to divert its resources to focus on what they do best and outsource the process and task that is not important to the overall objective of the company. SCM has allowed company to rethink their entire operation and restructure it so that they can focus on its core competencies and outsource processes that are not within the core competencies of the company. Due to the current competitive market, it is the only way for a company to survive.

- **Value Advantage:**

  SCM has allowed business nowadays to not just have productivity advantage alone but also on value advantage. Through maximizing added value and also reduce the cost in the same time, more innovation can be added to the product and process. Mass manufacturing offers productivity advantage but through effective supply chain management, mass customization can be achieved. With mass customization, customers are given the value advantage through flexible manufacturing and customized adaptation. Product life cycles also can be improved through effective use of SCM. Value advantage also changes the norm of traditional offerings that is 'one-size-fits-all.' Through SCM, the more accepted offerings by the industry to the consumers would be a variety of products catered to different market segments and customers preferences.

- **Better Information Sharing Among:**

  A supply chain is dynamic. It essentially involves the constant flow of information, product and funds between the different stages of the supply chain. There is continuous interaction between all the stages and all the partners of the supply chain.

- **Reduced Inventories Along The Chain:**

  By streamlining the entire supply chain, a company can reduce inventory, improve time to market, compress cycle times, free up more cash, decrease costs and improve profitability.

ADVANTAGES AND DISADVANTAGES OF SUPPLY CHAIN MANAGEMENT

Advantages Of Supply Chain Management

One of the advantages of supply chain management over the traditional chain management is that suppliers share valuable information throughout the chain and this information consists of information on demand, forecasts on sales and demand and transportation.

Through sharing of information the firms in the chain become more efficient and as a result this reduces the cost of production rendering them to have competitive advantages over other firms.

Supply chain management improves productivity and efficiency in a firm as compared to traditional chain management. SCM (supply chain management) improves the firm's processes whereby it improves on quality control and inventory control; this in turn improves the productivity and efficiency of the firm.

Increased efficiency can be seen in terms of the reduction in the cost of goods sold by the firm. This is achieved through reducing the cost of inputs whereby a firm will source the less costly raw materials.

Supply chain management also reduces the transport duties of a firm and taxes. The shipment and transportation duties are shared by firms and as a result these duties are reduced and this constitutes to the reduction in the cost of production and final price of goods.

When there is sharing of transport duties there is a reduction in transport errors that occur between firms. The chain management ensures that the delivery of goods is streamlined and therefore the delivery time of goods is reduced. This will in turn increase consumer loyalty.

The other advantage is that firms reduce the issues of bad debts. As the payment terms across the firms is well organized and defined, the firm does not accumulate bad debts because the payment terms between firms is well defined and followed by the firms in the supply chain.

Disadvantages Of Supply Chain Management

Despite the advantages associated with the supply chain management, there exists certain disadvantages.

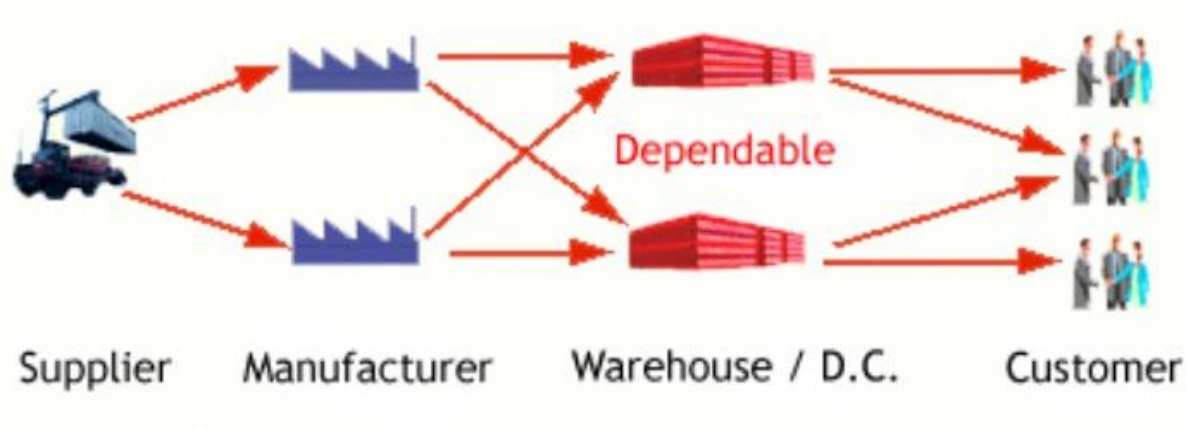
One of the disadvantages includes the issue of employment. The traditional supply chain management involved salesmen and other managers who ensured that the transaction is completed as required.

However after the introduction of new supply chain management there has been increased unemployment which has resulted to high unemployment levels in the economies. This has occurred despite the new management system providing a faster and convenient way to improve both the firm's objectives and the customer.

The other disadvantage is that initializing the supply chain management is complex and requires a firm to invest more in terms of capital. Therefore this method is costly and very complex as compared to the traditional method.

DECISIONS INVOLVED IN SUPPLY CHAIN MANAGEMENT

Companies in any supply chain must make decisions individually and collectively regarding their actions in five areas:



1. **Production**:
   What products does the market want? How much of which products should be produced and by when? This activity includes the creation of master production schedules that take into account plant capacities, workload balancing, quality control, and equipment maintenance.

2. **Inventory**:
   What inventory should be stocked at each stage in a supply chain? How much inventory should be held as raw materials, semi-finished, or finished goods? The primary purpose of inventory is to act as a buffer against uncertainty in the supply chain. However, holding inventory can be expensive, so what are the optimal inventory levels and reorder points? All this has to be discussed.

3. **Location**:
   Where should facilities for production and inventory storage be located? Where are the most cost efficient locations for production and for storage of inventory? Should existing facilities be used or new ones built? Once these decisions are made they determine the possible paths available for product to flow through for delivery to the final consumer.

4. **Transportation:**

How should inventory be moved from one supply chain location to another? Air freight and truck delivery are generally fast and reliable but they are expensive. Shipping by sea or rail is much less expensive but usually involves longer transit times and more uncertainty. This uncertainty must be compensated for by stocking higher levels of inventory.

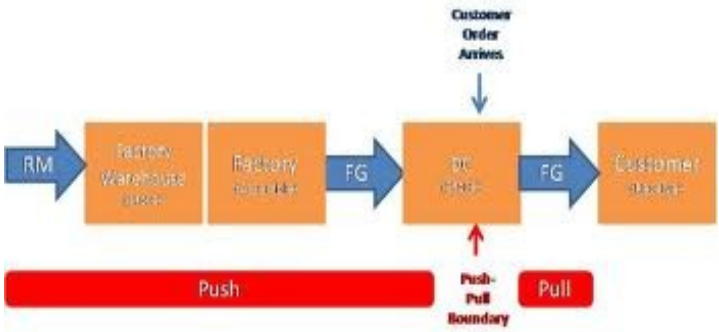
5. **Information:**

How much data should be collected and how much information should be shared? Timely and accurate information holds the promise of better coordination and better decision making. With good information, people can make effective decisions about what to produce and how much, about where to locate inventory and how best to transport it.

SUPPLY CHAIN PROCESSES

Two different ways to view the processes performed in a supply chain are:

1. **Push/Pull view of Supply chain:**



It is referred to as a speculative process because they respond to forecast rather than actual demand. It is very useful while considering strategic decisions relating to supply chain design.

It forces a more global consideration of supply chain process as they relate to a customer order. A Supply chain that has fewer stages & more pull processes has a significant impact on improving supply chain performance

- Processes in a SCM are divided into two categories depending on whether they are executed in response to a customer order or in anticipation of customer orders.
- For e.g. Tata steel collects orders from its customers to produce in large quantities.
- In this case the manufacturing cycle is reacting to consumer demand (pull process).
- E.g. HUL a consumer product firm, produces in anticipation of customer demand (push process).
- In the pull processes, customer demand is known with certainty at the time of execution.
- It is referred to as a reactive process because they react to customer demand.
- In the push processes, demand is not known & must be forecast as the customer order is yet to arrive.

2. Cycle View Model Of Supply Chain:

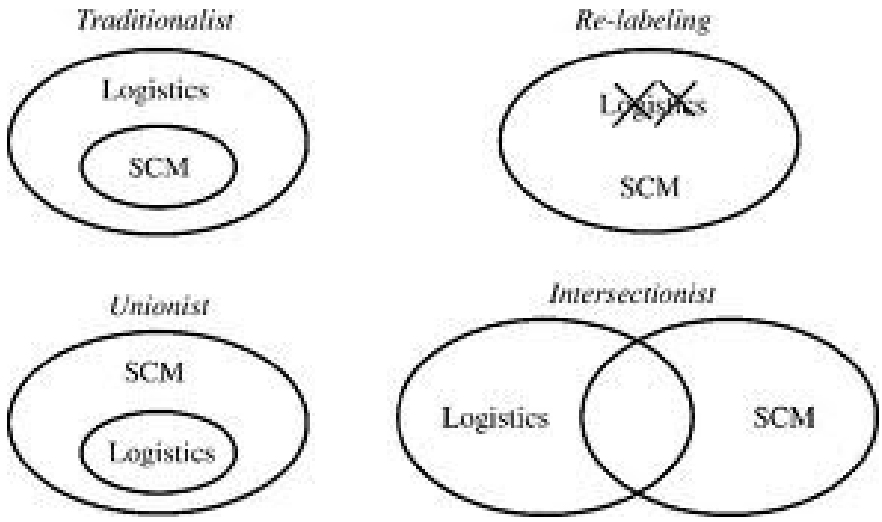
According to the cycle view, the processes in a supply chain are divided into a series of cycles, each performed at the interface between two successive stages of a supply chain. It clearly defines the processes involved & the owners of each process.

It is useful when considering operational decisions because it specifies the roles & responsibilities of each member of the supply chain & the desired outcome for each process.

The respective cycles are triggered by a customer order, replenishment orders from the distributor or by the forecast of customer demand & current product availability in terms of finished goods with the manufacturer.

C.

DIFFERENCE BETWEEN LOGISTICS AND SUPPLY CHAIN MANAGEMENT



1. **DEFINITION:**

- **Logistics:**

  It is the process of strategically managing the procurement, movement and storage of materials, parts and finished inventory through the organisation and its marketing channels in such a way that current and future profits are maximised.

- **Supply Chain Management:**

  It is the management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at less cost to the supply chain as a whole.

2. **MAIN OBJECTIVE:**

- **Logistics:**

  Logistics aims at cost reduction by integrating resources across the pipeline.

- **Supply Chain Management:**

  Supply chain aims at profitability by value creation.

3. **FOCUS:**

- **Logistics:**

  Logistics tries to take the product to the consumer at minimum logistical cost. Hence it is supply driven.

- **Supply Chain Management:**

  SCM focuses on value creation in the supply chain. Hence it is customer focused or demand driven.

FURTHER DIFFERNCES BETWEEN LOGISTICS AND SUPPLY CHAIN MANAGEMENT

- Supply chain includes logistics. Supply chain is to ensure continuous flow of activity and how this flow is ensured is logistics. Supply chain includes activities such as customer service and supplier development.

  Logistics concerns activities directly involving physical materials, such as movement and storage.

- Supply chain is the network of facilities (warehouses, factories, terminals, ports, etc), vehicles (trucks, trains, planes and ocean vessels) and the Information systems connecting the suppliers & customers.

  Logistics is basically what happens in the supply chain and involves the flow of material, information & money. Logistics activities (customer response, inventory management, supply, transportation & warehousing) connect and activate the objects in the supply chain.

- Supply chain includes strategy and planning, while logistics is more focused on execution. Supply chain is a link of several entities like a materials supplier, manufacturer, transporter, distributor and retailer.

  Logistics on the other hand has always been associated to delivering the right materials to the right entity at the right cost, quality, quantity and time.

DEVELOPMENTS IN SUPPLY CHAIN MANAGEMENT

Six major movements can be observed in the evolution of supply chain management studies: Creation, Integration, and Globalization (Lavassani et al., 2008a), Specialization Phases One and Two, and SCM 2.0.

1. Creation Era

The term supply chain management was first coined by a U.S. industry consultant in the early 1980s. However, the concept of a supply chain in management was of great importance long before, in the early 20th century, especially with the creation of the assembly line. The characteristics of this era of supply chain management include the need for large-scale changes, re-engineering, downsizing driven by cost reduction programs, and widespread attention to the Japanese practice of management.

2. Integration Era

This era of supply chain management studies was highlighted with the development of Electronic Data Interchange (EDI) systems in the 1960s and developed through the 1990s by the introduction of Enterprise Resource Planning (ERP) systems. This era has continued to develop into the 21st century with the expansion of internet-based collaborative systems. This era of supply chain evolution is characterized by both increasing value-adding and cost reductions through integration.

3. Globalization Era

The third movement of supply chain management development, the globalization era, can be characterized by the attention given to global systems of supplier relationships and the expansion of supply chains over national boundaries and into other continents. Although the use of global sources in the supply chain of organizations can be traced back several decades (e.g., in the oil industry), it was not until the late 1980s that a considerable number of organizations started to integrate global sources into their core business. This era is characterized by the globalization of supply chain management in organizations with the goal of increasing their competitive advantage, value-adding, and reducing costs through global sourcing.

4. Specialization Era—Phase One: Outsourced Manufacturing and Distribution

In the 1990s industries began to focus on “core competencies” and adopted a specialization model. Companies abandoned vertical integration, sold off non-core operations, and outsourced those functions to other companies. This changed management requirements by

extending the supply chain well beyond company walls and distributing management across specialized supply chain partnerships.

This transition also re-focused the fundamental perspectives of each respective organization. OEMs became brand owners that needed deep visibility into their supply base. They had to control the entire supply chain from above instead of from within. Contract manufacturers had to manage bills of material with different part numbering schemes from multiple OEMs and support customer requests for work -in-process visibility and vendor-managed inventory (VMI).

The specialization model creates manufacturing and distribution networks composed of multiple, individual supply chains specific to products, suppliers, and customers who work together to design, manufacture, distribute, market, sell, and service a product. The set of partners may change according to a given market, region, or channel, resulting in a proliferation of trading partner environments, each with its own unique characteristics and demands.

5. Specialization Era—Phase Two: Supply Chain Management as a Service

Specialization within the supply chain began in the 1980s with the inception of transportation brokerages, warehouse management, and non-asset-based carriers and has matured beyond transportation and logistics into aspects of supply planning, collaboration, execution and performance management.

At any given moment, market forces could demand changes from suppliers, logistics providers, locations and customers, and from any number of these specialized participants as components of supply chain networks. This variability has significant effects on the supply chain infrastructure, from the foundation layers of establishing and managing the electronic communication between the trading partners to more complex requirements including the configuration of the processes and work flows that are essential to the management of the network itself.

Supply chain specialization enables companies to improve their overall competencies in the same way that outsourced manufacturing and distribution has done; it allows them to focus on their core competencies and assemble networks of specific, best-in-class partners to contribute to the overall value chain itself, thereby increasing overall performance and efficiency. The ability to quickly obtain and deploy this domain-specific supply chain expertise without developing and maintaining an entirely unique and complex competency in house is the leading reason why supply chain specialization is gaining popularity.

Outsourced technology hosting for supply chain solutions debuted in the late 1990s and has taken root primarily in transportation and collaboration categories. This has progressed from the Application Service Provider (ASP) model from approximately 1998 through 2003 to the On-Demand model from approximately 2003-2006 to the Software as a Service (SaaS) model currently in focus today.

6. Supply Chain Management 2.0 (SCM 2.0)

Building on globalization and specialization, the term SCM 2.0 has been coined to describe both the changes within the supply chain itself as well as the evolution of the processes, methods and tools that manage it in this new "era".

Web 2.0 is defined as a trend in the use of the World Wide Web that is meant to increase creativity, information sharing, and collaboration among users. At its core, the common attribute that Web 2.0 brings is to help navigate the vast amount of information available on the Web in order to find what is being sought. It is the notion of a usable pathway. SCM 2.0 follows this notion into supply chain operations. It is the pathway to SCM results, a combination of the processes, methodologies, tools and delivery options to guide companies to their results quickly as the complexity and speed of the supply chain increase due to the effects of global competition, rapid price fluctuations, surging oil prices, short product life cycles, expanded specialization, near-/far- and off-shoring, and talent scarcity. SCM 2.0 leverages proven solutions designed to rapidly deliver results with the agility to quickly manage future change for continuous flexibility, value and success. This is delivered through competency networks composed of best-of-breed supply chain domain expertise to understand which elements, both operationally and organizationally, are the critical few that deliver the results as well as through intimate understanding of how to manage these elements to achieve desired results. Finally, the solutions are delivered in a variety of options, such as no-touch via business process outsourcing, mid-touch via managed services and software as a service (SaaS), or high touch in the traditional software deployment model.

COMPONENTS OF SUPPLY CHAIN MANAGEMENT INTEGRATION

The Management Components of SCM

The SCM components are the third element of the four-square circulation framework. The level of integration and management of a business process link is a function of the number and level, ranging from low to high, of components added to the link (Ellram and Cooper, 1990; Houlihan, 1985). Consequently, adding more management components or increasing the level of each component can increase the level of integration of the business process link. The literature on business process re-engineering,[10] buyer-supplier relationships,[11] and SCM[12] suggests various possible components that must receive managerial attention when managing supply relationships. Lambert and Cooper (2000) identified the following components:

* Planning and control
* Work structure
* Organization structure
* Product flow facility structure
* Information flow facility structure
* Management methods
* Power and leadership structure
* Risk and reward structure
* Culture and attitude

However, a more careful examination of the existing literature leads to a more comprehensive understanding of what should be the key critical supply chain components, the "branches" of the previous identified supply chain business processes, that is, what kind of relationship the components may have that are related to suppliers and customers. Bowersox and Closs states that the emphasis on cooperation represents the synergism leading to the highest level of joint achievement (Bowersox and Closs, 1996). A primary level channel participant is a business that is willing to participate in the inventory ownership responsibility or assume other aspects of financial risk, thus

including primary level components (Bowersox and Closs, 1996). A secondary level participant (specialized) is a business that participates in channel relationships by performing essential services for primary participants, including secondary level components, which support primary participants. Third level channel participants and components that support the primary level channel participants and are the fundamental branches of the secondary level components may also be included.

Global Supply Chain Management

Global supply chains pose challenges regarding both quantity and value:

Supply and Value Chain Trends

- Globalization
- Increased cross border sourcing
- Collaboration for parts of value chain with low-cost providers
- Shared service centers for logistical and administrative functions
- Increasingly global operations, which require increasingly global coordination and planning to achieve global optimums
- Complex problems involve also midsized companies to an increasing degree,

These trends have many benefits for manufacturers because they make possible larger lot sizes, lower taxes, and better environments (culture, infrastructure, special tax zones, sophisticated OEM) for their products. Meanwhile, on top of the problems recognized in supply chain management, there will be many more challenges when the scope of supply chains is global. This is because with a supply chain of a larger scope, the lead time is much longer. Furthermore, there are more issues involved such as multi-currencies, different policies and different laws.

The consequent problems include:

- Different currencies and valuations in different countries
- Different tax laws (Tax Efficient Supply Chain Management)
- Different trading protocols
- Lack of transparency of cost and profit

SCM in Global Perspective

Practicality and Usefulness

• Help companies compete all over the world
• Expand business operations
• Offer new services and applications to meet global customers needs
• Give company a competitive advantage
• Falling International Trade Barriers Mean Rising Profits

Recent changes effecting the global supply chain

• Internet and technological change
• Proliferation of trade agreements
• Falling Trade Barriers
• Increase in international trade groups
• New Markets

Advantages of Global Supply Chains

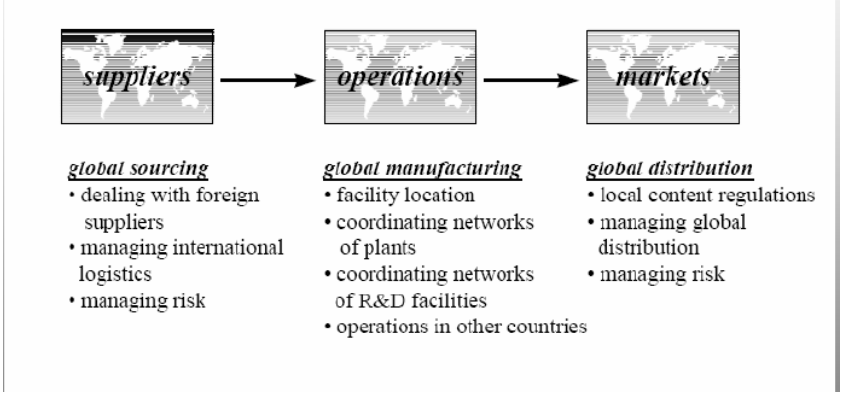
• Reduced total costs
• Inventory reduction
• Improved fulfillment cycle time
• Reduce cycle time
• Increased forecast accuracy
• Productivity increase
• Improved capacity
• Expand international connections
• Increase intellectual assets
• Delivery improvement
• Diversified business and trading
• Competitive advantage
• Untapped markets
• Enhance speed and efficiency

Potential Global Supply Chain Obstacles

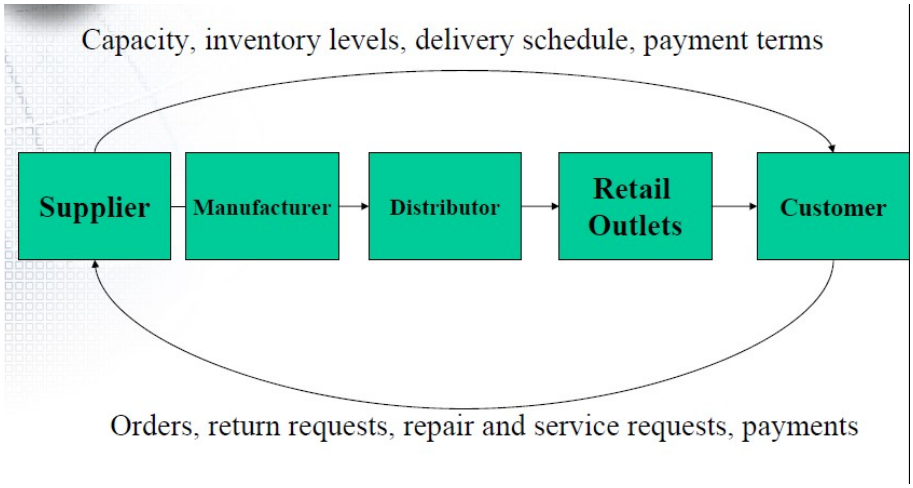
• Member nations VS. Non member nations
• Inefficient transportation and distribution systems
• Market instability
• Different languages
• Differences in Currencies
• Differences in Measurement Systems (metric versus decimal)

• Different Customs, beliefs and cultures
• Political turmoil
• Trade imbalances
• Export surges and recessions
• Greater distance
• Tax Policies
• Operational Threats
• Strategic Challenges
• Technological capabilities

Global operation



Major Parties in SCM



List of SCM companies

- Koenig Solutions Pvt. Ltd.
- Decision Technologies (India) Pvt. Ltd.
- Vision Comptech Integrators Limited
- Ramsoft Technologies Pvt. Ltd.
- X-is tech Pvt. Ltd.
- e-Enable Technologies Pvt. Ltd.
- Parsec Technologies (India) Ltd.
- Monet Infotech Private Limited
- Nucsoft Ltd.
- Learnet India Ltd.
- APT Interactive Pvt. Ltd.
- Hatigor Solutions Pvt. Ltd.
- Microhard Technologies (India) Pvt. Ltd.

Supply chain management software

Supply chain management software (SCMS) is a business term which refers to a WHOLE range of software tools or modules used in executing supply chain transactions, managing supplier relationships and controlling associated business processes.

While functionality in such systems can often be broad – it commonly includes:

1. Customer requirement processing
2. Purchase order processing
3. Inventory management
4. Goods receipt and Warehouse management
5. Supplier Management/Sourcing

A requirement of many SCMS often includes forecasting. Such tools often attempt to balance the disparity between supply and demand by improving business processes and using algorithms and consumption analysis to better plan future needs. SCMS also often includes integration technology that allows organizations to trade electronically with supply chain partners.

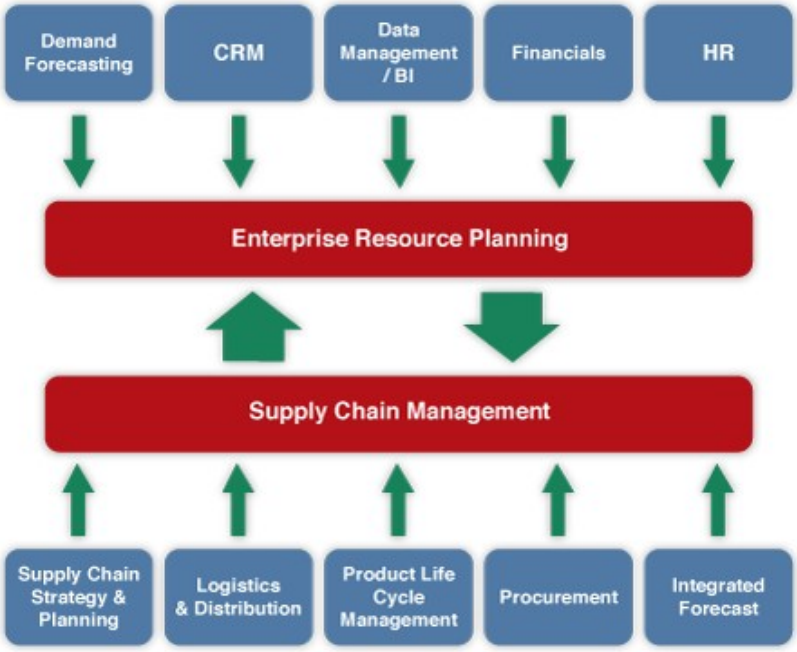
•

Dedicated Supply Chain Tools v/s ERP Systems

While many organizations utilize Plant Simulation (PS) and Enterprise Resource Planning (ERP) solutions to satisfy supply chain needs, many supply chain management software solutions are available as stand alone tools. SCMS can be differentiated from ERP solutions as they don't include the breadth of functionality of a full ERP (for example SCMS may not include HR or manufacturing modules.) Stand alone systems include inventory optimization tools, sourcing tools, supplier relationship management and spend analysis systems which can be used either independently or integrated with ERP solutions.

Businesses can benefit from SCMS and ERP systems by cutting the cost, streamlining operations, forecasting sales and profit and defining the right processes and people. This type of software product can facilitate more efficient management and can contribute to more reliable and predictable business operations.

The other major difference between SCMS and ERP systems is the flexibility and high-level of customization of ERP software. The same ERP software can be used in many different companies by customizing the product to match the particular business process.



CASE STUDY

1) AMUL's SUPPLY CHAIN MANAGEMENT PRACTICES

Introduction

AMUL is a dairy cooperative in the western India that has been primarily responsible, through its innovative practices, for India to become the world's largest milk producer. The distinctive features of this paradigm involves managing a large decentralized network of suppliers and producers, simultaneous development of markets and suppliers, lean and efficient supply chain, and breakthrough leadership.
Every day Amul collects 447,000 litres of milk from 2.12 million farmers , converts the milk into branded, packaged products, and delivers goods worth Rs 6 crore (Rs 60 million) to over 500,000 retail outlets across the country.

To implement their vision while retaining their focus on farmers, a hierarchical network of cooperatives was developed, this today forms the robust supply chain behind GCMMF's endeavors. The vast and complex supply chain stretches from small suppliers to large fragmented markets.

Management of this network is made more complex by the fact that GCMMF is directly responsible only for a small part of the chain, with a number of third party players (distributors, retailers and logistics support providers) playing large roles. Managing this supply chain efficiently is critical as GCMMF's competitive position is driven by low consumer prices supported by a low cost system of providing milk at a basic, affordable price.

GUJARAT COOPERATIVE MILK MARKETING FEDERATION (GCMMF)

GCMMF is India's largest food products marketing organisation. It is a state level apex body of milk cooperatives in Gujarat, which aims to provide remunerative returns to the farmers and also serve the interest of consumers by providing quality products, which are good value for money. GCMMF markets and manages the Amul brand.

The distribution network

Amul products are available in over 500,000 retail outlets across India through its network of over 3,500 distributors. There are 47 depots with dry and cold warehouses to buffer inventory of the entire range of products.

GCMMF transacts on an advance demand draft basis from its wholesale dealers instead of the cheque system adopted by other major FMCG companies. This practice is consistent with GCMMF's philosophy of maintaining cash transactions throughout the supply chain and it also minimizes dumping.Wholesale dealers carry inventory that is just adequate to take care of the transit time from the branch warehouse to their premises. This just-in-time inventory strategy improves dealers' return on investment (ROI). All GCMMF branches engage in route scheduling and have dedicated vehicle operations.

Largest Cold Chain

AMUL has the largest cold chain network in India (i.e. 18000 refrigerators) as compared to any other company. The chemical components of milk are water, SNF and solids. Milk is very perishable product so it has to be consumed within 24 hours. In order to avoid wastage AMUL converts the milk in to SNF and milk solids by evaporating the water, which comprises up to 60-70% of milk contents. This is possible only if the distribution channel right from the producer to the consumer is well organized. It will be surprising to know that AMUL makes even the 'Sarpanch' to eat pizza i.e. it supplies pizzas even to rural market.

THE BUSINESS MODEL

From the very beginning, in the early 1950s, AMUL adopted the network as the basic model for long-term growth.

- The network explicitly includes secondary services to the farmer-suppliers.
- Several of the entities in the network are organized as cooperatives linked in a hierarchical fashion.

Customers: In comparison with developed economies, the market for dairy products in India is still in an evolutionary stage with tremendous potential for high value products such as ice cream, cheese etc. The distribution network, on the other hand, is quite reasonable with access to rural areas of the country. Traditional methods practiced in western economies are not adequate to realize the market potential and alternative approaches are necessary to tap this market.

Suppliers: A majority of the suppliers are small or marginal farmers who are often illiterate, poor, and with liquidity problems as they lack direct access to financial institutions. Again, traditional market mechanisms are not adequate to assure sustenance and growth of these suppliers.

Third Party Logistic: In addition to the weaknesses in the basic infrastructure, logistics and transportation services are typically not professionally managed, with little regard for quality and service. In addition to outbound logistics, GCMMF takes responsibility for coordinating with the distributors to assure adequate and timely supply of products. It also works with the Unions in determining product mix, product allocations and in developing production plans. The Unions, on the other hand, coordinate collection logistics and support services to the member-farmers. In what follows we elaborate on these aspects in more detail and provide a rationale for the model and strategies adopted by GCMMF.

Simultaneous Development of Suppliers and Customers

From the very early stages of the formation of AMUL, the cooperative realized that sustained growth for the long-term was contingent on matching supply and demand. The member-suppliers were typically small andmarginal farmers with severe liquidity problems, illiterate and untrained. AMUL and othercooperative Unions adopted a number of strategies to develop the supply of milk and assure steady growth. First, for the short term, the procurement prices were set so as to provide fair andreasonable return. Second, aware of the liquidity problems, cash payments for the milk supply was made with minimum of delay. This practice continues today with many village societies making payments upon the receipt of milk. For the long-term, the Unions followed a multi-pronged strategy of education and support. For example, only part of the surplus generated by the Unions is paid to the members in the form of dividends

Managing Third Party Service Providers

Unions focused efforts on these activities and related technology development.The marketing efforts were assumed by GCMMF. All other activities were entrusted to third parties. These include logistics of milk collection, distribution of dairy products, sale of products through dealers and retail stores, some veterinary services etc. It is worth noting that a number of these third parties are not in the organized sector, and many are not professionally managed. Hence, while third parties perform the activities, the Unions and GCMMF have developed a number of mechanisms to retain control and assure quality and timely deliveries. This is particularly critical for a perishable product such as liquid milk.

Coordination for Competitiveness

Coordination is one of the key reasons for the success of operations involving such anextensive network of producers and distributors at GCMMF. Some interesting mechanisms exist for coordinating the supply chain at GCMMF.
These mechanisms are:

Inter-locking Control

The objective for developing such an inter-locking control mechanism is to ensure that theinterest of the farmer is always kept at the top of the agenda through its representatives whoconstitute the Boards of different entities that comprise the supply chain. This form of directrepresentation also ensures that professional managers and farmers work together as a team tostrengthen the cooperative. This helps in coordinating decisions across different

entities as well as speeding both the flow of information to the respective constituents and decisions.

Coordination Agency: Unique Role of Federation

Its objective is to ensure that all milk that the farmers produce gets sold in the market either as milk or as value added products and to ensure that milk is made available to an increasingly large section of the society at affordable prices.

Supplier Enhancement and Network servicing

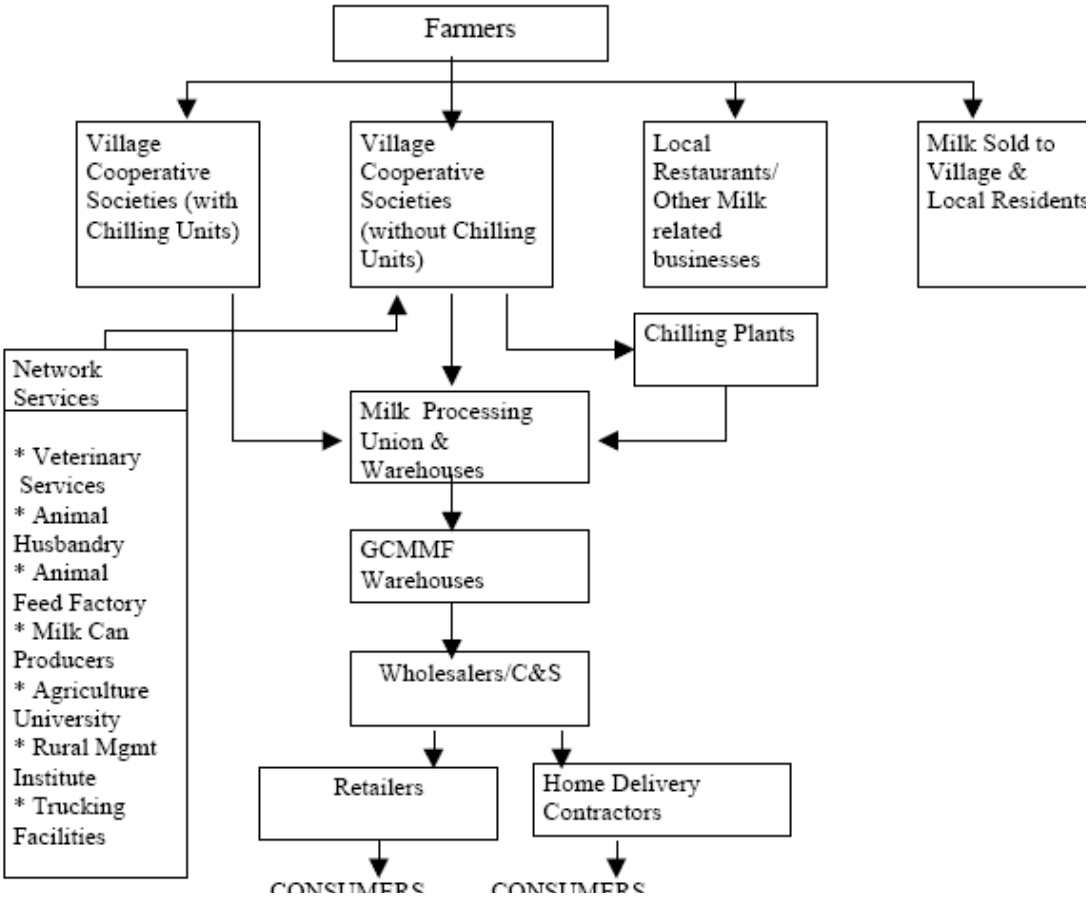
Their objective is to ensure that producers get maximum benefit and to resolve all their problems. They manage the procurement of milk that comes via trucks & tankers from the VSs. They negotiate annual contracts with truckers, ensure availability of trucks for procurement, establish truck routes, monitor truck movement and prevent stealing of milk while it is being transported.

AmulYatraProgramme

The AmulYatraProgramme ensures that every new distributor visits Anand before commencing business, thereby imbibing an appreciation of Federation philosophy and culture as well as operational systems and processes. All new distributors' salesmen are trained in the Federation's philosophy and methods as well as in selling skills.

AmulYatraprogramme has been continuing to bring our channel partners to Amul to give them an exposure to our cooperative institutions. This year our emphasis was upon our newly appointed distributors and channel partners from various business segments like Organised Retail, Caterers etc.

GCMMF'S SUPPLY CHAIN



Conclusion

The benefits of an efficient supply chain management included reduction in lead time faster inventory turnover accurate forecasting increased warehouse space reduction in safety stock and better working capital utilization. It also helped in reducing the dependency on distribution centre management personnel resulting in minimization of training costs and errors. Stock outs were also completely eliminated.

Supply Chain Management (SCM) involves joint collaboration between outsourcing partners, suppliers, and customers. It comprises the transformation of goods from raw materials through to the delivery of the finished product; it also includes the management of key information flows. SCM involves the integration of these activities and aims to improve relationships between the various parties, while achieving a sustainable competitive advantage through high quality and lower cost products. SCM is closely linked with enterprise resource planning (ERP) and electronic commerce systems.

Future supply chains are likely to be more dynamic in nature, and consist of collaborative value networks in which productivity and efficiency are constantly maximised. Purchasing firms need to ensure that costs and risks are equitably shared across the supply chain. Risk management has become a strategic imperative – particularly for manufacturers operating global supply chains. Risk categories include:

- natural disasters
- terrorism
- market risks
- commodity risks, and
- transportation risks.

Increased security and improved resilience are required to mitigate these risks. Regular testing of infrastructures using simulated disruptions can provide a better understanding of potential issues and possible deficiencies. Organisations that are dependent upon SCM must develop appropriate criteria for the appraisal of supply chain performance, and continuously measure this performance.