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MBA PROGRAMME II YEAR – III SEMESTER SPECIALIZATION: OPERATIONS



SUPPLY CHAIN MANAGEMENT

COURSE: MB117D/ SC D3.2

BLOCKS: 1-4

DEPARTMENT OF STUDIES AND RESEARCH IN MANAGEMENT

KARNATAKA STATE OPEN UNIVERSITY

MUKTHAGANGOTHRI, MYSURU- 570 006.

DEPARTMENT OF STUDIES AND RESEARCH IN MANAGEMENT

M.B.A III SEMESTER

COURSE - MBSC - 3.2 D

SUPPLY CHAIN MANAGEMENT

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BLOCK - 1 : SUPPLY CHAIN MANAGEMENT

Dear Learners,

Supply chain constitutes an integral part of operations management. Companies procure materials from different suppliers, produce the products and then distribute to their customers. They coordinate with their suppliers and customers at various phases. This whole process is not just a group of events but a series of interdependent events. So we can call this as a chain of process which includes receiving an order from customer, order required material from the suppliers, producing the products, packing them and delivering it to the customer. Some of the activities can be outsourced to third party depending upon expertise, efficiency and cost considerations. Hence as a student of operations management, you must understand how supply chain works in a manufacturing industry. It needless to say that supply chain is significant in service industry as well.

In this course, you will have to study four blocks, namely

Block -1: Introduction to Supply Chain Management Block -2: Supply Chain Planning and Purchasing Block -3: Logistics and Warehouse management Block -4: Modern Supply Chain Management

BLOCK -1 INTRODUCTION TO SUPPLY CHAIN MANAGEMENT UNIT-1: SUPPLY CHAIN MANAGEMENT

Structure:

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- 1.1 Introduction
- 1.2 Evolution of Supply Chain Management
- 1.3 Meaning and Definitions of Supply Chain Management
- 1.4 Features of Supply Chain Management
- 1.5 Objectives of Supply Chain Management
- 1.6 Functions of Supply Chain Management
- 1.7 Scope of Supply Chain Management
- 1.8 Advantages of Supply Chain Management
- 1.9 Disadvantages of Supply Management Chain
- 1.10 Modern Tools for Efficient SCM
- 1.11 Case Study
- 1.12 Notes
- 1.13 Summary
- 1.14 Key Words
- 1.15 Answer to Check Your Progress
- 1.16 Self-Assessment Questions
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1.0 OBJECTIVES

After studying this unit, you will be able to:

- Define the supply chain management
- > Sketch out the evolution of supply chain management
- Discuss the features of supply chain management
- > Explain nature and scope of supply chain management
- State the functions of supply chain management
- > Highlight the contributions of supply chain management
- ➤ Make out the skills needed for a Supply Chain Manager.

1.1 INTRODUCTION

As a student of management, you have to understand that producers of goods manufactured/ services will see to that they reach customers, who in turn use them to get satisfaction. For this purpose, One has to understand the sequence of processes involved in the production and distribution of a commodity which is termed as supply chain. In commerce, a supply chain is a system of organizations, people, activities, information, and resources involved in supplying a product or service to a consumer. In fact, Supply chain activities involve the transformation of natural resources, raw materials, and components into a finished product and deliver to the end customer. In sophisticated supply chain systems, used products may re-enter the supply chain activities to fulfill its objectives.

You are also aware, that an optimized supply chain can increase customer satisfaction and improve shop floor operations to a greater extent. On the other hand, poorly functioning supply chain will ruin relationships with suppliers and customers, and thereby becomes headache in every aspect of business. The supply chain management help the companies concerned to distribute products within the time and at lower cost.

Supply chain management is branch of management which apparently deals with the flow of goods and services. This includes all processes that change raw materials into final products. It also includes the active streamlining of a business's supply-side activities to maximize customer value and gain a competitive advantage in the marketplace.

1.2 EVOLUTION OF SUPPLY CHAIN MANAGEMENT

Six major movements in the evolution in Supply Chain Management have been show cased, and they are:

1. Creation Era

- a. Supply chain management first founded by Keith Oliver in 1982.
- b. This concept was of great importance as early as 20th century, with creation of assembly line.
- c. Characteristics of this era of supply chain management include need for large-scale changes, re-engineering, downsizing driven by cost reduction programs, and widespread attention to Japanese management practices.

2. Integration Era

- a. This era of supply chain management studies highlighted with introduction of electronic data interchange systems in 1960s, and developed by introduction of enterprise resource planning systems in 1990s.
- b. This continued to develop into the 21st century with expansion of Internet-based collaborative systems.
- c. This era of supply chain evolution is characterized by both increasing value added and cost reductions through integration.

3. Globalization Era

Globalization era, can be attributed by attention given to global systems of supplier relationships and expansion of supply chains at cross boundary.

4. Specialization Era

- a. This model creates manufacturing and distribution networks composed of several individual supply chains specific to producer to end consumer.
- b. Supply chain management works as a service as well
- c. SCM 2.0 is a trend in WWW, means to increase creativity, information sharing and collaboration among end users. SCM 2.0 designed to rapidly deliver results with quickly manage future change for continuous flexibility, value and success.

1.3 MEANING AND DEFINITIONS OF SUPPLY CHAIN MANAGEMENT

In 1982, Keith Oliver, a consultant at Booz Allen Hamilton had introduced the term "supply chain management" to the public domain. Wirtschafts Woche in Germany had published for the first time the results of an implemented and "Supply Chain Management project", led by Wolfgang Partsch. Supply chains were originally defined as encompassing all activities associated with flow and transformation of goods from raw materials through to the end user, as well as the associated information flows. Supply Chain Management was then further defined as the integration of supply

chain activities through improved supply-chain relationships to achieve a competitive advantage. In the late 1990s, "supply-chain management" rose to prominence, and operations managers began to use it in their titles with increasing regularity.

Let us understand a few other commonly accepted definitions of supply-chain management include:

The systematic, strategic coordination of traditional business functions and tactics across all business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole.

Hines observes that "Supply chain strategies require a total systems view of the links in the chain that work together efficiently to create customer satisfaction at the end point of delivery to the consumer. As a consequence, costs must be lowered throughout the chain by driving out unnecessary expenses, movements, and handling. The main focus is turned to efficiency and added value, or the end user's perception of value. Efficiency must be increased, and bottlenecks should be removed. The measurement of performance should focus on total system efficiency and the equitable monetary reward distribution to those within the supply chain. The supply-chain system must be responsive to customer requirements". The integration of key business processes across the supply chain for the purpose of creating value for customers and stakeholders

A supply chain is a network between a company and its suppliers to produce and distribute a specific product to the final buyer. This network includes different activities, people, entities, information, and resources. The supply chain also represents the steps it takes to get the product or service from its original state to the customer. SCM focus on comprehensive flow of value delivery to a customer. Value is delivered through the defined business activity of the organization in the form of goods and services. The value flow, there are two associated flows in a supply chain – information flow and cash flow.

From the above explanation, it is very clear that Supply chain management is the management of the flow of goods and services that includes the process from transformation of raw materials to finished products. The supply chains cover everything from production to product development and information system needed to direct the undertakings.

1.4 FEATURES OF SUPPLY CHAIN MANAGEMENT

It is needless to say that effective supply chain management systems minimize cost, waste and time in the production cycle. The industry standard has become a just-in-time supply chain where retail sales automatically signal replenishment orders to manufacturers. Retail shelves can then be restocked almost as quickly as product is sold. One way to further improve on this process is to analyze the data from supply chain partners to see where further improvements can be made. The features of supply chain management are as under;

1. Inventory Management

With supply chain management, companies can significantly improve the way they track and manage their supplies of raw materials and components needed for production, finished goods to satisfy open sales orders, and spare parts required for field service and support. This eliminates excess and waste, frees up valuable assets for other important purposes, and minimizes related storage costs.

2. Order Management

Supply chain management can dramatically accelerate the execution of the entire order-todelivery cycle by helping companies to more productively generate and track sales orders. Supply chain management also enables the dynamic scheduling of supplies more effectively to meet demand, as well as more rapid creation of pricing and product configurations.

3. Procurement

All activities and tasks associated with sourcing, purchasing, and payables can be fully automated and streamlined across a company's entire supplier network with supply chain management. As a result, businesses can build stronger relationships with vendors, better assess and manage their performance, and improve negotiations to leverage volume or bulk discounts and other cost-cutting measures.

4. Logistics

As companies expand globally, their supply chains become more and more complex. This makes the coordination of the numerous warehouses and transportation channels involved quite a challenging endeavor without supply chain in place. With supply chain management, businesses can improve on-time delivery performance and boost customer satisfaction by achieving complete visibility into how finished goods are stored and distributed, regardless of the number of facilities or partners that participate.

5. Forecasting and Planning

With supply chain management, organizations can more accurately anticipate customer demand and plan their procurement and production processes accordingly. As a result, they can avoid unnecessary purchases of raw-materials, eliminate manufacturing over-runs, and prevent the need to store excess finished goods, or slash prices to move products off of warehouse shelves.

6. Return Management

Supply chain can simplify and accelerate the inspection and handling of defective or broken goods – on both the buy and sell side of the business –.Many supply chain offerings also include add-on options or modules designed to enhance related activities. Through these features, support is provided for a variety of important processes such as contract management, product lifecycle management, capital asset management, and more.

7. Management of Inventory

Supply chain management accord thrust on maintaining an optimum level of inventory throughout the year in any organization. It keeps records and tracks supply of raw materials, spare parts and finished goods. The system makes sure all inventories are available in right quantity at right time, so that production is unhindered. It evolves proper strategies for procuring and maintaining all inventories as per requirements thereby it avoids any situation like under stocking or overstocking. It may be noted that both are not good for companies.

8. Agile supply chain management

It is supply chain reorganization around a new set of principles that emphasis the need for new structures, value chain configurations, communications and information systems and a whole new mindset when it comes to how a supply chain should operate.

1.5 OBJECTIVES OF SUPPLY CHAIN MANAGEMENT

There are many objectives of supply chain management and they are:

• Reduce Operating Expenses

Supply chain management scaled down the operational expenses of a business. It reduces all types of business expenses such as cost of purchase, production and delivery. You are fully aware of the fact that lesser the operating expenses invariably reduce the cost of sales and thereby reduce the selling price as well. Holding period of raw materials and finished goods is reduced by facilitating a smooth flow of raw material in between supplier and a company. Similarly movement of finished products between company and customers will be within the schedule.

• Enhance Customer Satisfaction

Supply chain management help boosting the overall customer experience with business. Proper analysis of customer behavior is done before formulating any production strategy which apparently leads to production of right product. The technique checks the quality of products to ensure they meet desired standards. Providing right quality of products at right price provide better satisfaction to customers. It may be noted that an organization survive for a long term provided the level of consumer satisfaction is high.

• Improve Distribution Channel

Supply chain management provides an efficient channel to business which stimulates the whole process of distribution. Concerned organization needs to have proper coordination between various transportation channel and warehouses which obviously facilitate faster movement of goods. This way the whole distribution system is to be effective, which enables to deliver product in right time and at right location. In case any transport means is stuck either problem created by nature or technical flaw the distribution system will be collapsed, consequently marketing system will be hit adversely.

• Strengthen Financial Position

Supply chain management strengthens financial status of business by attaining better efficiency in its process. Supply chain manager prevents any shortage of materials and focuses on cutting any excessive costs. Any chance of funds blockage in inventories is avoided by facilitating a speedy movement of goods. Optimum funds are always maintained by managers within the business which leads to strengthen the financial status. Blockage of funds on inventory reduces the liquidity position of the company.

Regulate Proper Inventory

Maintenance of proper inventory throughout the period is very essential for continued operations of business. All inventories such as raw materials, spare parts and finished product are properly recorded by managers for maintaining a right stock always. Any situations like under stocking or over stocking are avoided which leads to disruption of smooth functioning of business organization.

• Promotes Better Coordination

Supply chain management establishes a better coordination among all stakeholders of business. Proper channel is developed for easy communication of employees, customers and suppliers with organization. Manager can easily direct their employees and they in turn also contact their supervisors through established channel in the event of any problem erupts. It promotes exchange of information among all parties and assists in bringing proper coordination within the organization.

• Order Fulfillment

A company cannot earn revenue without selling goods. For this, it is essential for such companies to fulfill the orders from customers efficiently based on customer requirements. All entities of the supply chain work together to ensure that goods are available as required. As a result execution of all orders becomes easy. SCM streamlines order processing and avoiding duplicate work which will increase order processing speeds. Supply Demand Matching;

• Reducing Waste

Waste reduction is an essential function of supply chain management through various methods. Avoiding excess stocking of raw materials is a way to prevent wastage. Many products cannot be used after a period; as such they must be discarded. Optimum quantity of raw and finished goods based on customer demand. Further the teams are in constant touch with marketing teams to find out demand trends and alter product stocks accordingly.

• Improving Delivery Speeds

Customers expect the goods to be delivered faster, for which o e-commerce sites play a very vital role. Companies are vying with each other to offer a faster supply of goods than competitors; as a result there is immense pressure on supply chain managers. Finding warehouses closer to customers and ensuring timely availability of delivery logistics through collaboration help in reaching goods to consumers on time

• Ensuring Real-Time Information

Information is crucial for any operation, more so supply chain. This is especially undoubtedly true with this department, where various persons are overseeing different but connected operations. Any delay in one could affect everything down the line. This is why up-to-date status is made available for everyone. Customers' today demand to know the status of their orders. Information about raw material needs must also reach purchasing teams on time. It is a crucial SCM function to ensure that an adequate tracking mechanism is in place for real-time information for everyone.

1.6 FUNCTIONS OF SUPPLY CHAIN MANAGEMENT

Supply Chain Management centers around five main functions and they are, Purchasing, Operations, Logistics, Resource Management, Information Workflow

Supply chain management maintains balance between the demand and supply and involves activities right from procurement of materials and converting them into finished goods to ensuring delivery at the right time to reach the end-consumer. Therefore supply chain management is the lifeline of an organization. It needs to be efficient to keep the operations running like a well-oiled machine. A streamlined supply chain management can enhance customer relationships, lower down operational costs. The role of global supply chain management primarily comprises five functions mentioned below:

- **Purchasing;** it pertains to procuring raw materials and other resources that are required to manufacture the goods. It involves coordination with suppliers to deliver the materials without any delay. It is not a simple act of buying things. There are various aspects one needs to consider when purchasing raw materials or other items needed to manufacture finished goods. All purchasing activities can have a significant impact on the sales and profitability of a company; as such most material suitable for that company needs to be purchased.
- **Operations**; the operation team engages in demand planning and forecasting for inventory management, production, and shipping. Before giving a raw material purchase order, the organization must anticipate the possible demand for a product and the number of units it needs to produce. If the demand is over anticipated, then it could result in excess inventory cost. If the demand is under anticipated, the establishment wouldn't be able to meet customer demand, thereby leading to revenue loss. So, the operation is a critical function of supply chain department.
- Logistics; this is a supply chain management function that requires immense coordination. The manufacturing of products has commenced. It needs space for storage until it is shipped for delivery. There is a need for making local warehouse arrangements. Let's say; the products are to be delivered outside the city, state, or country limits. This brings transportation into the loop. There will also be a need for outstation warehouses. Logistics ensures that products reach the end-point delivery without any glitches.

• **Resource Management;** All firms need raw materials, technology, time, and labor. However, all the processes need to be efficient and effective. This phase is taken care of by the resource management function team. It decides the allocation of resources in the right activity at the right time to optimize the production at reduced costs. A major duty here is to properly allocate people for various jobs to ensure that all work is done on time. The workforce is essential in moving goods and ensuring the proper execution of orders.

1.7 SCOPE OF SUPPLY CHAIN MANAGEMENT

Supply chain management focuses mainly on the following;

- Minimizes Operating Cost: Supply chain management focuses on reducing the overall operating cost of the organisation. It aims at bringing efficiency and raising the profitability of such organisations. By developing a proper chain it brings down the purchasing cost, production cost and delivery cost. It enables smooth flow of raw materials from the supplier to an organisation which reduces the holding period of materials with the supplier and avoids any losses due to delay in production. Similarly, companies are not required to hold on expensive inventories for a longer time and distribute quickly through the supply chain.
- **Boosts Customer Service**: Supply chain management helps in providing better service to customers. All production strategies are framed in accordance with requirements of customers to manufacture right product. It properly anticipates demands of customers before initiating the production. Supply managers monitor all operations of business and ensure that quality products are produced using best combination of resources. Right product available to right cost provide better satisfaction to customers.
- Enhance Financial Position: Management of supply chain has an effective role on the financial position of business. It improves the efficiency of the organization, cut down the excessive cost and avoids any shortage. Supply chain manager bring down the cost by reducing the use of fixed assets like plants, transportation vehicles, warehouses etc. Proper supply chain results in speedy flow of products which minimizes the blockage of funds in inventories. It ensures that optimum funds are always available which helps in improving financial position.
- Manages distribution: Distribution of products at the right time and the right location is a complex task for every organisation. The credibility of the company depends on distribution also. Supply chain management accelerated the overall distribution system. It coordinates

with various transportation channels and warehouses for attaining faster movement of groom one place to another. Supply chain managers will see to it that all products get delivered at the right location within the time limit. By developing a proper network, routing and scheduling the manager of supply chain ensure the movement of goods to ease the whole distribution system.

- Coordination among Partners: It may be noted that proper coordination among all partners of business increase productivity and profitability. It develops a proper channel through which employees, supplier and customers can easily interact with business. Managers can easily control activities of their subordinates by communicating them all the required information. As you know, employees in case of any problem or error can contact their supervisors. Customers access their brands for any information through self-portals which are developed as a part of the customer support system. This enables a better exchange of information and brings coordination among partners.
- **Inventory Management**: Effective maintenance of inventory is a must for uninterrupted operation of every business. It keeps record of all inventories i.e. raw materials, spare parts and finished goods. Supply chain managers ensure that right inventory is always maintained within the organisation. They work to overcome under stocking or overstocking. Supply chain managers frame proper strategies for procuring, producing and maintaining all inventories as per requirements.
- **Supplier Management**: Supply chain management operates mainly to strengthen the relationships between business and suppliers. It tracks and records every interactions or transaction with the suppliers. Proper supply chain enables timely procurement of all required raw materials from suppliers. It develops a proper network through which suppliers and business can easily interact. Supply chain management solutions provide a self-service portal by which supplier can contact the company in case of any issues or problems.

1.8 ADVANTAGES OF SUPPLY CHAIN MANAGEMENT

Supply chain management professionals must ensure that these operations are carried out smoothly so that businesses can focus on the quality of their services. For that purpose you need to understand main advantages of supply chain management:

1. Higher Efficiency: When a company's supply chain operations which include the resource procurement, logistics, and delivery are strategically planned and executed, businesses can

predict demand more accurately as well as cater to them. This enhances the efficiency of a company to adjust to disruptions, ever-evolving markets and fluctuating industry trends.

2. Customer Retention and Experience: An effective supply chain management helps companies establish a strong reputation in the market. It increases a system's effectiveness to respond to customer demands. This doesn't just attract new consumers but also influences their loyalty to a brand. Businesses that prioritize customer service invest in effective supply chain management to ensure a seamless flow of goods and services.

3. Better Risk Assessment and Management: Agile management in supply chain allows companies to respond to disruptions efficiently. Responsible supply chain management also results in proactive action with respect to quality control. Businesses that do so are not just able to predict risks but also have corrective solutions in place to cover the losses they might incur from disruptions.

4. Improved Relationships: Supply chain management involves fostering profitable relationships with suppliers and distributors. Strengthening collaborations with vendors through effective communication and cooperation helps enhance productivity and cut down costs. SCM and performance metrics allow them to make meaningful decisions when it comes to choosing their suppliers or vendors.

5. Cost-Effectiveness: Supply chain management includes inventory management, which help cutting cost effectively when planned is and executed. To maximize the outcome of internal inventory, supply chain management has inventory management which allows managers to benefit from an on-demand or lean inventory model.

6. Qualitative Improvements; Responsible supply chain management directly impacts the quality of a company's products and services which are produced based on CSR standards and guidelines. This compliance contributes to sustainability and customer gratification. This is important because the cost to repair or replace an item due to quality issues is significantly high which can hurt companies on a budget.

7. Reduces Legal Liabilities; Effective supply chain management helps companies avoid negative publicity and legal liabilities that result from violations of global CSR standards. When businesses have indicative data of where risk might lie, they can better mitigate the

liabilities, be it through any protective strategy – insurance policies, upgraded resources, new technologies or improved work processes.

8. Reduces Delays; Effective dialogue and coordination result in reduced inconsistencies in distribution, logistical errors and delays in production and shipment. Inefficient shipping methods do not just cause hold-ups in the supply chain but also result in increased costs.

9. Uninterrupted Cash Flow; Supply chain management contributes to data-driven decisionmaking and profitable partnerships. There are also tools and technologies in place to conduct predictive analysis of potential risks to respond to changes and disruptions better.

10. Fidelity of the clients; Thanks to the efficiency in the production processes, customer service improves in aspects such as delivery time, purchase conditions ... This causes customers to have the brand in mind when they think about these specific products. If the shopping experience is satisfactory, they will repeat.

11. Better control; when the whole process is defined, we can know in real time and at all times in which link of the chain the product is located. This allows greater control with external actors such as suppliers, being able to quickly and easily access a greater number of offers. In addition, it allows tracking the dates of supply entries, production, distribution dates, etc.

12. Leadership. A good implementation of the supply chain, besides having good results for an organization, will also make leading company in the competitive market. Customers also play a decisive role, if they choose the company they will end up becoming a reference. Each actor in the chain knows what their functions are, when they should be carried out and the importance of working as a team. They work like a real chain in which each piece is key to achieve that the product arrives in the best conditions to the final customers.

1.9 DISADVANTAGES OF SUPPLY MANAGEMENT CHAIN

- a. Departmental wars. Supply chain projects involve multiple departments, such as purchasing, planning, manufacturing, distribution and Information Technology.
- b. More attention is paid to Information Technology, than to the quality of the data and the security of the same.
- c. The benefit on investment is difficult to measure
- d. The bad habits take time to disappear
- e. The costs are difficult to quantify.

f. The time and planning required for its implementation.

CHECK YOUR PROGRESS

- 1. Define the supply chain management
- 2. List the objectives of supply chain management
- 3. What are the benefits of supply chain management to the stake holders?
- 4. What is order management?
- 5. What is agile supply chain?

1.10 MODERN TOOLS FOR EFFICIENT SCM

- Shipping Status Alerts; these tools are increasingly being used by companies that have several consignments in transit to various customers. These tools give regular alerts about where these goods are, which will enable to have real-time information about different shipments.
- Order Management Tools; is highly essential to perform role of Supply Chain Management efficiently, for those companies that are supplying materials to various e-commerce platforms. These tools help in managing orders and ensuring that they are not ignored by mistake. There are also various reports that one can generate from these programs, which will help in analyzing order processing time and optimizing the process.
- Warehouse Management; this is great support for supply chain managers who struggle to manage multiple space in their warehouses while ensuring enough availability of goods. This help in planning space based on various inputs like sales forecasting, production plan, etc.
- Vendor Management Tools; companies having many supplies for various products find it difficult to manage them. This tool helps in analyzing transactions with suppliers to know how they have impacted main functions of supply chain management. It is possible to know which supplier has provided maximum benefits to a company. It allows managers to think about either changing vendors or doing more negotiations.
- Analytics and Reporting Tools; every department head has a task of analyzing and reporting in different supply chain activities effectively. Analytics tools use various parameters to assess performance, so that one can easily understand the reason for delays or unwanted expenses. So that it will provide valuable insights in making better decisions.

1.11 CASE STUDY

1. Deere & Company

Deere & Company (brand name John Deere) is famed for the manufacture and supply of machinery used in agriculture, construction, and forestry, as well as diesel engines and lawn care equipment. In 2014, Deere & Company was listed 80th in the Fortune 500 America's ranking and was 307th in the 2013 Fortune Global 500 ranking.

Supply Chain Cost Reduction Challenges: Deere and Company has a diverse product range, which includes a mix of heavy machinery for the consumer market, and industrial equipment, which is made to order. Retail activity is extremely seasonal, with the majority of sales occurring between March and July.

The company was replenishing dealers' inventory weekly, using direct shipment and crossdocking operations from source warehouses located near Deere & Company's manufacturing facilities. This operation was proving too costly and too slow, so the company launched an initiative to achieve a 10% supply chain cost reduction within four years.

The Path to Cost Reduction: The company undertook a supply chain network-redesign program, resulting in the commissioning of intermediate "merge centers" and optimization of crossdock terminal locations. Deere & Company also began consolidating shipments and using breakbulk terminals during the seasonal peak. The company also increased its use of third-party logistics providers and effectively created a network that could be optimized tactically at any given point in time.

Supply Chain Cost Management Results: Deere & Company's supply chain costmanagement achievements included an inventory decrease of \$1 billion, a significant reduction in customer delivery lead times (from ten days to five or less) and annual transportation cost savings of around 5%.

2. Intel

One of the world's largest manufacturers of computer chips, Intel needs little introduction. However, the company needed to reduce supply chain expenditure significantly after bringing its low-cost "Atom" chip to market. Supply chain costs of around \$5.50 per chip were bearable for units selling for \$100, but the price of the new chip was a fraction of that, at about \$20. The Supply Chain Cost Reduction Challenge: Somehow, Intel had to reduce the supply chain costs for the Atom chip, but had only one area of leverage—inventory. The chip had to work, so Intel could make no service trade-offs. With each Atom product being a single component, there was also no way to reduce duty payments. Intel had already whittled packaging down to a minimum, and with a high value-to-weight ratio, the chips' distribution costs could not be pared down any further.

The only option was to try to reduce levels of inventory, which, up to that point, had been kept very high to support a nine-week order cycle. The only way Intel could find to make supply chain cost reductions was to bring this cycle time down and therefore reduce inventory. The Path to Cost Reduction: Intel decided to try what was considered an unlikely supply chain strategy for the semiconductor industry: make to order. The company began with a pilot operation using a manufacturer in Malaysia. Through a process of iteration, they gradually sought out and eliminated supply chain inefficiencies to reduce order cycle time incrementally. Further improvement initiatives included: Cutting the chip assembly test window from a five-day schedule, to a bi-weekly, 2-day-long process

Introducing a formal S&OP planning process Moving to a vendor-managed inventory model wherever it was possible to do so. Supply Chain Cost Management Results: Through its incremental approach to cycle time improvement, Intel eventually drove the order cycle time for the Atom chip down from nine weeks to just two. As a result, the company achieved a supply chain cost reduction of more than \$4 per unit for the \$20 Atom chip—a far more palatable rate than the original figure of \$5.50.

3. Starbucks

Like Intel, Starbucks is pretty much a household name, but like many of the most successful worldwide brands, the coffee-shop giant has been through its periods of supply chain pain. In fact, during 2007 and 2008, Starbucks leadership began to have severe doubts about the company's ability to supply its 16,700 outlets. As in most commercial sectors at that time, sales were falling. At the same time, though, supply chain costs rose by more than \$75 million. Supply Chain Cost Reduction Challenges: When the supply chain executive team began investigating the rising costs and supply chain performance issues, they found that service was indeed falling short of expectations. Findings included the following problems

Fewer than 50% of outlet deliveries were arriving on time. Several poor outsourcing decisions had led to excessive 3PL expense. The supply chain had, (like those of many global organisations) evolved, rather than grown by design, and had hence become unnecessarily complex

The Path to Cost Reduction: Starbucks' leadership had three main objectives in mind to achieve improved performance and supply chain cost reduction. These were to: Reorganize the supply chain, Reduce cost to serve, Lay the groundwork for future capability in the supply chain. To meet these objectives, Starbucks divided all its supply chain functions into three main groups, known as "plan" "make" and "deliver". It also opened a new production facility, bringing the total number of U.S. plants to four. Next, the company set about terminating partnerships with all but its most effective 3PLs. It then began managing the remaining partners via a weekly scorecard system, aligned with renewed service level agreements.

Supply Chain Cost Management Results: By the time Starbucks had completed its transformation program, it had saved more than \$500 million over the course of 2009 and 2010, of which a large proportion came out of the supply chain, according to Peter Gibbons, then Executive Vice President of Global Supply Chain Operations.

1.12 NOTES

1.13 SUMMARY

Recapitulate that supply chain management is branch of management which apparently depicts the flow of goods and services. This includes all processes that change raw materials into final products. It also includes the active streamlining of a business's supply-side activities to maximize customer value and gain a competitive advantage in the marketplace. Supply chain covers all activities from production to product development to information systems, and attempts to centrally control or link the production, shipment, and distribution of a product. Resilient supply chain, supplier management, order management, management of inventory warehousing management workflow management, logistics; resource management, return management etc., form supply chain management for firm because it will help to achieve most of the business objectives.

1.14 KEY WORDS

• **Supplier Management:** Proper supply chain enables timely procurement of all required raw materials from supplier

- **Resilient supply chain:** They are built using processes and modern supply chain technologies that allow them to forecast, anticipate, and respond quickly to whatever risks or opportunities the future brings.
- **Supplier Management:** Proper supply chain enables timely procurement of all required raw materials from suppliers. It develops a proper network through which suppliers and business can easily interact.
- Order Management: Supply chain management can dramatically accelerate the execution of the entire order-to-delivery cycle by helping companies to more productively generate and track sales orders.
- Management of Inventory: The system makes sure all inventories are available in right quantity at right time, so that production is unhindered.

1.15 ANSWER TO CHECK YOUR PROGRESS

- 1. Supply chain management is branch of management which apparently deals with the flow of goods and services.
- Reduce Operating Expenses, Enhance Customer Satisfaction, Improve Distribution Channel, Strengthen Financial Position, Regulate Proper Inventory, Promotes Better Coordination, Order Fulfillment and Reducing Waste
- 3. Higher Efficiency Customer Retention and Experience, Better Risk Assessment and Management, Improved Relationships, Cost-Effectiveness and Qualitative Improvements
- 4. It is supply chain management that can dramatically accelerate the execution of the entire orderto-delivery cycle by helping companies to more productively generate and track sales orders.
- 5. It is a supply chain wide reorganization around a new set of principles that emphasis the need for new structures, value chain configurations, communications and information systems and a whole new mindset when it comes to how a supply chain should operate.

1.16 SELF ASSESSMENT QUESTIONS

- 1. Explain how supply chain management was taken its shape and also give latest trends
- 2. Discuss the features of supply chain management
- 3. Explain nature and scope of supply chain management
- 4. State the functions of supply chain management
- 5. Highlight the contributions of supply chain management to the development of countries
- 6. In what way supply chain management is advantageous to companies in India. Explain
- 7. Explain the concepts of supply chain management

- 8. What are the challenges of supply chain management?
- 9. Examine various Steps of Supply Chain Management process
- 10. Analyze a case of supply chain management of a company of your own choice
- 11. Case Studies: Cost Management

1.17 REFERENCES

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UNIT-2: VALUE CHAIN MANAGEMENT

Structure:

- 2.1 Introduction
- 2.2 Creation value
- 2.3 Innovation in Supply Chain Management
- 2.4 Leveraging Value Chain Management
- 2.5 Supply Chain Effectiveness
- 2.6 Supply Chain Infrastructure in India
- 2.7 Strategic sourcing
- 2.8 Notes
- 2.9 Summary
- 2.10 Key Words
- 2.11 Answer to Check Your Progress
- 2.12 Self-Assessment Questions
- 2.13 References

2.0 OBJECTIVES

After studying this unit, you should be able to:

- Define Creating value
- Sketch out the Evolution of value creation
- Differentiate company value from value creation
- Explain the Importance of create value of customers in the light of marketing strategies
- Explain various steps in strategic sourcing needed for supply chain management

2.1 INTRODUCTION

A business is an organization or enterprising entity engaged in commercial, industrial, or professional activities. Businesses can be either -profit entities or non-profit organizations that operate to fulfill a charitable mission or further a social cause. The term "business" also refers to the organized efforts and activities of individuals to produce and sell goods and services for profit. Business begins with value creation as it is imperative for the sustainability. The purpose of the organization is to create and deliver value in an efficient way so that it will generate profit after cost. Value creation is the starting point for all businesses, successful or not. This work could be mechanical or creative of course, not all work is value-creating tasks like moving rocks from one place to another, and then back. The purpose of a business is to create value through work, sell or trade it to customers, and capture some of that value as profit.

2.2 VALUE CREATION

Value Creation is the ability of companies or societies to generate wealth or profit through their economic activity. In the area of strategic management, value creation is defined as the main objective of commercial companies and their reason for being. In the economic and especially business. The aim of a company has been for the maximum possible profit. According to the theory of the company, commercial or economic organizations base their work and operation on value creation. The definition of value creation is giving something valuable to receive something else that's more valuable to you. This definition is broad and captures both costs and benefits. Further, it applies to owners, customers, and employees Value creation is the primary aim of any business entity. Creating value for customers helps sell products and services, while creating value for shareholders, by way of increases in stock price, insures the future availability of investment capital to fund operations. The importance of value creation to both the business and its consumers should now be easy to recognize. It may be noted that businesses is for value creation mainly because it provides financial well-being and keeps them to be highly competitive in the marketplace, and consumers want value creation as it provides the products and services for daily lives.

The value creation process is at the heart of integrated thinking and value creation. Strategically, the business model is a central cog in the value creation process which turns valuable resources and relationships (inputs) into results (outputs) that create value for stakeholders and society with outcomes and impact thereof.

2.2.1. Importance of create value of customers

In order to gain the trust and love of customers of company, managers should create strong ties between company brand and its target audience. It may be possible if the former not only provides quality services and functional goods but something more: ethics, the feeling of confidence and reliability, and of course, positive emotions that make communication with brand enjoyable and worthwhile. It is two times more efficient to retain existing customers than to attract new ones. In fact many have conceded this view. At the same time, only 18% of companies focus their marketing strategies on maintaining solid relationships with their existing customers.

Here are the most popular types of motivational programs any one can use via email:

- **Discounts**; a company can offer a discount to high-spending customers. The proposition may also cover multiple purchases, regularly purchased or complementary products and services. Besides, a company can propose a discount during holidays or off-season to help customers and boost your sales.
- **Special offers**; gratitude and gifts for cooperation are always welcomed. This way a company can say to the customers that, "we appreciate you as a customer and look forward to cooperating again." Further a company can offer some free goods as a bonus for customer orders or a special service level. For example, free or expedited shipping, after-hours service, decreasing a minimum order quantity, or assigning a personal manager.
- Free trials; a third of marketers say that 11-30% of people who use a trial, later become customers with a paid account. Whether a company provide traditional, customers want to check what they are investing in before buying a paid plan. This is a good opportunity to let users realize the value of product without expending resources.

- **Subscription services;** nowadays, a subscription doesn't always mean a paid software plan, but monthly delivery of retail products, from razors to food. A USA Today survey says that 25% of respondents are currently subscribed to scheduled retail deliveries, while 32% plan to sign up within six months. For example, a pet store may offer a discount when customers subscribe for regular cat food deliveries. With this service, the customer is always stocked up with daily essentials.
- **Partnering with another brand**; a company may start creating value for its customers with cobranded offers. As a partner, a manager can choose a company that complements his brand. For example, certain bank customers can get higher cash back if buying from their partner's retail website. If a company proposes relevant goods and services with this collaboration, customers will feel that the companies know their needs and care about providing excellent service.

2.3. INNOVATION IN SUPPLY CHAIN MANAGEMENT

You are fully aware of the fact that the supply base is home to the most varied sources of innovation, which will create huge competitive advantage. It may be noted that suppliers are the experts at what they do, and if they have emerged from the recession in good shape they become the experts at constant innovation and reinvention. The innovation that could transform business brings visible benefits. Innovation is the practical implementation of ideas that result in the introduction of new goods or services or improvement in offering goods or services. Innovation in Supply Chain Management and Logistics Innovation are based on getting the best suppliers and materials. Instead, companies should try to work with suppliers to innovate in safer and better ways so that they can continue to develop and deliver services and products. Supply chain companies adopt R and D to achieve the motto of fulfilling the objectives and thereby satisfying the desire of the stake holders.

2.3.1 Barriers to Supply chain.

Supply base innovation doesn't just happen, and there are a number of significant barriers that stand in the way of supply chain.

• **Protectionism;** suppliers seek to protect their investment in the innovation. They won't readily share details of what they are working on until they are ready to announce to the world, unless they believe company could help them realize their ambition, and only then provided there is sufficient trust in the relationship to do so. Suppliers want to commercialise their ideas and innovations and get a fair return. If company expects its suppliers to innovate for free or demand that they bring latest thing as part of company expectations around 'continuous improvement',

the chances are suppliers will pay lip service to this and talk to other companies who are prepared to pay.

• Lack of communication; even if parties are prepared to open up and share their plans, someone needs to ask that question and give reply to quests. Good supplier review meetings should make time for this sharing, but sharing is only beneficial if something happens next, which brings me to the final point. If a supplier brings a great idea that could add competitive advantage to the business, but the idea doesn't make it past the minutes of the meeting, then it is lost.

2.4 LEVERAGING VALUE CHAIN MANAGEMENT

In today's modern business environment, we find competitive landscape and requirements to successfully compete are evolving and shifting constantly. Experts have identified two reasons for this. Firstly rapid escalation in disruptive technology (internet) has led to increased customer demands. Secondly steady performance of the global economy over the past decade and the resulting increases to standards of living. These two factors drastically changed the way consumers' value and evaluate the goods and services at their disposal.

These changes and disruptions are affecting small businesses and large enterprises alike. With consumer preferences shifting towards features and convenience, businesses are forced to attack product development from a value perspective as opposed to taking the historically popular cost-centric approach. On the B2B front, customers are placing more emphasis on supplier competencies such as visibility, integration, and risk management. In recent years this has brought increased attention to the concept of value change management.

Value chain is defined as set of integrated activities performed to deliver a valuable product or service to a given market. Value chain is a sequence of activities that each adds value to a product, services or experience. Any activity that generates more valuable output than the cost of inputs can be value chain. These are employed in model economics at the level of industry or firm. An attempt has been made to give you an insight of valuable relating to Products;

Value chain management is a strategic business analysis tool used for the seamless integration and collaboration of value chain components and resources. VCM focuses on minimizing resources and accessing value at each chain level, resulting in optimal process integration, decreased inventories, better products and enhanced customer satisfaction. VCM was introduced in the mid-1980s by Michael Porter, a business strategy authority and longtime Harvard Business School professor. VCM has evolved into a universally applied business management strategy, and is a powerful strategic planning tool that extends from organizations to distribution and supply networks.

The value chain framework is made up of five primary activities -- inbound operations, operations, outbound logistics, marketing and sales, service -- and four secondary activities procurement and purchasing, human resource management, technological development and company infrastructure.

A value chain analysis is done when a business identifies its primary and secondary activities and sub activities, and evaluates the efficiency of each point. A value chain analysis can reveal linkages, dependencies and other patterns in the value chain.

2.5 SUPPLY CHAIN EFFECTIVENESS

Supply chain management is harnessed by the company not only to fulfill the requirement of internal but also to achieve the desired result. Supply chain efficiency is the internal standard of performance of an organization, while supply chain effectiveness is the external standard of performance. Supply chain efficiency refers to a business's ability to harness the resources at their disposal in the best way possible, so as to minimize costs and maximize profits. This is different from a supply chain's effectiveness refers to a business's ability to meet the demands of groups outside the organization. In other words it is the capability of producing a desired result or the ability to produce desired output.

Examples of Some of the best Supply Chain Management

Coca-Cola Company.

Main makers, marketers and distributors of drink concentrates and non-alcoholic syrups.

The main office is located in Atlanta, GA but their products are distributed to virtually every country in the world. Their preparation, distribution and transportation logistics are in line with a segmentation strategy for their customers when it comes to the size and presentation of their products, having an extremely successful supply chain, Coca-Cola participates in sponsorships, partnerships, and alliances; thus creating a great management and marketing of their products.

Colgate.

The main toothpaste brand made by Colgate-Palmolive, dedicated to producing, distributing and selling oral hygiene and home cleaning products since later19th century. This company keeps present all aspects of product diversity, effectiveness, optimization and customer support and it uses an effective distribution channel that encompasses all aspects of care and maintenance. The products are sold in many venues such as pharmacies, supermarkets, convenience stores and small wholesalers, thus creating an excellent impact within their distribution channels and management.

7-Eleven.

7-Eleven is an international chain of convenience stores, based out of Dallas, Texas in USA. The currently have around 58.308 in 16 different countries, most of them franchises. They are mainly focused on selling basic food items, medicine and toiletries and magazines, but this all depends on their host country. Their main stores are located throughout the United States and Asia. They supply a huge variety of customer needs 24 hours a day in most locations. Their reach, capacity and management have made 7-Eleven one of the biggest and most productive companies in the world.

Amazon.

Amazon is a US electronic commerce and cloud computing company. Their headquarters are based in Seattle, Washington and they are the largest internet-based retailer in the United States. Amazon was one of the first companies that started selling book online. Currently their range of products include selling music, videogames, shoes, clothing, luggage and many other accessories. Amazon offers about everything you can think of and their variety in offers and products along with their customer driven shopping and recommendations is a hit with customers. One of the reasons why Amazon can have such a wide spectrum of products is the fact that they are not limited by physical spaces, since they don't have actual stores. Their supply chain goes from the lowest levels of inventory, through the logistics of the order itself all they way up to an outstanding distribution chain of their products in an international scale. Amazon can currently ship close to 10 million different products. This diversity gives it an edge against competitors and makes it a perfect example of what efficient supply chain management can accomplish.

2.6 SUPPLY CHAIN INFRASTRUCTURE IN INDIA

Supply chain infrastructure basically comprises human resources, financial resources, packaging materials, warehouses, transport and communications. The infra provides essential data and consultation in each step of the interaction among supply chain partners and processes. The supply chain infrastructure consists of the assets and systems that drive the network of suppliers, manufacturers, and logistics functions. It includes the information and organizational structures that support the supply chain. Supply Chain infrastructure provides the means for chain economic entities and firms sharing a common interest to participate in a mutual exchange. A modernized and efficient supply chain improves the ease of doing business, scales down the costs of manufacturing, and accelerates rural and urban consumption growth due to better market access.

The infra in supply chain management comprises of transportation of road, rail, water ways and airways depending upon the good to be carried away.

2.6.1 Road network transports;

Roads spanning a total of 5.89 million kilometers. This road network transports 64.5% of all goods in the country and 90% of India's total passenger traffic uses road network to commute. Road transportation has gradually increased over the years with improvement in connectivity between cities, towns and villages in the country. According to the Ministry of Roads, Transport and Highways (MoRTH), there are 599 National Highways in India. Over a period of time, the numbering of National Highways in India has been renewed. The GOI has created Bharathmala, under which every effort is made to provide good roads all over, so that goods and services also can move too far off places in the country and outside. The biggest challenge is (poor) infrastructure. More can be accomplished if there's better infrastructure and the ability to scale up to get products to the villages. For example, the Food Security Bill that has been passed needs to be implemented. How to get rice and food grains to the villages remains an SCM challenge. There's going to be a huge opportunity once infrastructure bottlenecks are removed. This country has the potential to come up as a supply chain center of excellence for the world.

2.6.2 Railway stations;

These are often unable to cope with the large volume of goods transported. Merchandise at railway stations and factories are often left waiting for transport due to delayed turn-around times. The Indian rail network has 123,542 km of total tracks over a 67,415 km route and about 9300 stations with 12,147 trains.

Foreign and local companies are working contractually with the government to finish the first phase of the Eastern Corridor by mid-2018. More freight corridors are planned, and offer good opportunities for large contractual collaborations.

2.6.3 Port connectivity in India;

India's ports 12 in number handle 95 percent of the country's trade by volume, playing a key role in international supply chains. India currently permits 100 percent FDI for the construction and maintenance of ports. Connectivity is one of the critical enablers for ports with latest technology and the end-to-end effectiveness of the logistics system drives competitiveness for the maritime industry as well. India's hinterland connectivity is mainly based on surface transport i.e. road and rail, wherein, domestic waterways (coastal shipping and inland waterways) playing a very limited role.

Pipelines are predominantly used only for transporting crude oil, refined petroleum products and natural gas.

In India, smooth connectivity to ports is even more important as the cargo generating centers are mainly in the hinterland instead of in the coastal region. Under Sagarmala Programme, endeavor is to provide enhanced connectivity between the ports and the domestic production/consumption centres. The nine coastal states of Maharashtra, Karnataka, Kerala, Goa, Gujarat, Tamil Nadu, Andhra Pradesh, Odisha, and West Bengal host the majority of seaports in India.

2.6.4. Civil Aviation Infrastructure;

During the last decade, significant changes and improvements have been observed in logistics management. Its growth in different fields proves the necessity to continue investigating the correlation between transportation and the supply chain on the examples of certain companies. Airports Authority of India manages a total of 137 Airports, which includes 103 Domestic Airports, 24 International Airports, and 10 Customs Airports. AAI is responsible for creating, maintaining, upgrading, and managing civil aviation infrastructure in India and works under the Ministry of Civil Aviation. UDAN, a regional connectivity scheme developed smaller regional airports for easy access to aviation. International Airports in India also aid moving goods and services to various destinations in short period of time.

With the new reforms coming into play, a gradual resolution of these problems seems imminent. In the last three years, India's supply chain sector has seen an influx of capital, both foreign and domestic. Firms like Future Supply Solutions have raised almost US\$2 billion (Rs 130 billion) in investments from domestic and foreign channels.

2.6.5 Warehouse development;

As you know, warehouses today have transformed into a new breed of fulfillment centers. These centers are chosen based on the location, such that they provide ecommerce businesses access to the maximum sites at the lowest transportation costs.

In the first quarter of 2017, international trade and e-commerce fulfillment drove the absorption of 53.8 million square feet of warehouse and distribution space in the US. This level of absorption was well above the quarterly average of 49.3 million square feet of the last seven years. According to GLOBECON Freight Systems, warehousing and storage was a \$22 billion industry in 2015, with by almost 10,000 businesses in the US, employing over 600,000 people. Another \$9 billion and 60,000 employees were engaged in handling order fulfillment.

Multinational firms in construction and related industries can also take advantage of investment opportunities in India's ports, roads, and warehouse development. The corporations need to build larger distribution centers into the interiors to consolidate access and move larger ones on efficient and appropriate vehicles. The supply chain industry has a cascading impact on almost all aspects of trade and retail. As India opens its economy further, financing the improvement of this linkage sector is vital for business growth. A modernized and efficient supply chain improves the ease of doing business, scales down the costs of manufacturing, and accelerates rural and urban consumption growth due to better market access.

CHECK YOUR PROGRESS

- 1. What is Value Creation?
- 2. What is Value chain?
- 3. What a Supply chain infrastructure comprises of ?
- 4. What is Supply Chain Strategy?
- 5. What are the barriers of supply chain?

2.7 STRATEGIC SOURCING

Every company in supply chain management strives hard to achieve continuous improvement with lowest cost. Strategic sourcing is the process of developing channels of supply at the lowest total cost, not just the lowest purchase price. It expands upon traditional organisational purchasing activities to embrace all activities within the procurement cycle, from specification to receipt, payment for goods and services to sourcing production lines where the labor market would increase firms' ROI. Strategic sourcing processes aim for continuous improvement and re-evaluation of the purchasing activities of an organisation.

In the services industry, strategic sourcing refers to a service solution, sometimes called a strategic partnership. It is specifically customized to meet the client's individual needs. In a production environment, it is often considered one component of supply chain management. Modern supply chain management professionals have placed emphasis on defining the distinct differences between strategic sourcing and procurement. Procurement operations support tactical day-to-day transactions such as issuing purchase orders to suppliers, whereas strategic sourcing represents to strategic planning, supplier development, contract negotiation, supply chain infrastructure, and outsourcing models.
The term "Strategic sourcing" was popularized through work with a variety of blue chip companies by a number of consulting firms in the late 1980s and early to mid 1990s. This methodology has been followed for procurement departments in large, sophisticated companies such as Fortune 500 companies. It can be defined as a collective and organized approach to supply chain management. It defines the way information is gathered and used so that an organization can leverage its consolidated purchasing power to find the best possible values in the marketplace Strategic sourcing is the process of developing channels of supply at the lowest total cost, not just the lowest purchase price. It expands upon traditional organization to receipt, payment for the purchase. Strategic sourcing is organized because of the necessity of some methodology or process. It is collective because one of the most essential necessities for any successful strategic sourcing attempt is of receiving operational components, apart from the procurement, engaged in the decision-making and assessment process.

The strategic processing has 7 step approaches. These steps are explained below;

1 Survey on Total Expenditure.

The first three steps involved in the strategic sourcing are carried out by the sourcing team. In this first stage, the team needs to do a complete survey on the total expenditure. The team ensures that it acknowledges every aspect regarding the spend category itself. The five major regions that are analyzed in the first stage are as follows;

- a) Complete previous expenditure records and volumes.
- b) Expenditures divided by items and sub items.
- c) Expenditures by division, department or user.
- d) Expenditures by the supplier.
- e) Future demand projections or budgets.

2. Supplier Market Assessment

This step includes frequent assessment of the supplier market for pursuing substitute suppliers to present incumbents. A thorough study of the supplier marketplace dynamics and current trends is made. The major element of the key products design is should-cost. Along with it, an analysis on the major suppliers' sub-tier marketplace and examination for any risks or new opportunities are also important.

3 Supplier Survey

This step is developing a supplier analysis for both incumbent and potential substitute suppliers. This analysis assists in finding out skills and abilities of a supplier. Data collected from incumbent suppliers is used for verifying spend information that suppliers have from their sales systems. The survey team considers the above-mentioned areas for gathering information. The areas are include–feasibility, capability, maturity and capacity

The analysis is to examine the potential and skills of the market to satisfy the customer demands. Further it helps in the examination made at the initial stage mainly to find out if the proposed project is feasible and can be delivered by the identified supply base. Furthermore, it also supplies an initial caution of the customer demands to the market and enables suppliers to think about how they would react to and fulfill the demand. The motto behind is to motivate the appropriate suppliers with the right structural layout to respond to the demands.

4 Building the Strategy

This step comprises constructing the sourcing strategy. The merger of the first three steps supports the necessary elements for the sourcing strategy. For every region or category, the strategy depends on answering the marketplace vs supplier, clients supportive for testing incumbent supplier relationships and substitutes to the competitive assessment. Generally, these substitutes are opted when a purchasing firm has little leverage over its supply base. They will depend on the belief that the suppliers will share the profits of a new strategy.

5 RFx Request

Mostly, the competitive approach is applied in general cases. In this approach, a request for proposal or bid needs to be prepared (e.g., RFP, RFQ, eRFQ, ITT) for most spend classifications or groups. This defines and clarifies all the needs for all prequalified suppliers. The request should comprise product or service specifications, delivery and service requirements, assessment criteria, pricing structure and financial terms and conditions.

In this stage, an interaction plan needs to be executed to allure maximum supplier interest. It must be ensured that each and every supplier is aware that they are competing on a level playing field. After sending the RFP to all suppliers, it is to be confirmed that they are given enough time to respond. In order to motivate greater response, follow-up messages may also be sent.

6 Selection

This step helps manager concerned in selecting and negotiating with suppliers. The sourcing team is advised to apply its assessment constraints to the responses generated by the suppliers.

The manager sees the limitation of RFP response if required. In case the response found to be correct, settlement process is conducted first with a larger set of suppliers and then shortlisted to a few finalists. If the sourcing team utilizes an electronic negotiation tool, large number of suppliers can sustain in the process for longer duration, giving more wide suppliers a better opportunity at winning the enterprise.

7. Communication with New Suppliers;

After informing the winning supplier(s), they should be invited to take part in executing recommendations. The execution plans vary according to the scale of switches the supplier makes. A communication plan will be set up, including any modification in specifications and improvements in delivery, service or pricing models. These tend to be communicated to users as well. As we know, the company gains immensely from this entire process of creating a communication plan, making some modifications according to the customer demand and further forwarding this to the customer. This process should be acknowledged by both the company and the supplier.

For new suppliers, the company need to construct a communication plan that copes with the alteration from old to new at every point in the process engaged by the spend category. The sections that have an impact of this change are the department, finance and customer service. The task is to grasp the intellectual capital of the sourcing team, which has been developed within the seven-step process; so that it can be used the next time that category is sourced.

2.8 NOTES

_____ _____ _____ _____ _____ _____ 2.9 **SUMMARY**

To sum up that business entity whether for profit or nonprofit organization strive hard for sustainability. For this purpose business begins with value creation. The purpose of the organization is to create and deliver value in an efficient way so that it will generate profit after cost. Value creation is the starting point for all businesses, successful or not. Value creation is the primary aim of any business entity. Creating value for customers helps sell products and services, while creating value for shareholders, by way of increases in stock price, insures the future availability of investment capital to fund operations.

Supply chain companies adopt R and D to achieve the motto of fulfilling the objectives and thereby satisfying the desire of the stake holders. Companies highly rely upon Value chain, which is a sequence of activities that each adds value to a product, services or experience. Any activity that generates more valuable output than the cost of inputs can be value chain. This proved very much in the success story of a few leading companies. To be very effective , companies follows good practices of SCM and thereby companies are not only benefited by the reduction of expenditure, but also by incrementing profitability in investments, commercial growth and reducing overall cost of doing business. The companies using 7 steps of strategic sourcing would help developing channels of supply at the lowest total cost, not just the lowest purchase price.

2.10 KEY WORDS

- **RFx Request;** in this approach, a request for proposal or bid needs to be prepared (e.g., RFP, RFQ, eRFQ, ITT) for most spend classifications or groups.
- Efficiency mantra; in supply chain organization is possible through mantra: Automate. Simplify. Accelerate.
- Effectiveness of supply chain; it is the external standard of performance.
- Value creation; it is giving something valuable to receive something else that's more valuable to you.
- **Hyperautomation;** is that everything that can be automated will be automated. Technologies such as machine learning, artificial intelligence and robotic process automation can all be deployed to facilitate or automate tasks that originally required some form of human judgment or action.
- Strategic sourcing processes; it aim for continuous improvement and re-evaluation of the purchasing activities of an organisation.
- Value chain; it is a sequence of activities that each adds value to a product, services or experience.

2.11 ANSWER TO CHECK YOUR PROGRESS

1. Value Creation is the ability of companies or societies to generate wealth or profit through their economic activity.

- 2. Value chain is defined as set of integrated activities performed to deliver a valuable product or service to a given market.
- 3. **Supply chain infrastructure** comprises human resources, financial resources, packaging materials, warehouses, transport and communications.
- 4. **Supply Chain Strategy;** A strategy for how the supply chain will function in its environment to meet the goals of the organization's business and organization strategies.
- 5. Protectionism and lack of communications are the barriers of supply chain

2.12 SELF ASSESSMENT QUESTIONS

- 1. Define the Creating value and give the meaning thereof
- 2. Differentiate company value from value creation in supply chain management
- 3. Explain the Importance of create value of customers in the light of marketing strategies
- 4. Explain various steps in strategic sourcing needed for supply chain management in the corporate world

2.11 **REFERENCES**

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UNIT-3: SUPPLY CHAIN STRATEGIES

Structure:

3.0.	Objectives
3.0.	Objectives

- 3.1 Introduction
- 3.2 Supply Chain Solution
- 3.4 Distribution Management
- 3.5 Elements of Distribution Management
- 3.6 Distribution strategy
- 3.7 Role of Distribution Management in supply chain management
- 3.8 Relationships in supply chain
- 3.9 Conflicts of interest
- 3.10 Notes
- 3.11 Summary
- 3.12 Key Words
- 3.13 Answer to check your progress
- 3.14 Self -Assessment Questions
- 3.15 References

3.0 OBJECTIVES

After studying this unit, you will be able to;

- Discuss the significance of supply chain solutions in company to achieve its endeavors
- Discuss the importance of distribution management in buying companies
- Bring out the utility of distribution of strategies in the business, which can make the supply chain effective.
- Bring out the effectiveness of the relationship management in Supply Chain activities
- List the advantages and challenges of Distribution Management

3.1 INTRODUCTION

In the proceeding units, hope you have learnt about various concepts of supply chain management. In fact those units also gave you the relevant information of supply chain innovation, value creation, value chain management, effectiveness of supply chain companies and SCM strategic sourcing. Under the Supply Chain Solutions, the companies marry business process, technology and the company culture to develop strategies and a plan so that a company can implement business improvements that get near-term and long-term results. In fact the Supply Chain Solution is essential for a smooth manufacturing process, and it will help companies concerned to get ready to deliver goods and services to the needy based on rely on supply partners The company concerned has to harness the distribution, so that goods reach the customers easily. The people involved in this ensure the work assign judiciously.

You are very well aware that distribution is the process used to oversee the movement of goods from supplier to manufacturer to wholesaler or retailer and finally to the end consumer. It is needless to say that numerous activities and processes are involved, including raw goods, vendor management, packaging, warehousing, inventory, supply chain, logistics and sometimes even block chain. Good distribution strategies need to be put in place so that company can maximize revenue and profits. In an ideal supply chain relationship, both customers and suppliers get connected in ways that allow them to easily exchange information, demand data, and the visibility of status. Nature of traditional relationships between suppliers and customers in supply chain needs to be changed.

3.2 SUPPLY CHAIN SOLUTIONS

The supply chain operations more help reducing risk. It may be noted that entrepreneurial spirit, global line of transportations services of a company in to the sphere combined with superior

customer service delivers a competitive advantage for the customers worldwide. Supply Chain Solutions makes sense of how, when and where to buy the components the company need to deliver product to its final destination.

3.2.1 Benefits of Supply Chain Solution to Small Businesses;

Effective supply chain solutions assist small businesses in reducing their expenses, and increasing the efficiency of their manufacturing operations, so as to enabling them to cope up with increasing demand. Supply Chain Solution is essential for a smooth manufacturing process, and it will help companies concerned to get ready to deliver goods and services to the needy based on rely on supply partners. The benefits of supply chain solutions to small business can be understood effectively with the help of the following factors.

a. Increase in production

A dependable communication line established by the company between management, suppliers, and consumers via the use of supply chain solutions is a great cushion to promote export. Supply chain solutions that are effective and efficient assist to build strong connections with suppliers and customers, which help in the elimination of delays and the increase in production.

b. Enhanced Effectiveness

Resource wastage in the manufacturing process unnecessarily increase manufacturing costs. Inadequate preparation is often to blame. When a business uses supply chain management, only actions that have a positive impact on the bottom line are promoted. As a result organization's operations run smoothly, and the output meets the company's requirements.

c. Profit Maximization

Increasing profitability may be achieved in a number of ways. Supply chain management reduces waste in the manufacturing, storage, and logistics processes. For example, lower transportation costs leads to improving efficiency which results higher earnings. When a company's turnover rate rises, earnings rise along with it. A company's increased production capacities undoubtedly reap benefits from economies of scale in areas such as transportation, storage, and buying as well as in manufacturing.

d. Shipping Optimization

According to Professionals Logistics Report, transportation expenses rose by 8 percent between 2017 and 2018. As shipping prices rise, supply chain managers must focus on shipping optimization. Small packages, big purchases, and other delivery situations may all benefit from identifying the

most cost-effective shipping options. Every company strives hard to save costs for the good of business, as the same may be passed on to customers for increasing customer satisfaction.

e. Increased Customer Satisfaction

Every customer has the ability to purchase high-quality products; also they want companies to deliver things on time at a fair price. Businesses cultivate customer loyalty when consumers place their trust in the company's capacity to provide high-quality products at competitive rates on a consistent basis. Small companies are able to expand their operations as and when the pleased consumers refer them to others.

f. Less Risk Factors

Companies conduct analysis of both large-scale and fine-grained supply chain data. The analysis reveals not only possible hazards, but also allowing businesses to develop contingency plans in case of unforeseen events. Companies may prevent bad consequences by being proactive rather than reactive when supply chain interruptions, quality control problems, or other issues occur. Having a clear understanding of hazards companies may also help businesses operate more efficiently.

3.3 DISTRIBUTION MANAGEMENT

You are fully aware of the fact that goods produced will have no sense unless they are distributed effectively. As a student of management you have already understood the importance of distribution management. It is the process used to oversee the movement of goods from supplier to manufacturer to wholesaler or retailer and finally to the end consumer. Numerous activities and processes are involved, including raw good vendor management, packaging, warehousing, inventory, supply chain, logistics and sometimes even block chain.

3.3.1 Distributor

A distributor is an entity that supplies products to retailers and other businesses that sell directly to consumers. Take, for example, a wholesale rice distributor that supplies rice to restaurants, provision stores and sometimes directly to customers if operation scale is high(Midday meal scheme of the Government being administered in state run and aided schools)

3.3.2 Distribution Strategy

It is a strategy or a plan to make a product or a service available to the target customers through its supply chain. Distribution strategy designs the entire approach for availability of the offering starting taking inputs from what the company communicated in marketing campaigns to what target audience is to be served. A company can decide whether it wants to serve the product and service through their own channels or partner with other companies to use their distribution channels to do the same. Some companies can use their own exclusive stores for their own products or can use available retail chains to sell their products. It can be combination of both. Many companies these days also use online exclusive channels to sell their products or services.

3.3.3 Importance of Distribution Strategy

Distribution Strategy is precisely the strategy deployed by a company to make sure the product/service can reach the maximum potential customers at minimal or optimal distribution costs. A good distribution strategy can maximize revenue and profits but a bad and unplanned distribution strategy can lead not only to losses but also helping the competitors get the advantage through the opportunity in the market which buyer company created.

3.3.4 Distribution Strategies in Supply Chain Management:

Distribution management has long been a big business challenge. Raw goods can arrive too early and go bad before they are used. or, finished products can arrive too late, allowing a competitor to seize the lion's portion of market share. Effective distribution is so crucial that sub-discipline practices became an integral part of supply chain and inventory management, such as just in time inventory. Overall, successful distribution involves many moving parts and methods requiring a strong distribution management strategy fueled by real-time information

Other examples include a produce distributor that supplies lettuce, tomatoes and other produce to restaurants; and a pharmaceutical distributor that supplies a variety of prescription-controlled drugs to pharmacies.

3.3.5 Distribution vs. Logistics

You are fully aware of the fact that Logistics refers to the detailed planning and processes involved with the effective supply and transportation of goods. Logistics includes activities and processes such as supply management, bulk and shipping packaging, temperature controls, security, fleet management, delivery routing, shipment tracking and warehousing. Logistic is perhaps easiest to think of logistics as physical distribution.

Whereas, distribution is a management system within logistics is focused on order fulfillment throughout distribution channels. It is the chain of agents and entities that a product or service moves through on its way from its point of origin to a consumer. Examples of distribution channels include ecommerce websites, wholesalers, retailers and 3rd party or independent distributors. Distribution

includes activities and processes such as consumer or commercial packaging, order fulfillment and order shipping. In short, distribution is most easily understood as commercial or sales distribution.

3.3.6 Challenges of Distribution Management

Distribution challenges can arise from a variety of disruptions. Now let us make an effort to sunderstand how such challenges occur, and they are;

- Natural disruptions include severe weather events, raw material shortages (e.g. bad crop years), pest damages, and epidemics or pandemics.
- Human disruptions include riots, protests, wars and strikes.
- Transportation disruptions include transport vehicle disrepair, maintenance downtimes and accidents, as well as delayed flights and restrictive or new transportation regulations such as those regularly seen in trucking.
- Economic challenges include recessions, depressions, sudden drops or increases in consumer or market demands, new or changes in fees or compliance costs, changes in currency exchange values and payment issues.
- Product disruptions include product recalls, packaging issues and quality control issues. Buyer disruptions include order changes, shipment address changes and product returns.

3.3.7 Channels of Distribution

There were historically three distribution channels:

- Wholesaler. Goods are distributed from manufacturers to wholesalers in this channel. For example, liquor distillers distribute their brands of liquors to wholesalers.
- Retailer. Goods are distributed from manufacturer or wholesaler to retailers. For example, big
 name designer clothing and accessories are distributed to higher end retailing chains such as
 Neiman Marcus, Nordstrom and Macy's.
- Distributor. This channel moves goods from the source or manufacturer to an authorized distributor. For example, a Ford factory distributes various Ford makes and models to authorized Ford dealerships for sale to consumers or company fleets.

E-commerce.

This is the recent and most disruptive distribution channel wherein goods and services are represented virtually online and then distributed directly to the buyer. Ecommerce as a fourth channel, which has led to rapid changes and makes distributors rethink their traditional strategies.

3.4. ELEMENTS OF DISTRIBUTION MANAGEMENT

The elements of distribution management systems are the steps involved in getting the product from the manufacturer to the end customer. This include : supply chain, block chain, logistics, a purchase order and invoicing system, vendor relationship management (VRM), customer relationship management (CRM), an inventory management system (IMS), a warehouse management system (WMS) and a transportation management system (TMS).

3.4.1 Choosing a Distribution Management System

Choosing the right distribution management system for your organization depends a great deal on your organization's distribution goals and challenges, and the distribution models and channels your company uses. But as a general rule, companies should evaluate: Ease of integration and compatibility with legacy systems, scalability and elasticity, security, data management and analytics, including real-time data streaming and ecosystem data-sharing and Adaptability, whether the system is agile enough to accommodate the rapid changes needed to overcome obstacles or seize new opportunities.

3.5 DISTRIBUTION STRATEGY

The supply chain companies are required to deploy the required process such that products/ services are available to the end users effectively.

3.5.1 Definition

Distribution Strategy is defined as a comprehensive process of making products and services available to businesses and target customers for their use effectively. The current market conditions for any goods or commodities have designed, such that it is to operate at the global level. For this particular reason brands are constantly trying to broaden their target markets. When it comes to increasing one's customer base there are two primary aspects to look into, marketing and distribution. Companies concerned evolve Distribution Strategy based on the conditions at micro and macro level.

3.5.2 Objectives Distribution Strategy

The objectives of distribution strategy are

- Movements of Goods
- Availability of Goods
- Protection of Goods
- Cost Reduction

Customer Satisfaction

3.5.3 Types of Distribution Strategies

-Let us understand some of the important distribution strategies adopted by the companies, and they are as under;

1. Intensive Distribution

The purpose of intensive distribution strategy is to make a product available at every outlet plausible. In other words, intensive distribution is to reach as much of the market as possible. Businesses that engage in mass marketing may prefer the intensive distribution method. Both fast moving consumer goods and consumer durable products are great candidates for intensive distribution.

An intensive distribution strategy is commonly undertaken by the company when there are many competitors for a product. Further, if a specific distributor does not supply the product a customer will likely purchase the product from a competitor instead. If increased product availability will result in more sales, Intensive distribution is an ideal strategy for a business to choose.

2. Exclusive Distribution

Certain companies prefer to work with sole exclusive distributors concerning their products, so that such companies reach the end customers easily. Exclusive distribution is useful for companies that deal with high value goods having an excellent brand reputation. Exclusive distribution is preferable for businesses that customers are willing to travel to and have a high emotional investment there on. For example, a luxury clothing brand may only have storefronts in select regions, catering to a customer base that has the time and money needed to acquire their products.

Exclusive distribution is beneficial for avoiding competition in the market. Due to an exclusive agreement made between distributors and the brand, distributors are not at risk of partnering with competing brands. With a decreased need to focus on its distribution base, the brand can instead focus on its marketing initiatives and promotional activities without any hassel.

3. Selective Distribution

It is clear from the above that intensive distribution targets all outlets available and exclusive distribution uses a sole distributor. Selective distribution occurs when a limited number of selected outlets are chosen. The selective distribution strategy is an ideal choice for businesses that are looking for a middle point between intensive and exclusive distribution strategies.

4. Direct Distribution

Direct distribution can refer to a very short supply chain process. Direct distribution takes place when a business sends an item directly to an end customer. Alternatively, e Commerce merchants and retail businesses commonly utilize direct distribution methods. Direct distribution is not only much more cost efficient but also less time consuming than indirect distribution methods.

5. Indirect Distribution

Generally a product going directly from a supplier to an end customer. In case of indirect distribution product travels between multiple providers. As a result, indirect distribution methods generally result in a longer supply chain. As the global supply chain expands and grows, indirect distribution is becoming more widespread. In fact, it is not unusual for a product to go through dozens of distribution centers throughout its supply chain journey.

3.6 ROLE OF DISTRIBUTION MANAGEMENT IN SUPPLY CHAIN MANAGEMENT

- Supply chain distribution is required to balance the supply and demand. The distribution strategy should be capable to handle market changes, including supply disruptions and increase in demand. The distribution chain aims to reduce the number of transactions needed to get a product from supplier to customer.
- A distribution network must be flexible, responsive, and efficient to take your warehouse inventory to the next level and keep your business competitive in this ever changing world of digital innovations.
- The fully integrated distribution functionalities offer end-to-end business process support to improve service delivery and enhance customer experience with the help of reduced transportation costs.
- The distribution and transportation management solutions with real-time monitoring of fleet will help buyer company understand every aspect of inventory and optimize warehouse operations so that the company can stock, pick, and fulfill orders more efficiently. From strategic analysis to automating business operations and from real-time insight to optimizing the purchasing process
- The buying company can streamline everything right from hiring the workforce, inventory management, packaging, and other operations to ensure a steady flow of the products.
- Working within tight margins and during peak season needs a sophisticated distribution management system that can forecast demand to ensure the swift delivery of items.

• Distribution management helps stock the products in advance so that when the order is placed, the products are shipped immediately. Every company has its own distribution model, but the following elements are fundamental

3.7 RELATIONSHIPS IN THE SUPPLY CHAIN

It may be noted that supply chain would highly meaningful and effective, only when there is good relationship. The term "relationships" covers a lot of ground in supply chain management. There are strategic relationships, tactical relationships, transactional relationships, internal relationships, and possibly more in supply chain. There are also relationships among members of the supply chain community. A supply chain is a network between a company and its suppliers who are engage to produce and distribute a specific product, and thereby the supply chain represents the steps it takes to get the product or service to the customer. Supply chain management is about more than making sure all the different links in your network are operating in the right way. Relationships play a central role in supply chains and if organisations don't get them right, they'll feel the ramifications all the way from suppliers to customers.

3.7.1 Handfield's view on Relationship in Supply Chain Management:

According to Handfield's 30 years of research in the world of supply chain, the key to management "is actually about managing inter-organizational relationships and often involves multiple enterprises. He has a slightly different take on the three flows of supply chain. While professionals are usually taught that these three flows include materials/products, information, and finances' He says relationships are really important. Relationships as the glue that holds supply chains together. Further explains, trust is a team that designates a series of small promises kept. A company can attain expected performance when such companies first start working with another party, whether it's a supplier or a distributor. Although managing relationships may not be at the top of company's supply chain list, also explains that they really matter when something goes wrong. Additionally, these relationships are also about finding ways to continuously improve performance and take cost out of the supply chain and drive innovation, drive new technology besides dealing disruption tactfully.

CHECK YOUR PROGRESS

- 1. What is **Distribution Strategy**?
- 2. What is the purpose of Intensive Distribution?
- 3. Who are the parties in traditional distribution channel?

- 4. What is Selective distribution ?
- 5. What are the objectives of distribution strategy?

3.8. CONFLICTS OF INTEREST

For some reason, there's a peculiar notion out there that all business services ought to be considered consulting. In our view, that's ludicrous. Organizations whose revenue streams are derived from performing service, whether warehousing or running IT departments aren't really consultants, either. There are lots of reasons to make use of consultants. Here are some:

- Shortage of internal resources reduction analysis and implementation
- Lack of specific internal experience
- New geographic operations
- New functional responsibilities
- Need for independent review of operations, decisions, and/or alternatives
- Solutions outside of internal political dynamics
- Desire for synthesis of multiple industry and functional experiences
- Availability of experience with analytic or decision- support tools
- Exposure to experience with service providers
- Experience with specific technology solutions, software, hardware, or both
- Knowledge of and access to best practices
- Track record of creativity in solution development

3.9 NOTES

_____ _____ _____ _____ _____ _____ _____ _____

3.10 SUMMARY

You know that Supply chains cover all activities from production to product development to information systems needed mainly to direct these organizations the system and attempt to centrally control or link the production, shipment, and distribution of a product. It is needless to say that it is a network of facilities and distribution options which performs functions such as procurement of materials, transformation of these materials into intermediate and finished products, and distribution of these finished products to customers. Supply Chain Solution is essential for a smooth manufacturing process, and it will help companies concerned to get ready to deliver goods and services to the needy based on rely on supply partners The company concerned has to harness the distribution, so that goods reach the customers easily. Effective supply chain solutions assist small businesses in reducing their expenses, and increasing the efficiency of their manufacturing operations, so as to enabling them to cope with increasing demand. It is the process used to oversee the movement of goods from supplier to manufacturer to wholesaler or retailer and finally to the end consumer. Numerous activities and processes are involved, including raw good vendor management, packaging, warehousing, inventory, supply chain, logistics and sometimes even block chain.

3.11 KEY WORDS

- **Tactical relationships** can be a source of opportunity for the supplier and provide mutual value with a group of customers that the company might otherwise lose to competition.
- **Strategic Relationships** in Business; A strategic partnership is defined as a relationship between two companies, usually formalized by several business contracts.
- **Distribution Strategy**: It is a strategy or a plan to make a product or a service available to the target customers through its supply chain
- **Distributor;** A distributor is an entity that supplies products to retailers and other businesses that sell directly to consumers
- **Direct distribution** takes place when a business sends an item directly to an end customer.

3.12 ANSWER TO CHECK YOUR PROGRESS

- 1. **Distribution Strategy**: It is a strategy or a plan to make a product or a service available to the target customers through its supply chain
- 2. **Intensive Distribution**; The purpose of intensive distribution strategy is to make a product available at every outlet plausible
- 3. Wholesaler retailer and distributor
- 4. Selective distribution occurs when a limited number of selected outlets are chosen.
- 5. The objectives of distribution strategy are Movements of Goods, Availability of Goods, Protection of Goods, Cost Reduction and Customer Satisfaction

3.13 SELF-ASSESSMENT QUESTIONS

- a) What is a supply chain solution? Discuss its significance in company to achieve its endeavors
- b) Examine the benefits of supply chain solutions to small business entrepreneurs

- c) Discuss the importance of distribution management in buying companies
- d) Bring out the utility of distribution of strategies in the business, which can make the supply chain effective.
- e) Explain the essence of a good distribution strategy in Indian supply chain companies
- f) Highlight the effectiveness of the relationship management in Supply Chain activities

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UNIT-4: SUPPLIER RELATIONSHIP MANAGEMENT

Structure:

4.0	Objectives
4.1	Introduction
4.2	Developing Relationships
4.3	Vendor or supplier conflicts
4.4	Vendor management
4.5	Vendor Management Process
4.6	Techniques and Best Practices for Effective Vendor Management
4.8	Vendor Relationship Management Strategies
4.9	Case Study
4.10	Notes
4.11	Summary
4.12	Key Words
4.13	Answer to check your progress
4.14	Self-Assessment Questions
4.15	References

4.0 **OBJECTIVES**

After studying this unit, you will be able to;

- Discuss the relevance of relationship in supply chain activities
- Examine the general reasons for conflict of interest between buying companies and vendors.
- > Define vendor management and explain various parts of vendor management process
- Suggest an organization to build Strong Vendor and Supplier Relationships and thereby enable it gain competitive advantage

4.1 INTRODUCTION

Good relationship between vendors and suppliers is utmost important, as they provide critical service for any business. The selection, cultivation and building of vendor and supplier relationships should be a continuous process that strives to balance the business needs with the needs for partners. Having healthy relationships with these vendors help ensure that shelves are healthily stocked with great products that bring delight to the customers. Building trust provides the cornerstone of vendor or supplier relationship.

As already stated, the vendors and the suppliers' provide a critical service for any business. This service allows business to focus on building products or services that add value to your customers. Vendor and supplier relationships are a delicate and highly sensitive between the businesses best interests and the sometimes competing interests of suppliers. Strategic Relationship Management is an advanced form of supplier relationship management that is widely considered advantageous for both suppliers and buyers. It's this strategic approach that helps companies develop mutual awareness of what's going on between them, find effective ways to communicate, and resolve issues efficiently. One thing is clear: all parties need to receive mutual benefit from the relationships. This is an important dynamic as it creates healthy vendor and supplier relationship long run, which will be achieving competitive advantage.

4.2 DEVELOPING RELATIONSHIPS

In any business, relationships really matter, so also supply chain. So much so that it's vital to develop good vendor and supplier relationships continuously. The foundation for these relationships includes the following:

• **Respect:** Relationships are built on mutual respect. If you don't respect a vendor or supplier than the relationship will be doomed to fail.

- **Trust**: Building trust provides the cornerstone of your vendor or supplier relationship. Trust becomes important when times get tough.
- **Mutual Benefit**: Relationships need to provide benefits to both parties. Without mutual benefits the partnership will be on shaky ground since the incentives to stick around are lacking.
- **Fairness and Honesty**: Fair and honest partners will always win out in the long run. Any short term gain realized by lying, cheating or taking advantage of a partner will tarnish the long term relationship and destroy trust.

Without these components, a vendor or supplier relationship will be challenging to maintain and will certainly descend into a bad situation over time. Remember all of these components must be present because they feed off each other and allow the relationship to be productive instead of a chore.

Vendor/supplier relationships apply to all sorts of businesses, from e-commerce startups to brick and mortar bakeries and affiliate marketers. Example, an affiliate is someone who promotes a product of their choice to an audience. The affiliate makes money through commissions when they make sales of the product or service. The vendor in this relationship would be the affiliate network as they facilitate relationships between marketers and suppliers. There are many facets of a vendor or supplier relationship to consider when negotiating terms. These facets revolve around the following:

- The business person, having launched into a deal, need to understand the true benefits a particular vendor or supplier gave them.
- A mutually beneficial relationship requires both parties to understand what each one brings to the partnership.
- Businesses person consider price and time will matter while other times maybe turnaround is hot button issue. The business person need to understand how vendor and supplier contribute to the business and thereby plays into core business needs.
- Vendors and suppliers can promise a lot but never deliver. This is especially true for small vendors that are drive up the price of (a company's shares) in order to gain a financial advantage their capabilities.
- Be aware of the particular challenges that your company may apply to a supplier so that you can judge their ability to deliver.

4.3 VENDOR OR SUPPLIER CONFLICTS

All relationships have conflict no matter how good they are. Always try to avoid conflict but alert and recognize when conflict is present. A good vendor or supplier relationship will be able to withstand some amount of conflict as long as both parties want to resolve the conflict in a productive way. Frequently, a vendor or supplier relationship will disagree when one of the parties decides to take advantage of the other. Taking unfair advantage of a situation is a short sided approach to building a lasting business. Again, its fine to negotiate hard get the best deal but it's also wise to understand the implications. Resolving conflict is never easy. In fact, most of us shy away from dealing with conflict until it hits the point where the conflict becomes unavoidable. Some of the most common vendor or supplier conflicts include:

- Late payments: Everyone makes late payments. As a company, it won't keep mum payment issue by just ignoring those accounts receivable calls. It is wise to bring it to the notice of vendor or supplier about it.
- **Product returns:** Products can sometime come to you damaged or defective. When this happens, you vendor or supplier should be notified right away so corrective measures can be taken. Handle any product returns with care and respect since a good vendor will want to correct the issue as soon as they can.
- **Specification misunderstandings:** Subcontracting can be a tremendous asset to a company if the work to be performed is properly specified. When specification misunderstandings creep in, strive to not lay blame but rather get to the root of the matter as a team.
- Late Delivery: Chronic delivery problems are a telling sign that your vendor or supplier is struggling to meet your demands. This problem can be sorted out in a variety of ways depending on the root of the problem. Discuss the late delivery issues with your supplier by looking past the late delivery and figure out why the deliveries are late.
- **Poor product performance:** Product performance can be affected by many things. Most vendors and suppliers are constantly looking for ways to reduce their costs while still maintaining a high level of quality and performance. Sometimes, they miss an important parameter that they feel is a nice to have but for your product, is critical to have. This is why proper performance specifications should be agreed upon up front. That way, any process change can be compared to what your requirements are.

4.4 VENDOR MANAGEMENT

A vendor is a party in the supply chain that makes goods and services available to companies or consumers. The term "vendor" is used to describe the entity that is paid for goods that are provided, rather than the manufacturer of the goods itself. Notwithstanding, it is possible for a vendor, who is one of the prime stakeholders, to operate as both a supplier (and seller) of goods and a manufacturer. The companies concerning with supply chain management strive hard to check the cost of various kinds. It may be noted that no company could work one; instead they prefer to work with a few, dozens, or even hundreds of different vendors with different contract terms, pay rates, and points of contact that must be managed through a vendor manager.

The vendor management is used to describe the activities such as researching and sourcing vendors, obtaining quotes with pricing, capabilities, turnaround times, and quality of work, negotiating contracts, managing relationships, assigning jobs, evaluating performance, and ensuring payments are made. It requires a lot of skills, resources, and time. The vendor management is not merely finding the supplier with the cheapest price for a product or service, it's beyond that. It's concerning with streamlining the process for heightened efficiencies and managing vendor relationships to ensure that the agreements made are mutually beneficial for both parties. With effective vendor management processes in place, a company can properly establish service, quality, cost, and satisfaction goals and choose and manage third-party suppliers that help achieve those business goals.

Challenges in Vendor Management

Although there are many benefits, some challenges need to be overcome to ensure the smooth functioning of the organization. There are many challenges that an organization may face if vendor management is not implemented correctly. They are as follows:

- a) **Vendor Compliance Risk**; setting standards before dealing with vendors is beneficial to the companies, In fact it can save loads of time and money spent. Not all vendors may perform as per your standards. It is important to choose the right vendor from multiple vendors, who meet organizational standards and criteria while promising excellent performance.
- b) **Vendor Reputation Risk;** It is quite clear that dealing with multiple vendors is not an easy task for any organization. Also, the quality of work has to be gauged properly before getting into a contract, which makes the process more complicated. While some vendors may get the task done really well; others can put up with some poor performance and throw all deadlines in a

informal a state of confusion, anxiety, or excitement. Therefore, a buying company has check background before any selection is made.

- c) Lack of Visibility; While it is really important to have a centralized data storage solution for managing vendor data, it also benefits the organization from a centralized view and improved visibility, which can lead to better resource allocation and improved efficiency.
- d) **Vendor Data Storage;** As the organization grows, it becomes essential to have a vendor data storage solution in place. Enterprise data storage is a centralized repository for information, which commonly offers data management, protection, and sharing functions considering. You know that enterprises handle massive amounts of business-critical data, storage systems that are highly scalable, offer unlimited connectivity, and support multiple platforms would benefit them the most. In the absence of a vendor management system, storing and retrieving data might prove to be really tough, the fact that you may be dealing with multiple vendors for multiple projects at the same time.
- e) Vendor Payment Risk; some vendors may have different payment terms, while some may adhere to industry standard terms. Figuring out the terms and ensuring that the payment is always made on time is one of the major issues, especially while dealing with multiple vendors at the same time.

4.5 VENDOR MANAGEMENT PROCESS

Vendor processing involves both departmental users, vendors, and the Vendor Management Team. The departmental users and vendors will be responsible for requesting new vendors and vendor modifications. The Vendor Management Team is responsible for validating all information and ensuring that all documentation/vendor records are compliant. The Vendor Management Team will adhere to the Vendor Validation Policy to ensure that all vendors are legitimate and are tax compliant by adhering to all documentation requirements.

(1) Identification and Establishment of Business Goals

Before the vendor management process starts, it is crucial to identify and establish business goals that necessitate vendor involvement. This helps in understanding the requirements of every business unit and prevents duplication of efforts and wastage of resources in terms selecting and contracting with vendors. It also helps in the later stages of measuring and evaluating vendor performance as these goals establish appropriate metrics.

(2) Establishment of a Vendor Management Team

After the business goals are recognized, the next step should be the foundation of a dedicated vendor management team. This centralized team should be skilled in identifying business goals and KPIs for vendor management, selecting relevant vendors, negotiating the contracting process, periodically assessing the performance of the vendors and tracking all transactions activities.

This team is crucial as they will act as an intermediary between the business units and the vendors and ensure collaboration between the two. It will also prevent the engagement of too many stakeholders – When vendor management is decentralized to the business units, it results in a large number of contracts with the same vendor or disparate transactions with multiple vendors. This impedes tracking and evaluation of vendor performance and exposes the organization to vendor risk.

(3) Creation of a Database for all Vendor-related Information

After the business goals are clear and the vendor management team is up and running, the next step should be to build an updated and categorized database of all relevant vendors and vendor-related information.

(4) Identification of the Selection Criteria for Vendors

Once all vendor-related information is streamlined, updated and categorized, you have to select the criteria based on which all relevant vendors will be chosen. Cost has been the primary selection criterion for choosing vendors, businesses are increasingly looking at other criteria to determine which vendor would best serve their requirements – after all, lowest cost doesn't guarantee the highest value. The has recognized non-cost factors that need to be considered to select vendors; financial stability, previous experience in the field of work as the business, industrial recognitions, the procedures followed by the vendor, economies of scale and their legal/regulatory records. It is important to consider all of the aforementioned criteria to have a holistic assessment of the vendors.

(5) Evaluation and Selection of Vendors

At this stage, the vendors need to be evaluated based on the selection criteria and, if applicable, the bidding process. The submitted proposals need to be thoroughly assessed to understand the pricing structure, scope of work and how the requirements will be met, the terms and conditions, expiry and renewal dates, etc. This will ensure that your organization is deriving the maximum value from the vendor. Look out for hidden savings opportunities.

Assess the internal strengths and weaknesses of the vendors and study how the external opportunities and threats can affect your transaction as well as the vendor management process. Once you have ensured a complete start-to-finish evaluation process, it's time to choose your vendor.

(6) Developing Contracts and Finalizing Vendors

After the above steps are over, it is necessary that an organization has select one out of several alternatives. It's time to complete the contracting process and get vendor(s) onboard. Typically, the contracting stage is assigned to the legal and finance team and the senior management involved with the vendors. The rest of the business units receive the contract and engage with the vendors after the finalization process. This tends to be sub-optimal in the long run – the business units are the ones finally collaborating with the vendors on a day-to-day basis and have valuable insights on how to maximize the vendors' operational performance. Therefore, all the relevant stakeholders need to be involved, at least in the decision-making process.

(7) Building of Strong Vendor and Supplier Relationships

Vendors and suppliers provide a critical service for any business. This service allows the business to focus on building products or services that add value to your customers. Vendor and supplier relationships are a delicate dance between businesses best interests and the sometimes competing interests of suppliers. One thing is clear: all parties need to receive mutual benefit from the relationship. This is an important dynamic to understand since, in the long run, a healthy vendor and supplier relationship will be a competitive advantage.

All relationships have conflict no matter how good they are. Always try to avoid conflict but recognize when conflict is present. A good vendor or supplier relationship will be able to withstand some amount of conflict as long as both parties want to resolve the conflict in a productive way. Too often, a vendor or supplier relationship will turn south when one of the parties decides to take advantage of the other. Taking unfair advantage of a situation is a short sided approach to building a lasting business. Again, its fine to negotiate hard get the best deal but it's also wise to understand the implications.

4.6 TECHNIQUES AND BEST PRACTICES FOR EFFECTIVE VENDOR MANAGEMENT

The organizations have put in place a vendor management process best-suited to them. However, vendor management doesn't just end once the vendors are chosen. There are techniques and best practices that complement process and can make organization's vendor management even more effective. Let's take a look:

(1) Convey expectations clearly

Whilst engaging with vendors, it's necessary to clearly define the business goals of the organizations and expectations from the vendors. Let the vendors know what are current and future requirements are and how they align with organization's objectives. It will enable you and the vendors to be on the same lines and ultimately collaborate better, even in the long-run. It helps to set benchmarks, reduces risks related to vendor performance and compliance, and to evaluate the vendors.

(2) Ensure deadlines that are achievable and realistic

Given the set of goals and expectations, it is important for the company to set deadlines that can be met, realistically, by the vendors. Setting impossible deadlines not only impedes vendor performance and value creation, but it also increases risk and prevents meaningful collaboration.

(3) Collaborate with your vendors to maintain long-term relationships

The word 'collaboration' has come up quite a few times. Well, it is important because simply negotiating with the vendors about pricing and performance leads to the completion of a transaction. But, when the company collaborate and involve the vendors in strategizing how to achieve the goals and expectations, it leads to valuable, long-term relationship building. Collaboration allows both the enterprise and the vendors to brainstorm innovative ideas about how value-creation from their partnership can be maximized.

(4) Establish KPIs to measure Vendor Performance

Vendors deliver goods as per the expectations and business goals. For that purpose, c is put in place to measure the various facets of the vendors and to ultimately know if the vendor management process is effective. The KPIs vary according to the organizations and based on what they consider as important while evaluating vendor performance.

- Relationship Management; measured by the vendor's commitment, flexibility, and innovation,
- Cost Management; measured discounted pricing, order costs, etc.,
- Quality; measure by staff expertise, order accuracy, conformance to requirements, warranties, etc.,

- Delivery; measured by on-time delivery, response time to order issues and emergencies, etc., and
- Customer Satisfaction

(5) Assess Vendor Risks to enable its Minimization

This is probably one of the most important techniques that will help ensure vendor management delivers what is expected. Risk assessment of vendor management is not a single step. It starts when the company recognize a need for a vendor and then, it's simply ongoing. There are multiple types of risks surrounding vendor management – financial, payment, operational, compliance and data security to name a few. The company needs to periodically identify all vendor-related risks at every step of the vendor management process, assess its impact based on the manageable risk and plan mitigation measures.

The threats that pose as risks are continuously changing. The company ensure that the organizations are monitoring the internal and external environment of the organization and assess the controls put in place, their effectiveness and update them as required. This level of due diligence will help minimize vendor-related risks and ensure vendor performance is able to satisfy all requirements.

Vendor Management v/s Vendor Relationship Management;

In many cases the terms 'vendor management' and 'vendor relationship management' are used interchangeably. Does one additional word really create any difference? Answer to the question is yes.

- While vendor management covers the entirety of an enterprise's engagement with its vendors, Vendor relationship management is a part of that entirety which focuses on the 'human aspect' of vendor management. At the end of the day, the vendors are represented by people.
- Building lasting and meaningful relationships with vendors, especially the critical ones, is going up on the list of priorities for an organization dealing with vendor management. Teams are recognizing the value of synergizing with their vendors meaningful, sustained collaboration can positively impact vendor performance and can also help minimize vendor risks. In order to facilitate this, there are a growing number of VRM tools that enable companies to effectively manage their vendor relations.

4.7 VENDOR RELATIONSHIP MANAGEMENT STRATEGIES

Vendor relationships require quite a bit of planning and hard work. Proper application of mind might help curing many disorders. Here are three vendor relationship management strategies which may be used to maximize the value of supplier relationships:

- 1. **Poor Communication**; Often Poor communication between the parties is the root cause for most business failures. The inability to convey or receive important information from suppliers can shake the very foundations of the vendor management process. Corporate buyers need to communicate with their vendors frequently in order to transmit their requirements lucidly and effectively and get a better understanding of their suppliers' capabilities.
- 2. Build partnerships; The key to efficient vendor management is moving out of a transactional relationship and into a strategic supplier-buyer relationship model. In the first step of the process is treating the suppliers as valuable partners. Secondly, pre-defined KPIs with suppliers may be disclosed, and they can be involved in key strategic vendor management decisions like evolving clear objectives for the relationship. This will not only allow tapping into their expertise but also offering other benefits like increased trust, preferential treatment, and more.
- **3.** Create a win-win situation; Running after short-term cost savings will cost the organization more in the long run and make a substantial impact on the quality as well. It may not be appropriate to squeezing suppliers to cut down the cost, instead the company can take some time to study and understand vendor's business thoroughly. Negotiation should be based on good faith and value rather than resorting to strong-arm tactics. Objectives of the partnership should be structured in such a way that it offers equal opportunity for profitability and strengthens both businesses.

Best Practices in Vendor Relationship Management

Procurement teams in company, have to follow best practices and implement them to lower the total cost of ownership and thereby improve the efficiency of the supplier management process. Let us quickly look at the best practices of three vendor relationship management or vendor performance management

1. Measure performance; Organizations with the best vendor relationship process have an elaborate system to measure the performance of their vendors. The techniques such as scorecards, vendor ratings, and vendor performance reviews may be used to hold vendors accountable for their performance.

- 2. Share risks; Uncertainty in the supply chain does not augur well for both the players. This uncertainty paves the way for a number of risks like price volatility, demand fluctuations, and so on. The players have to follow carefully designed vendor contracts which obviously reduce the amount of uncertainty, by enabling risk-sharing.
- 3. **Build trust**; A truly effective vendor relationship management process is built on a foundation of trust. Buyers who ensure that their vendors are financially and emotionally invested in the relationship have a good chance of winning the trust of their vendors in a relatively short period of time.

Comprehensive Procurement Solution to Improve Vendor Relationship Process;

Vendor relationship management isn't restricted to managing an up-to-date database of the vendors and communicating with them regularly. In fact, this process is actually designed to help knowing the vendors better, making them an active partner in your business operations. In addition to supplier information management, managing vendors involves things like efficient vendor on boarding, transparent vendor performance reviews, robust risk mitigation, and more. Manual vendor management tools such as paper forms and spreadsheets cause a number of disruptions like delayed payments, missed discounts, lost opportunities for savings, and strained vendor relationships.

Cloud-based procurement software like Kissflow Procurement Cloud makes the vendor management process smooth and consistent. This Kissflow offers accurate, advanced insights on contract compliance, expense management, and operational performance reporting. Running your vendor management through Kissflow helps the buying company to evaluate vendors by offering proper visibility into the process. The advantages Kissflow Procurement Cloud are as under;

- Quick vendor screening
- Retrieve and verify supplier data like business reports, financial and credit risk data
- Real-time collaboration
- Instantly confirm goods receipt notices (GRNs), goods return ship notices, and more
- All data in one place Access all POs, PRs, contracts, and confidential vendor payment information, all in one place easy vendor enrolment
- Collect key vendor information to screen them based on reputation, past performance, and more
- Corrective actions with sub-par supplier performance, initiate corrective action plans or off board them.

CHECK YOUR PROGRESS

- 1. Differentiate between Supplier and Vendor
- 2. List any two challenges of vendor Management
- 3. What is supply chain solution?
- 4. What is vendor management?
- 5. Name any three qualities required to build relationship

4.8 CASE STUDY

Headquartered in Westport Connecticut, Terex Corporation may not be such a well-known name, but if your company has ever rented an aerial working platform (a scissor-lift or similar), there is a good chance it was manufactured by Terex and dispatched to the rental company from its transfer center in North Bend, Washington.

The North Bend facility is always full of lifting equipment. The company makes most pieces to order and customizes them to meet customers' unique preferences. Terex maintained a manual system for yard management at the transfer center, which generated excessive costs for what should have been a relatively simple process of locating customers' units to prepare them for delivery.

The Supply Chain Cost Reduction Challenge: A wallboard and sticker system was a low-tech solution for identifying equipment items in the yard at Terex. While inexpensive in itself, the solution cost around six minutes every time an employee had to locate a unit in the yard. It also required a considerable number of hours to be spent each month taking physical inventories and updating the company's ERP platform.

The Path to Cost Reduction: Terex decided to replace the outdated manual yard management process with a new, digital solution using RFID tracking. Terex decided to replace the outdated manual yard management process with a new, digital solution using RFID tracking. Decision-makers chose a yard management software (YMS) product, and then had the transfer center surveyed before initiating a pilot project covering a small portion of the yard.

After a successful pilot, the company approved the solution for full-scale implementation, replacing stickers, yard maps, and wallboard with electronic tracking and digital inventory management. As of December 2017, Terex was planning to integrate the yard management solution with its ERP platform to enable even greater functionality.

Supply Chain Cost Management Results: While the YMS cannot reconcile inventory automatically with the Terex ERP application, it does at least provide a daily inventory count via its

business intelligence module. That alone has saved the labour costs previously incurred in carrying out manual counts.

More importantly, though, the RFID-based unit identification and location processes have saved the company around 70 weeks per year in labour costs, by cutting the process-time down from six minutes, to a mere 30 seconds per unit.

4.9	NOTES

4.10 SUMMARY

Good relationship between vendors and suppliers provide critical service for any business. It is a continuous process, which covers selection, cultivation and building of vendor that strives to balance the business needs with the needs for partners. It paves the way for healthy relationships with these vendors, which products that bring delight to the customers. Relationships are built on mutual respect, trust, provide benefits to both parties, and fairness and honesty will ensure benefits to the parties. All relationships have conflict no matter how good they are, but the relationship reduces such conflicts to the plummeted level. The vendor management revolves around activities such as researching and sourcing vendors, obtaining quotes with pricing, capabilities, turnaround times, and quality of work, negotiating contracts, managing relationships. Wholesalers & Distributors, Manufacturers & Vendors and Import Sources have been involved in the tasks. Every organization put in place a vendor management process best-suited to them.

4.11 KEY WORDS

- **Supply Chain Solutions;** It makes sense of how, when and where to buy the components you need to deliver your product to its final destination.
- Supplier Relationship Management: Supplier relationship management is the systematic approach to evaluating vendors that supply goods, materials and services to an organization, determining each supplier's contribution to success and developing strategies to improve their performance.

- Vendor Data Storage; Enterprise data storage is a centralized repository for information, which commonly offers data management, protection, and sharing functions considering.
- **Spend optimization**; Supplier relationship management practices like collaborative supply chain analysis, process re-engineering, joint demand management, reduced inventory, and total cost modeling delivers cost savings and optimizes organizational spend.

4.12 ANSWER TO CHECK YOUR PROGRESS

- 1. Suppliers have long term relationship with company suppliers are the partners of the business in way.
- 2. Vendor compliance risk and vendor reputation risk
- 3. It makes sense of how, when and where to buy the components you need to deliver your product to its final destination.
- 4. The vendor management is used to describe the activities such as researching and sourcing vendors, obtaining quotes with pricing, capabilities, turnaround times, and quality of work, negotiating contracts, managing relationships, assigning jobs, evaluating performance, and ensuring payments are made.
- 5. Trust, honesty, fairness

4.13 SELF-ASSESSMENT QUESTIONS

- a) Discuss the relevance of relationship in supply chain activities in the present scenario
- b) Draw the foundational level of relationship in supply chain management
- c) Examine the general reasons for conflict of interest between buying companies and vendors. In what way conflict of interest affect the organization?
- d) Define vendor management and explain various parts of vendor management process
- e) Explain the measures to be employed by the company in building relationships by an organization with vendors
- f) Describe the benefits of vendor management. Suggest how vendor management of a company can be made more effective
- g) "Building strong vendor and supplier relationships, pave the way for providing a critical service for any business" Explain.
- h) Differentiate Vendor Management from Vendor Relationship Management;
- i) Explain the Strategies of Vendor Relationship Management being adopted by the buying companies to perform their tasks
- j) Discuss techniques and best practices which act as complementary process so that organization's can make vendor management even more effective
- k) Suggest an organization to build Strong Vendor and Supplier Relationships and thereby enable it gain competitive advantage
- Highlight the strategies to be adopted by the organization in developing and establishing a solid supplier relationship management
- m) State three broad steps involved in processes of strategic sourcing related to supplier relationship management
- n) Describe various types of suppliers in Supplier Relationship Management

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BLOCK-2: SUPPLY CHAIN PLANNING AND PURCHASING

Dear Learner,

Now you are aware of importance of Supply Chain Management. You have also understood Why people relay on Supply Chain Management and see various activities of an organization in an integrates way.

To have efficient Supply Chain Management practices, one should have proper supply chain planning. All the activities of Supply Chain Management has to be planner well in advance. Planning gives fair idea for estimation of budget, human resource requires, allotment of other resources etc., proper avoids duplication of work.

Purchasing is an integral component of Supply Chain Management. We can see a exclusive department in any organization engages in purchasing. Normally a purchase manager is appointed to take care of purchasing. His job is to get purchase specifications from engineering department, get an indent of required quantities of different material from manufacturing section, identify suitable supplier either nationally or internationally, place order, follow up supply and arrange for incoming material inspection and processing of payment. In big organizations, payment part may be handed over to a separate accounts section.

Dear Learner, you are going to learn more about all these in this block. This second block contains 4 units namely,

Unit-5: Supply Chain Planning Unit-6: Planning demand Unit-7: Purchasing and Supply chain recession Unit-8: Building long term relation with vendors.

BLOCK-2: SUPPLY CHAIN PLANNING AND PURCHASING

UNIT-5: SUPPLY CHAIN PLANNING

Structure

3

- 5.2 Introduction
- 5.3 Demand Planning
- 5.4 Master Planning
- 5.5 Collaborative Planning
- 5.6 Case Study
- 5.7 Notes
- 5.8 Summary
- 5.9 Key Words
- 5.10 Answer to check your progress
- 5.11 Self-Assessment Questions
- 5.12 References

5.1 **OBJECTIVES**

After studying this unit, you should be able to:

- Explain supply chain planning
- Develop master planning of an organizational supply chain
- Evaluate planning supply chain activities collaboratively

5.2 INTRODUCTION

Supply chain planning (SCP) is a process, wherein a forward-looking approach is followed. This helps in coordinating assets for optimizing the delivery of goods, services and information from supplier to customer, and balancing supply and demand.

Planning is the backbone of supply chain management because for efficiently deploying resources and coordinating all activities along globally dispersed value chain, supply chain planning is crucial. If proper planning is not done, a company has to face the risk of sacrificing cost efficiency and has to lose customers due to poor service. Proper execution of supply chain helps in ensuring that all process along the supply chain are smoothly managed and the company can match supply and demand on daily basis. Supply chain planning helps in managing low costs of goods sold by using a company's resources and assets as well as managing competitive inventory levels.

Supply chain planning makes sure of all the customer demand and market needs by taking in to account such as replenishment, production and supply decision. In line with business objectives and targeted customer service, supply chain planning ensures cost efficiency and high market responsiveness. There are two types of planning that is long-term planning and tactical planning.

Long-term planning is conducted for the next 3-10 years by aligning the company's overall business strategy. Tactical supply chain planning is usually developed for meeting the needs for the next 4-36 months. Long-term plan helps in developing basis for evaluating aggregated level for sales and operations planning whereas short-term tactical planning is used to maintain at stock-keeping level, covering 0-12 weeks, which is the basis for fine scheduling of production and order fulfillment.

5.3 DEMAND PLANNING

Customer demand ultimately drives supply chain, as a result planning starts with available and planned customer orders. Every supply chain manager considers demand forecasts due to long lead times in the production. For various aspects of supply chain, that is, next month's production schedule to yearly schedule, the process of forecasting future customer demand is crucial. This helps in reviewing supply chain plans with major contractors and to review market estimates by which capacity requirements in the upcoming year can be identified.

The overall production lead time has to be decided by time horizon of forecast and demand plan. Longer planning perspectives requires a greater share of demand to be forecasted, the key challenge for demand planning also. The accuracy of the obtained forecast will lower when the forecast is longer.

In a company, long-term forecasts are inputs to strategic planning and operational forecasts to production planning for the coming weeks and months. Normally companies differentiate between long-term forecasts and short term plans. Future demand is estimated by statistical forecasting methods. Sales force department reviews its results and market intelligence department enriches it. The final gross sales demand is balanced against available inventors to derive the net replenishment demand for the production supply.

Demand planning is the foundation of supply chain process. For accurately forecasting demand it involves an assessment of varied data, this can then be used in maintaining and storing optimum inventory and further avoids costs associated with surpluses. Historical data, projected sales, market conditions and other factors are considered for demand planning. In today's situation the help of advanced technology is taken for demand planning. This is powered by artificial intelligence and machine learning, and advanced supply chain management software can predict demand with precision. It can sense demand by looking at real-time data, market conditions and events and point-of-sale data.

Better understanding of consumer behavior and their buying patterns or factors influencing demand can better understand with the help of predictive analytics.

Planning demand encompasses

- 1. Demand forecasting in a supply chain.
- 2. Aggregate planning in a supply chain.
- 3. Sales and operations planning.

Demand forecasting in a supply chain

Forecasting of future demand are essential for making supply chain decisions. Historical demand information is used to forecast future demand, forecasts affect the supply chain. There are several methods available to estimate a forecast's accuracy.

A company must be knowledgeable about numerous factors that are related to the demand forecast. Some of these factors are as listed below

- Post demand
- Led time of product replenishment
- Planned advertising or making efforts
- State of the economy
- Planned price discounts
- Actions that competitors have taken.

Company follows basic steps like the following to perform effective forecasting

- i. Understand the objective of forecasting.
- ii. Integrate demand planning and forecasting throughout the supply chain
- iii. Understand and identify customer segments.
- iv. Identify the major factors that influence the demand forecast.
- v. Determine the appropriate forecasting technique.
- vi. Establish performance and error measures for forecast.

Aggregate Planning in supply chain

It is used to make decisions about production, outsourcing, inventory, and backlogs in a supply chain. Capacity of a company has a cost also lead times are often long hence companies must have information regarding certain aspects like capacity levels, production levels, outsourcing and promotions to make decision before knowing demand to meet it. Aggregate planning helps companies in answering questions like should company invest in a plant with large capacity that is able to produce enough to satisfy demand even in the busiest moths? Or should a company build a smaller plant but incur the costs of holding inventory build during slow periods in anticipation of demand in later months?

Aggregate planning is a process by which a company determines ideal levels of capacity, production, subcontracting, inventory, stock outs, and even pricing over a specified time horizon. The goal of aggregate planning is to satisfy demand while maximizing profit. Aggregate planning, as the name suggests, solves problems involving aggregate decisions rather than stock-.keeping unit. The aggregate planner's main objective is to identify the following operational parameters over the specified time horizon:

i. Production Rate: the number of units to be completed per unit time.

- ii. Workforce: the number of workers/units of capacity needed for production
- iii. Overtime: the amount of overtime production planned
- iv. Machine capacity level: the number of units of machine capacity needed for production
- v. Subcontracting: the subcontracted capacity required over the planning horizon
- vi. Backlog: demand not satisfied in the period in which it arises but carried over to future periods
- vii. Inventory on Hand: the planned inventory carried over the various periods in the planning horizon.

Sales and Operation planning taken care of marketing and manufacturing activities companies promise a delivery date to their customer which has be kept.

5.4 MASTER PLANNING

Master planning helps the companies in controlling and stabilizing future need for overall raw materials and overall capacity to meet company goals. It assesses the raw materials and capacities that are currently available, and raw materials and capacities are required to compete production.

EX: What must be manufactured, purchased, transferred or set aside as safety stock before you can complete production

Master planning allows the companies to control and stabilize the future need for raw materials and capacity to meet company goals. Master planning helps in evaluating the following

- Current availability of raw materials
- Requirement of raw materials ad capacities to complete production.

Master planning generally includes the network of the company's five levels of plans:

- i. Production plan
- ii. Master production schedule
- iii. Material requirements plan
- iv. Capacity requirements plan
- v. Production and purchasing activity control

CHECK YOUR PROGRESS

- 1. What is aggregate Planning?
- 2. What is Master Planning?

- 3. Why demand planning is used?
- 4. What does planning demand encompasses?
- 5. What is the basic step for effective forecasting?

5.5 COLLABORATIVE PLANNING

Due to industry initiative the collaborative planning gained popularity. Collaborating with partners across the extended supply chain, on demand forecasting and real time demand sensing, helps stock outs in volatile market cycles

Market services are a high-margin business, and they account for a large portion of profits, especially in heavy equipment manufacturing. The biggest problem in the present-day world is the high competition and volatility of market fluctuations, causing downturns and upturns. No matter what the causes are, the effect is either going to have high backorders from customers or end with huge unsold inventory lying on the shelf. There is not a one-size-fits-all answer to solve this problem.

It has been reported that supply chain collaboration has proved difficult to implement; there has been an over-reliance on technology in trying to implement it; a failure to und understand when and with whom to collaborate; and fundamentally a lack of trust between trading partners. This paper proposes that a supply chain segmentation approach, based on customer buying behavior and service needs, is the most appropriate context for collaboration.

Collaborative Planning, Forecasting and Replenishment (CPFR): is an approach which aims to enhance supply chain integration by supporting and assisting joint practices. CPFR seeks cooperative management of inventory through joint visibility and replenishment of products throughout the supply chain.

The American Production and Inventory Control Society (APICS) defines collaborative planning, forecasting, and replenishment(CPFR) as "a collaboration process whereby supply chain trading partners can jointly plan key supply chain activities from production and delivery of raw materials to production and delivery of final products to end customers. Collaboration encompasses business planning, sales forecasting, and all operations required to replenish raw materials and finished goods." The objective of CPFR is to optimize the supply chain by improving demand forecast accuracy, delivering the right product at the right time to the right location, reducing inventories across the supply chain, avoiding stock-outs, and improving customer service. Basically,

this can be achieved only if the trading partners are working closely together and willing to share information and risk through a common set of process.

The real value of CPFR comes from an exchange of forecasting information rather than from more sophisticated forecasting algorithms to improve forecasting accuracy. The fact is that forecasts developed solely by the firm tend to be inaccurate. When both the buyer and seller collaborate to develop a single forecast, incorporating knowledge of base sales, promotions, store openings or closings, and new product introductions, it is possible to synchronize buyer needs with supplier production plans, thus ensuring efficient replenishment. The jointly managed forecasts can be adjusted in the event that demand or promotions have changed, thus avoiding costly corrections after the fact.

On the surface, when decisions are made with incomplete information, it may appear that companies have "optimized" their internal processes when, in reality, inventory has merely shifted along the supply chan. Without trading partners in the supply chain will always be suboptimal, resulting in less than-maximum supply chain profits.

CPRF is an approach that addresses the requirements for good demand management. The benefits of CPRF include the following.

Strengthens partner relationship

- > Provides analysis of sales and order forecasts upstream and downstream.
- Uses point-of-sale data, seasonal activity, promotions, new product introductions, and store openings or closing to improve forecast accuracy.
- Manages the demand chain by exception and proactively eliminates problems before they appear.
- ➢ Allows collaboration on future requirements and plans.
- Uses joint planning and management of promotions.
- Integrates planning, forecasting and logistics activities.
- > Provides efficient category management and understanding of consumer purchasing habits.
- Provides analysis of key performance metrics (e.g., forecast accuracy, forecast exceptions, product lead times, inventory turnover, percentage stock-outs) to reduce supply chain inefficiencies improve customer service, and increase sales and profitability.

A description of the CPFR process model is as follows-

- Step 1: Develop Collaboration Arrangement
- Step 2: Create joint business plan
- Step 3: Create Sales forecast
- Step 4: Identify exceptions for sales forecast
- Step 5: Resolve/Collaborate on exception items
- Step 6: Create Order forecast
- Step 7: Identify exceptions for order forecast
- Step 8: Resolve/Collaborate on exception items
- Step 9: Order Generation



5.6 CASE STUDY

6. Avaya

Avaya is a global force in business collaboration and communications technology, and not so many years ago, was operating what, by its own executives' admission, was a worst-in-class supply chain. That situation arose as the result of multiple corporate acquisitions over a short space of time. The company was suffering from a range of supply chain maladies, including a long cash-to-cash cycle, an imbalance in supplier terms and conditions, excess inventory, and supply chain processes that were inefficient and wholly manual.

The Supply Chain Cost Reduction Challenge: After Avaya purchased Nortel Enterprise Solutions in 2009, the freshly merged company found itself but loosely in control of an unstable and ineffective supply chain operation. Aside from having too many disparate and redundant processes, the company had multiple IT solutions, none of which provided a holistic view of the supply chain or supported focused analysis.

The Path to Cost Reduction: Avaya's senior management team realized that its technology solutions, which varied from being inadequate to inappropriate, were causing many of its problems. The various acquisitions and mergers had transformed Avaya into a different kind of enterprise, and what it needed, rather than a replacement for all the discrete systems, was one solution to tie them all together.

To that end, the company put its trust in cloud technology, which was relatively immature at the time, and migrated all processes onto one platform, which was designed to automate non-valueadded activities and integrate those critical to proactive supply chain management, namely:

- a) Point of sale analysis
- b) Procurement analysis
- c) Supplier communication
- d) Supply and demand planning
- e) Inventory planning
- f) Inbound and outbound logistics planning

Of course, the technology was merely an enabler, and to transform its supply chain operation, Avaya embarked on a long-term, phased program to standardize processes, initiate a culture change, invest in top talent, and implement a system of rigorous benchmarking and KPI tracking.

Supply Chain Cost Management Results: Avaya's program of transformation took place over a period of three to four years, between 2010 and 2014. The path to cost reduction was a long one, but ultimately successful.

By making a conscious effort to lead the enterprise into a new way of thinking, change business culture, and unify technology under a single platform, Avaya has improved inventory turns by more than 200%, reduced cash tied-up in stock by 94%, and cut its overall supply chain expenditure in half. This dramatic turnaround also required the company to switch from a preoccupation with improving what it was doing, to a process of questioning what it was doing and why.

7. Sunsweet Growers

This final mini-case study in our collection, highlights how sometimes, excess supply chain costs are not about warehousing and transportation, but can be attributable to inefficiencies in manufacturing or production and—often at the root of it all—forecasting and planning.

Sunsweet Growers is the world's biggest producer of dried fruits and a little over a decade ago, found that while it was managing distribution operations well, high production costs were inflating end-to-end supply chain expenditure.

The Supply Chain Cost Reduction Challenge: When the leadership at Sunsweet looked into the company's production cost issues, recognition soon dawned that the distribution network was at least partly behind the problems. As a result, the company looked at how it could redesign the network to take out some of the production costs.

Later, it became apparent that although a redesign would yield some benefits, one of the most significant issues was in the approach to demand forecasting. Sunsweet was using a manual forecasting approach, with spreadsheets being the only technology involved.

The inefficiencies of this approach proved not only to hamper effective forecasting and production planning, but the knock-effect was an excess of warehouses in the network—so forecasting proved to be both a driver of production cost, and a key to improving the distribution network.

The Path to Cost Reduction: As in a number of the studies we've explored here, technology played a large part in solving Sunsweet's problems. After evaluating some 30 different software solutions, the company finally settled on a supply chain planning suite, and planned its improvement program to make use of each of the solution's modules in sequence, allowing ROI to be realized in phases as each module was implemented and leveraged.

At the same time, Sunsweet implemented a sales and operations planning program (S&OP) that once established, enabled plant resource requirements to be anticipated months—rather than weeks—in advance. As the overall improvement plan passed through its five phases, positive results accumulated and as hoped, software ROI reached 100% even before the company completed its full implementation.

Supply Chain Cost Management Results: Of course, the objective of Sunsweet's improvement program was not merely to achieve a 100% return on investment in its supply chain planning platform. The aim was to reduce production costs, and although the company hasn't published hard figures to quantify the total financial gain, it has claimed the following wins:

A 15 to 20% increase in forecasting accuracy

A reduction in overtime from 25% to 8% in production facilities

A 30% reduction in finished-goods spoilage

Number of warehouses in the United States cut from 28 to just eight

A transportation cost-per-unit that remained static for two years despite increased utilization of costly refrigerated transport and rising fuel costs

From the achievements documented above, and highlighted in several industry publications and articles, you don't need to be too much of a mathematician to deduce that cost savings would have been considerable.

5.7 NOTES

5.8 SUMMARY

Supply chain planning (SCP) is a process, in which a forward-looking approach is followed. This helps in coordinating assets for optimizing the delivery of goods, services and information from supplier to customer, and balancing supply and demand.

Demand planning is the foundation of supply chain process. For accurately forecasting demand it involves an assessment of varied data, this can then be used in maintaining and storing optimum inventory and further avoids costs associated with surpluses. Historical data, projected sales, market conditions and other factors are considered for demand planning. In today's situation the help of advanced technology is taken for demand planning. This is powered by artificial intelligence and machine learning, and advanced supply chain management software can predict demand with precision. It can sense demand by looking at real-time data, market conditions and events and point-of-sale data.

Master planning helps the companies in controlling and stabilizing future need for raw materials and capacity to meet company goals. It assesses the raw materials and capacities that are currently available, and raw materials and capacities are required to compete production.

Collaborative Planning, Forecasting and Replenishment (CPFR): is an approach which aims to enhance supply chain integration by supporting and assisting joint practices. CPFR seeks cooperative management of inventory through joint visibility and replenishment of products throughout the supply chain.

5.9 KEY WORDS

- Supply
- Chain
- Planning
- Purchasing
- Demand

5.10 ANSWER TO CHECK YOUR PROGRESS

- 1. Aggregate planning is a process by which a company determines ideal levels of capacity, production, subcontracting, inventory, stock outs, and even pricing over a specified time horizon.
- 2. Master planning helps the companies in controlling and stabilizing future need for overall raw materials and overall capacity to meet company goals.
- 3. The essence of demand management is to foster the ability of firms throughout the supply chain particularly manufacturing, and to satisfy the customer through collaborating activities related to the flow of product services, information, and capital
- 4. Planning demand encompasses demand forecasting, aggregate planning and Sales and operations planning in a supply chain.
- 5. To understand the objective of forecasting.

5.11 SELF ASSESSMENT QUESTIONS

- 1. What is demand Planning"
- 2. What is CPFR?
- 3. "Planning is the back bone of supply chain management". Do you agree with this statement?
- 4. Comment on the statement "Future needs of raw materials is taken care by controlling Master planning".
- 5. Explain Collaborative Planning, Forecasting and Replenishment with examples?

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UNIT-6: PLANNING DEMAND

Structure

6.1	Objectives
6.2	Introduction
6.3	Demand Management
6.4	Aggregate Planning
6.5	Forecasting
6.6	Case Study
6.7	Notes
6.8	Summary
6.9	Key Words
6.10	Answer to Check Your Progress
6.11	Self-Assessment Questions

6.12 References

6.1 **OBJECTIVES**

After studying this unit, you should be able to:

- Find out Demand management and methods
- Explain the meaning of aggregate Planning
- Conduct demand forecasting

6.2 INTRODUCTION

Dear Learners, as discussed in the previous unit, demand planning is a supply chain management process of forecasting, or predicting, the demand for products to ensure they can be delivered and satisfy customers. The goal is to strike a balance between having sufficient inventory levels to meet customer needs without having a surplus.

Demand planning spans several aspects, with the three primary areas being:

Product Portfolio Management

Product portfolio management oversees the overall product lifecycle, beginning with the introduction of a new product through to its end-of-life planning. In many cases, product lines are interdependent, and understanding how new products may influence demand for other products is important to understanding the overall product mix required to maximize market share.

Statistical Forecasting

Using historical data, statistical forecasting creates supply chain forecasts with advanced statistical algorithms. In this area, it is important to determine the accuracy of each model, identify outliers and exclusions and understand assumptions. Seasonal shifts (think the spurt of holiday shopping that occurs between October and December for retailers, or the boost in yard equipment sales in spring months) can also be assessed with statistical forecasting.

Trade Promotion Management

Trade promotion or marketing events can influence demand, especially in the retail industry. The goal of a trade promotion is to help a brand connect with a customer, often through an in-store giveaway, discount, or promotion, and these events can impact the demand for a product.

Rules for Creating a Collaborative Planning Process

Rule 1: If everyone travels on a different route, you may not end up in the same

- Rule 2: You don't want to manufacture something that you don't plan on
- Rule 3: Sales should not take orders for things which you cannot or don't plan

Rule 4: If manufacturing cannot stop making something, sales need to go out and sell it.

Rule 5: If you don't know what you plan to make or sell, finance cannot estimate the working capital needed.

Rule 6: Finance knows that obsolete inventory (unlike wine) does not improve with age, but sales should know that they too have a responsibility to dispose of it.

Rule 7: If you are selling at a loss, you cannot make it up in volume.

Rule 8: If everyone cannot agree on what went wrong, you will probably end up in the same place again.

Rule 9: Why plan if you don't plan to execute?

Rule 10: If you don't have a stake in the plan, you don't have a stake in its success.

6.3 DEMAND MANAGEMENT

According to Blackwell and Blackwell, demand management may be thought of as "focused efforts to estimate and manage customers' demand, with the intention of using this information to shape operating decisions." Traditional supply chains typically begin at the point of manufacture or assembly and end with the sale of product to consumers or business buyers. Much of the focus and attention has been related to the topic of product flow, with significant concern for matters such as technology, information exchange, inventory turnover, delivery speed and consistency, and transportation. This notwithstanding, it is the manufacturers-who are many times for removed from the end user or consumer market-who determine what will be available for sale where, when and how many. If this seems to reflect a disconnect between manufacturing and demand at the point of consumption, that is exactly what it is. Thus, any attention paid to demand management will produce benefits through the supply chain.

The essence of demand management is to foster the ability of firms throughout the supply chain particularly manufacturing, and to satisy the customer through collaborating activities related to the flow of product services, information, and capital. The desired end result should be to create greater value for the end user or consumer, for whom all supply chain activity should be undertaken. The following list suggests a number of ways in which effective demand management will help to unify channel members with the common goal of satisfying customers and solving customer problem.

• Gathering and analyzing knowledge about consumers, their problems, and their unmet needs.

✤ Identifying partners to perform the functions needed in the demand chain.

- Moving the functions that need to be done to the channel member that can perform them most effectively and efficiently.
- Sharing with other supply chain members' knowledge about consumers and customers, available technology and logistics challenges and opportunities.
- Developing products and services that solve customer's problems
- Developing and executing the best logistics, transportation, and distribution methods to deliver products and services to consumers in the desired format.

As firms identify the need for improved demand management, a number of problems occur. First is that lack of coordination between departments (i.e., the existence of "functional silos") results in little or no coordinated response to demand information. Second is that too much emphasis is placed on forecasts of demand, with less attention on the collaborative efforts and the strategic and operational plans that need to be developed from the forecasts. Third is that demand information is used more so for tactical and operational than for strategic purposes. In essence, and since in many cases historical performance is not a very good predictor of the future, demand information should be used to create collective and realistic scenarios of the future. Primary emphasis should be on understanding likely demand scenarios and mapping their relationships to product supply alternatives. The end result will be to better match demand as it occurs with appropriate availability of needed product in the market place.

Strategy	Examples of how to use demand Management
Growth strategy	 Perform "what if" analyses on total industry volume to gauge how specific
	mergers and acquisitions might leverage market share.
	 Analyze industry supply/ demand to predict changes in product pricing
	structure and market economics based on mergers and acquisition.
	 Build staffing models for merged company using demand date
	 Manage maturity of products in current portfolio to optimally time
	overlapping life cycles.
Portfolio	 Create new-product development/introduction plans based on life cycle.
strategy	Balance combination of demand and risk for consistent "Cash cows" with
	demand for new products.
	 Ensure diversification of product portfolio through demand forecasts

Positioning strategy	• Manage product sales through each channel based on demand and product
	economics.
	• Manage positioning of finished goods at appropriate distribution centers, to
	reduce working capital based on demand.
	 Define capability to supply of each channel.
Investment	• Manage capital investments, marketing expenditure, ad research and
strategy	development budgets based on demand forecasts of potential products and
	maturity of current products.
	 Determine whether to add manufacturing capacity.

6.4 AGGREGATE PPRODUCTION PLANNING

Operations scheduling and inventory management are two of the most critical activities of an organization; they directly influence how effectively the organization deploys its assets and capacity in producing goods and services. Developing feasible operations schedules and inventory control systems to meet delivery due dates and minimize waste in manufacturing or service organizations is a complex problem. The need for better operations scheduling and inventory management systems continues to challenge operations scheduling and inventory management systems continues to challenge operations scheduling in today's fiercely competitive global environment. In an environment fostering close buyer-supplier relationships the challenge of scheduling operations to meet delivery due dates and eliminate waste is becoming a more complex problem. The problem is compounded in an integrated supply chain, where a missed the date or stock-out cascades downstream, affecting the entire supply chain.

Operations managers are continually involved in resource and operations planning to balance capacity and output. Capacity may be stated in terms of labor, materials, or equipment. With too much excess capacity, production cost per unit is high due to idle workers and machinery. However, if workers and machinery are stressed, quality levels are likely to deteriorate. Firms generally run their operations at about 85 percent capacity to allow time for scheduled repairs and maintenance and to meet unexpected demand.

The aggregate production plan is a long range materials plan since capacity expansion involves the construction of a new facility and major equipment purchases, the aggregate production plan's capacity is usually considered fixed during the planning horizon. The aggregate production plan sets the aggregate output rate, workforce size, utilization and inventory, and /or backlog levels for an entire facility.

Aggregate production planning is a hierarchical planning process that translates annual business and marketing plans and demand forecast s into a production plan for all products in a place or facility. Demand management includes determining the aggregate demand based on forecasts of future demand, orders received from internal and external customers, special promotions, and safety stock requirements. This forecast of demand then sets the aggregate utilization, production rate, workforce level, and inventory balance or backlogs. Aggregate production plans are typically stated in terms of product families or groups. A product family consists of different products that share similar characteristics, components or manufacturing process.

The aggregate production plan (AAP) is a long-range materials plan that translate annual business plan, marketing plan and forecasts into a production plan for all products produced by a facility. The anticipated demand is used to set the facility's output rate, workforce size, utilization and inventory and backlog levels. The planning horizon for the APP is a year or more is continuously rolled forward to develop a game plan that is capable of producing enough finished goods within product families or groups each period to meet the sales goal. Of course, the APP must work within the production capacity constraints while controlling the use of financial resources for labor costs, machine setup and operating costs, inventory costs, and related expenses.

6.5 FORCASTING

Forecasting is the art and science of making projections about what future demand and conditions will be obtaining forecasting information frequently means using sophisticated techniques to estimate future sales or market conditions. Managers must decide how they will make forecasts and to what extent they will rely on forecasts to make decisions. Companies often use forecasts both on tactical level to schedule production and on a strategic level to determine whether to build new plants or even whether to enter a new market.

Once a company creates forecast, the company needs a plan to act on this forecast. Aggregate supply planning transforms forecasts into plans of activity to satisfy the projected demand. A key decision managers face is how to collaborate on aggregate planning throughout the entire supply chain. The aggregate plan becomes a critical piece of information to be shared across the supply chain because it affects both the demand on a firm's suppliers and supply to its customers.

Forecasting is the major component of demand management. It is the amount of product that will be purchased by consumers or end users. Although forecasts are made throughout the supply chain, the single, most important forecast is that of primary demand. In a truly integrated supply chain scenario, all other demand will emanate directly from-or at least be influenced by-primary demand. One of the key objectives of integrated supply chain management is to further the extent to which all supply chain decisions anticipate, as well as respond to primary demand as it occurs in the marketplace.



Form the above figure firm's approach to sales forecasting and its integration with production scheduling activities. The first step is to develop a twelve-month forecast of demand by month by applying traditional demand forecasting approaches (e.g. moving average, exponential smoothing, Box-Jenkins, regression analysis, etc.) to a three-year history file of data on factors such as demand, price, seasonality, availability, deals, and promotions. In the second step, brand and product managers review this forecast and recommend relevant changes. The result is an agreed-upon statement of gross market requirements for the succeeding one to three-year periods. The third step involves developing aggregate production schedules for the next twelve-month period and allocating

specific production requirements to various manufacturing facilities. Finally, the logistics function commonly assumes responsibility for scheduling production on a short term basis, in order to coordinate demand for finished product with the timing and availability of needed production inputs.

CHECK YOUR PROGRESS

- 1. What is Demand planning ?
- 2. What is Demand Management?
- 3. What is aggregate production plan?
- 4. What is Forecasting ?
- 5. What is a product family ?

6.6 CASE STUDY

Fragmented Supply Chains Provo Craft, a leading global supplier of innovative crafting tools and technology, wanted to grow its business exponentially, as well as expand into Europe. However, the company's fragmented supply chain infrastructure, compounded with inefficient processes, warehouse and inventory management caused major obstacles on the path to expansion. With the challenges at hand — and a clear vision of future goals — Provo Craft made the decision to outsource its supply chain processes to a single service provider. The company partnered with ModusLink for its supply chain infrastructure, expertise, and track record with helping clients expand globally. By making the in-source to outsource transition, Provo Craft experienced the following benefits: • The ability to focus on its core strengths, new product development, marketing and retail channel management • Migration to a best-in-class global supply chain • Progressive supply chain savings • The flexibility and infrastructure to enter new global markets Provo Craft improves its operations by outsourcing to a single service provider, ModusLink INDUSTRY Consumer Electronics

CHALLENGES • Prepare supply chain for exponential growth and global expansion • Improve warehouse management processes • Reduce high volume of excess inventory • Establish processes to track inventory and key performance metrics **SOLUTION** • Provo Craft outsourced supply chain processes to ModusLink • ModusLink assumed Provo Craft's facility in Utah and its warehouse employees • ModusLink developed and refined warehouse and inventory management processes • ModusLink to perform in-region postponement of Circuit scrapbooking cartridges to better align inventory with consumer demand Outsourcing our supply chain operations with ModusLink has benefited our business in many ways. During the past year, we have aligned with consumer demand, improved warehouse management processes and streamlined inventory.

2. NATHAN WHITE: CHIEF OPERATING OFFICER, PROVO CRAFT As part of the partnership, ModusLink assumed Provo Craft's employees and facility in Spanish Fork, Utah, where configuration, fulfillment and returns management are performed. In order to optimize supply chain performance and enhance productivity, ModusLink applied 5S methodology — a system for organizing, cleaning, developing and sustaining a productive work environment — to the facility. ModusLink also worked with Provo Craft to implement an inventory management system, as well as processes to improve visibility to the end-to-end supply chain. With warehouse management processes in place, ModusLink has streamlined order picking and fulfillment through usage statistics and time studies. This analysis has helped to establish efficient picking zones for highvolume products and identify slow-moving inventory. Due to long lead time of products manufactured and imported from various Asia Pacific facilities, Provo Craft often has inventory that is not in sync with consumer demand. The result is excess inventory sitting on warehouse shelves and the inability of Provo Craft to fulfill customer orders quickly and efficiently. Provo Craft's most popular products are content cartridges that contain images that make cutting detailed designs possible on any of its Circuit electronic cutting systems. Working closely with ModusLink, Provo Craft made changes to the design and manufacturing of the cartridges to allow for in-region postponement of the product. Instead of stocking more than 200 individual titles, generic cartridges will be flash-programmed prior to packaging and shipping at the Spanish Fork Solution Center. This build-toorder process will allow Provo Craft to react quickly to changes in demand and generate additional revenue on new release titles. Redundant safety stock of individual SKUs will be eliminated and older, low-volume titles can be built-to-order in a matter of days. With ModusLink at the helm of its supply chain operations, Provo Craft is in the process of converting a number of additional products that lend themselves to in-region postponement. Over time, this will include purchasing raw materials, content loading, kitting and assembly, all at the facility in Utah. Phase one of this plan will target 33 percent of new product volume, and this percentage will increase over time. Performing in-region postponement can reduce millions of dollar worth of inventory and vastly reduce lead times: Modus Link plans to procure, build and ship product within seven to 10 business days, based on customer demand. RESULTS • Committed to year-over-year cost reductions of up to six percent • Migrated from a fixed cost structure to a variable cost structure • Increased volume by six percent without increasing

operational cost • Achieved inventory accuracy greater than 98 percent • Reduced lead times by seven to 10 business days through in-region postponement and delivery turnaround to three business days from time of order • Shipped 99 percent of product on time www.moduslink.com info@moduslink.com P: +1 781.663.5000 We look forward to growing our relationship with ModusLink and taking advantage of the many opportunities that outsourcing has afforded us. Outsourcing is providing Provo Craft with more efficient, streamlined and flexible supply chain processes that will continue to scale over time. As sales grow internationally, Provo Craft intends to leverage the ModusLink network of solution centers to support sales worldwide. This has already begun on a small scale in the UK and Europe. With a partner like ModusLink by its side, the company can take control of its inventory, react to ever-changing consumer demands, and remain on the path to grow its business according to plan

6.7 NOTES

6.8 SUMMARY

Demand planning is a supply chain management process of forecasting, or predicting, the demand for products to ensure they can be delivered and satisfy customers. The goal is to strike a balance between having sufficient inventory levels to meet customer needs without having a surplus.

Demand Management

According to Blackwell and Blackwell, demand management may be thought of as "focused efforts to estimate and manage customers' demand, with the intention of using this information to shape operating decisions."

Aggregate Production Planning

The aggregate production plan is a long range materials plan Since capacity expansion involves the construction of a new facility and major equipment purchases, the aggregate production plan's capacity is usually considered fixed during the planning horizon. The aggregate production plan sets the aggregate output rate, workforce size, utilization and inventory, and /or backlog levels for an entire facility.

Forecasting

Forecasting is the art and science of making projections about what future demand and conditions will be obtaining forecasting information frequently means using sophisticated techniques to estimate future sales or market conditions. Forecasting is the major component of demand management. It is the amount of product that will be purchased by consumers or end users. Although

forecasts are made throughout the supply chain, the single, most important forecast is that of primary demand. In a truly integrated supply chain scenario, all other demand will emanate directly from-or at least be influenced by-primary demand. One of the key objectives of integrated supply chain management is to further the extent to which all supply chain decisions anticipate, as well as respond to primary demand as it occurs in the marketplace.

6.9	KEY WORDS
٠	Planning
•	Demand

- Management
- Forecasting

6.10 ANSWER TO CHECK YOUR PROGRESS

- 1. Demand planning is a supply chain management process of forecasting, or predicting, the demand for products to ensure they can be delivered and satisfy customers.
- 2. Focused efforts to estimate and manage customers' demand, with the intention of using this information to shape operating decisions.
- 3. The aggregate production plan (AAP) is a long-range materials plan that translate annual business plan, marketing plan and forecasts into a production plan for all products produced by a facility.
- 4. Forecasting is the art and science of making projections about what future demand and conditions will be obtaining forecasting information frequently means using sophisticated techniques to estimate future sales or market conditions.
- 5. A product family consists of different products that share similar characteristics, components or manufacturing process.

6.11 SELF ASSESSMENT QUESTIONS

- 1. Define demand management? And what are the primary areas of demand planning.
- 2. Comment on the statement "The essence of demand management is to further the ability of firms throughout the supply chain".
- 3. Explain aggregate production planning.

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UNIT-7: PURCHASING AND SUPPLY CHAIN DECISIONS

Structure

7.1

Introduction

7.2	Objectives
7.3	Purchasing and supply chain decisions
7.4	Managing inventory in supply chain
7.5	JIT Purchasing
7.6	Notes
7.7	Summary
7.8	Key Words
7.9	Answer to check your progress
7.10	Self Assessment Questions
7.11	References

7.1 **OBJECTIVE**

After studying this unit, you should be able to:

- Expalin purchasing in an organization and
- Analyse making decisions of supply chain.
- Identify the methods of making decisions

7.2 INTRODUCTION

The traditional purchasing process is a manual, paper –based system. However, with the advent of information technology, personal computers, local area networks, and the Internet, many companies are moving toward a more automated, electronic-based system. The goal of a proper purchasing system is to ensure the efficient transition of information from the users to the purchasing personnel and, ultimately, to the suppliers. Once the information is transmitted to the appropriate suppliers the system must also ensure the efficient flows of the purchased materials from the suppliers to the users, and the flow of invoices from the suppliers to the accounting department. Finally, the system must have an internal control mechanism to prevent abuse of the system.

EX: purchase order (POs) should be pre numbered and issued induplicate, and buyers should not be authorized to pay invoices. Pre numbered purchase orders make it easier to trace any missing or unaccounted-for purchase order. A duplicate purchase order should be issued to the accounting department for internal control purposes and to inform the department of a future payment or commitment of resources.

7.3 PURCHASING AND SUPPLY CHAIN DECISIONS

The fundamental goal of the procurement or purchasing function is to acquire optimum quality and quantity of goods and services for the company in a timely manner, and at the lowest total cost. This also means that the sale is not over when the item is delivered by the supplier. Additional items may be needed in future along with the necessary parts services or even training in few cases. These all should be facilitated by the purchasing function.

The significance of the role of purchasing in organizations today is based on the size of expenditures for goods and services as reflected in the organization's balance sheet and cost of manufacturing or service operations. In fact, the whole concept of purchasing function is now changing from the traditional material controlling to managing supply chains.



Purchasing Cycle: The traditional purchasing cycle steps are shown in the following figure

Requisitioning

Every organization needs a system by which a member of staff can notify the purchasing officer of a need for goods or services. A simple and clear requisition form is all that should be necessary. There is a tendency to oversimplify or over look the requisition stage, but it provides a mechanism by which the purchasing officer can gain an accurate description of the goods or service required. An end-user may know what is needed by many not have the technical expertise to describe it correctly. Accurately detailed requisitions ensure the supply of correct requirements and avoid the waste of money

Financial Approval

Financial approval must be given before the purchasing commitment is made, and the purchasing system should be designed to ensure that this is done. A simple technique is to include a space for recording financial approval on the requisitioning form.

Market Assessment

Once the purchasing officer receives an approved requisition a check should be made to ensure that the item is not already in stock. A market assessment should then be made, considering the following questions:

- Is there a competitive market for the item?
- Is the volume/value of goods required is sufficient enough to warrant calling for quotations and tenders, and if so, should prices and other details be obtained by telephone or in writing?
- If there is no competitive market, should the sole supplier be given an immediate order, or can a lower price be negotiated?
- Is it appropriate to call for "Registration of interest", prior to inviting formal tenders?
- Are suitable period contracts available?
- Is there a list of "approved suppliers" for the item, or is the establishment of an "approved suppliers" lit warranted?
- Could there be scope for a bulk purchase?

Purchase Decision

Having completed the market assessment and determined the method of purchase, the purchasing officer then decides on the supplier or suppliers. This decision must be well documented, not only for audit purposes but also to provide clear reasons justifying the choice of supplier in case there is a subsequent complaint or request under the official information Act.

Ordering

Every organization needs a good system of order tracking and follow-up. Ordering legally means a contract and hence utmost care is required to be taken during its drafting.

Delivery

The method, terms and time of delivery need to be clearly established when ordering. It should be remembered that freight can from a substantial part of the purchase cost, but the very competitive transport market means that wise freighting decisions can achieve considerable cost savings. Delivery is further discussed in a letter section.

Receipting and accounting for goods and services received

Clear procedures need to be established as these forms the basic documentation for the bill passing as well as payments.

Payment

The satisfactory conclusion of a purchasing transaction depends upon both parties (buyer and seller) fulfilling their part of the bargain. To maintain good suppler relations, it is important that payments are mad on the dates they are due.

Accounting System

All purchases of goods and services are inputs to the organization's business and need to be correctly charged to the output or outputs to which they contribute. This requires close co-operation between the organization's purchasing and accounting sections to ensure that the inputs are correctly calculated and charged.

Al these tasks mentioned above are necessary to be performed to arrive at proper purchase decision.

To ensure this we can define the nine goals of purchasing namely:

- Uninterrupted flow of materials: relates to the ability to never allow stock outs to occur. In most business today, this would mean finding other employment.
- **Manage inventory:** The cost of inventory is between 20-50 percent depending on the product. This is a great deal of capital tied up in a liability. If this number can be reduced it can affect the balance sheet in a positive manner.
- **Improve quality:** This goal can achieve truly great things when you consider the cost of inferior quality, rework charges, loss of manufacturing time etc.
- **Develop suppliers:** The success of supply management is directly connected to the ability of buyers to find and develop competent suppliers. After they are found then continuous improvement techniques can improve both the performance of buyer and seller.
- **Standardize:** Consolidate items to determine a (one) standard item, that buyers can procure in larger quantities, thereby saving money and without having to stock different items that many and without having to stock different items that may require different stocking conditions or other items that cost additional money.
- Achieve low cost: Achieve the lowest cost and not the lowest process which is radically different. Overall cost reduction contributes to the profit leverage effect.
- **Improve competitive position:** By performing the function of supply in a professional manner, costs are lowered for producing products w.r.t. that of the competition. This leads to a competitive advantage that is very solid and hard to duplicate.

- **Develop cross-functional relationships:** These relationships with other departments will increase your ability to perform your job of cost reduction. Information is often required to forecast or determine existing costs or processes that are critical to the success of your position.
- **Reduce administration costs:** The function of purchasing is well aware of the cost of doing business and continually seeks ways to reduce operating expense.

Types of purchases

The organization can separate its purchases according to the following heading.

- 1. Raw materials
- 2. Purchased parts
- 3. Maintenance repair operating
- 4. Packaging
- 5. Services
- 6. Tools
- 7. Resale items and
- 8. Equipment

These types of purchases require different sets of skills to successfully accomplish the job. Not all firms break up their purchases in this manner and if they do the definitions are often different.

Classification of purchase goods or services

Purchase goods or services can be classified on the basis of:

- 1. Requirements-which are commonly, energy, capital, raw materials etc.
- 2. Purchase frequency-nuts and bolts are purchased or frequently than capital machinery so rules apply to each that differs from one another.
- 3. Stocked items-these are items deemed necessary to have readily available either through need or aggravation of placing rush orders for low cost. Physical make-up-what the product is made of or shape of the item. This may influence how we buy or how much.
- 4. Transport type- how it comes to us may affect what quantity we order. Dedicated trucks that deliver daily will reduce the amount we order.
- 5. Product use-internal or external use.
7.4 MANAGEING INVENTORY IN SUPPLY CHAIN

What Is Inventory Management?

Inventory management helps companies identify which and how much stock to order at what time. It tracks inventory from purchase to the sale of goods. The practice identifies and responds to trends to ensure there's always enough stock to fulfill customer orders and proper warning of a shortage.

Once sold, inventory becomes revenue. Before it sells, inventory (although reported as an asset on the balance sheet) ties up cash. Therefore, too much stock costs money and reduces cash flow.

One measurement of good inventory management is inventory turnover. An accounting measurement, inventory turnover reflects how often stock is sold in a period. A business does not want more stock than sales. Poor inventory turnover can lead to deadstock, or unsold stock.

Why is Inventory Management Important?

Inventory management is vital to a company's health because it helps make sure there is rarely too much or too little stock on hand, limiting the risk of stock outs and inaccurate records.

Benefits of Inventory Management

The two main benefits of inventory management are that it ensures you're able to fulfill incoming or open orders and raises profits. Inventory management also:

Saves Money:

Understanding stock trends means you see how much of and where you have something in stock so you're better able to use the stock you have. This also allows you to keep less stock at each location (store, warehouse), as you're able to pull from anywhere to fulfill orders — all of this decreases costs tied up in inventory and decreases the amount of stock that goes unsold before it's obsolete.

Improves Cash Flow:

With proper inventory management, you spend money on inventory that sells, so cash is always moving through the business.

Satisfies Customers:

One element of developing loyal customers is ensuring they receive the items they want without waiting.

Inventory Management Challenges

The primary challenges of inventory management are having too much inventory and not being able to sell it, not having enough inventory to fulfill orders, and not understanding what items you have in inventory and where they're located. Other obstacles include:

Getting Accurate Stock Details:

If you don't have accurate stock details, there's no way to know when to refill stock or which stock moves well.

Poor Processes:

Outdated or manual processes can make work error-prone and slow down operations.

Changing Customer Demand:

Customer tastes and needs change constantly. If your system can't track trends, how will you know when their preferences change and why?

Using Warehouse Space Well:

Staff wastes time if like products are hard to locate. Mastering inventory management can help eliminate this challenge.

What is Inventory?

Inventory is the raw materials, components and finished goods a company sells or uses in production. Accounting considers inventory an asset. Accountants use the information about stock levels to record the correct valuations on the balance sheet.

Inventory Vs Stock

Inventory is often called stock in retail businesses: Managers frequently use the term "stock on hand" to refer to products like apparel and housewares. Across industries, "inventory" more broadly refers to stored sales goods and raw materials and parts used in production.

Some people also say that the word "stock" is used more commonly in the U.K. to refer to inventory. While there is a difference between the two, the terms inventory and stock are often interchangeable.

Different Types of Inventory

There are 12 different types of inventory: raw materials, work-in-progress (WIP), finished goods, decoupling inventory, safety stock, packing materials, cycle inventory, service inventory, transit, theoretical, excess and maintenance, repair and operations (MRO). Some people do not recognize MRO as a type of inventory. Different types of inventory.

Inventory Management Process

If you produce on demand, the inventory management process starts when a company receives a customer order and continues until the order ships. Otherwise, the process begins when you forecast your demand and then place POs for the required raw materials or components. Other parts of the process include analyzing sales trends and organizing the storage of products in warehouses.



How Inventory Management Works

The goal of inventory management is to understand stock levels and stock's location in warehouses. Inventory management software tracks the flow of products from supplier through the production process to the customer. In the warehouse, inventory management tracks stock receipt, picking, packing and shipping.

Inventory Management Techniques and Terms

Some inventory management techniques use formulas and analysis to plan stock. Others rely on procedures. All methods aim to improve accuracy. The techniques a company uses depend on its needs and stock.

A few inventory management techniques include are

- ABC analysis: This method works by identifying the most and least popular types of stock.
 Batch Tracking: This method groups similar items to track expiration dates and trace defective items.
- **Bulk Shipments:** This method considers unpacked materials that suppliers load directly into ships or trucks. It involves buying, storing and shipping inventory in bulk.
- **Consignment:** When practicing consignment inventory management, company business won't pay its supplier until a given product is sold. That supplier also retains ownership of the inventory until your company sells it.
- **Cross-Docking:** Using this method, you'll unload items directly from a supplier truck to the delivery truck. Warehousing is essentially eliminated.
- **Demand Forecasting:** This form of predictive analytics helps predict customer demand.
- **Drop shipping:** In this practice, the supplier ships items directly from its warehouse to the customer.
- Economic Order Quantity (EOQ): This formula shows exactly how much inventory a company should order to reduce holding and other costs.
- **FIFO and LIFO:** First in, first out (FIFO) means you move the oldest stock first. Last in, first out (LIFO) considers that prices always rise, so the most recently-purchased inventory is the most expensive and thus sold first.
- Just-In-Time Inventory (JIT): Companies use this method in an effort to maintain the lowest stock levels possible before a refill.
- Lean Manufacturing: This methodology focuses on removing waste or any item that does not provide value to the customer from the manufacturing system.

MATERIALS REQUIREMENTS PLANNING (MRP):

This system handles planning, scheduling and inventory control for manufacturing.

- Minimum Order Quantity: A company that relies on minimum order quantity will order minimum amounts of inventory from wholesalers in each order to keep costs low.
- **Reorder Point Formula:** Businesses use this formula to find the minimum amount of stock they should have before reordering, then manage their inventory accordingly.
- **Perpetual Inventory Management:** This technique entails recording stock sales and usage in real-time. Read "The Definitive Guide to Perpetual Inventory" to learn more about this practice.

- **Safety Stock:** An inventory management ethos that prioritizes safety stock will ensure there's always extra stock set aside in case the company can't replenish those items.
- Lean Six Sigma: This method combines lean management and Six Sigma practices to remove waste and raise efficiency.

CHECK YOUR PROGRESS

- 1. Differntiate between FIFO and LIFO
- 2. What does Economic Order Quantity (EOQ) indicates
- 3. What is single source supply?
- 4. Why A market assessment is done?
- 5. Name few different types of inventory

7.5 JIT PURCHASING

Just-in-time (JIT) manufacturing became one of the biggest trends in all facets of industry in the 1990s. JIT companies maintain only enough inventory to manufacture the products they need in the very near future. Parts are ordered on a near-continuous basis and often go directly from the loading dock to the assembly line. The benefits of this system include reduced inventory, improved quality, reduced lead time, reduced scrap and rework, and reduced equipment downtime. However, when a company shifts to JIT manufacturing, it must also shift to JIT purchasing.

JIT purchasing requires a nearly 180-degree change in purchasing philosophy. Traditional purchasing meant building a supplier list over time by constantly adding new suppliers, spreading purchases around, and maintaining higher inventory levels in case demand for a product soared or quality from a supplier dipped suddenly. JIT purchasing demands that buyers *narrow* their supplier list to a chosen few who can deliver high-quality products on-demand and in a timely fashion.

The JIT purchasers pays a fairly high cost in homework and vendor relations to achieve the "just-in-time" optimum. In addition to meeting specifications, suppliers must have the ability to make frequent, on-time deliveries and to provide very large volume commitments or single sourcing arrangements. Quality may be the toughest of these standards for suppliers to meet; the JIT purchaser should deal only with companies that utilize statistical analysis to verify the quality of their output. Failure to do so should eliminate the supplier from even being asked to submit a bid.

For frequent, on-time deliveries, it often helps if the supplier is located in the same geographic region as the buyer. That way, it is easier for the supplier to react to a sudden, unexpected demand for its product, and it costs far less to make the frequent deliveries that are needed. Those lower costs can in part be passed on to the buyer.

In single sourcing arrangements, it is not uncommon for the buyer to exert some influence over the supplier's business processes. The buyer has made such a significant commitment to the supplier, and is such a large portion of the supplier's total business, that it has the right to expect some say in the supplier's business practices. For some suppliers, this is an uncomfortable arrangement.

7.6 NOTES

7.7 SUMMARY

PURCHASING AND SUPPLY CHAIN DECISIONS

The fundamental goal of the procurement or purchasing function is to acquire optimum quality and quantity of goods and services for the company in a timely manner, and at the lowest total cost. This also means that the sale is not over when the item is delivered by the supplier.

MANAGEING INVENTORY IN SUPPLY CHAIN

Inventory management helps companies identify which and how much stock to order at what time. It tracks inventory from purchase to the sale of goods. The practice identifies and responds to trends to ensure there's always enough stock to fulfill customer orders and proper warning of a shortage.

7.8	KEY WORDS	
•	Inventory	

- Supply chain
- Decisions

7.9 ANSWER TO CHECK YOUR PROGRESS

- 1. **FIFO and LIFO:** First in, first out (FIFO) means you move the oldest stock first. Last in, first out (LIFO) considers that prices always rise, so the most recently-purchased inventory is the most expensive and thus sold first.
- 2. Economic Order Quantity (EOQ): This formula shows exactly how much inventory a company should order to reduce holding and other costs.
- 3. Purchasing a particular type or group of material from a single supplier always
- 4. A market assessment is preimerly done to check whether these is a competiative market for the product and what type of buying contract is better?
- 5. Different types of inventory inclide raw materials, work-in-progress (WIP), finished goods, decoupling inventory, safety stock, packing materials, cycle inventory, service inventory and so on.

7.10 SELF ASSESSMENT QUESTIONS

- "The fundamental goal of the procurement or purchasing function is to acquire optimum quality and quantity of goods and services for the company in a timely manner." Comment on this statement.
- 2. Explain how to manage managing inventory in supply chain

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UNIT-8: BUILDING A LONG-TERM RELATIONSHIP WITH VENDORS

Structure

- 8.2 Introduction
- 8.3 Building a long-term relationship with vendors
- 8.4 Supplier relationship management (SRM)
- 8.5 Objectives of Supplier Relationship Management
- 8.6 Importance of Supplier Relationship Management
- 8.7 Tasks of Supplier Relationship Management
- 8.8 Process of Supplier Relationship Management
- 8.9 Types of Suppliers in Supplier Relationship Management
- 8.10 Strategies for Supplier Relationship Management
- 8.11 SRM Software
- 8.12 Notes
- 8.13 Summary
- 8.14 Key Words
- 8.15 Answer to check your progress
- 8.16 Self-Assessment Questions
- 8.17 References

8.1 **OBJECTIVES**

After studying this unit, you should be able to;

- Describe how an organization can build long term relationship with vendors.
- Define what is supplier relationship
- Examine supplier relationship strategies.

8.2 INTRODUCTION

Determining whether an organization achieves their objectives is possible based on the strong partnership with vendors. As time progresses and your moving business grows, you will begin to experience increased demands for services. So, you have to ensure that your company is able to follow through and deliver the same quality as always. This could mean better rates, quicker services, and overall growth. And those who dare underestimate the importance of maintaining good vendor relationships usually experience the consequences fast. Whether it's bad reviews and comments from unsatisfied customers, or the inability to accept any moving lead that comes your way – a lot of it rides on good B2B relations. Like any other relationship you maintain, one with your vendors should be constantly nurtured.

8.3 BUILDING A LONG-TERM RELATIONSHIP WITH VENDORS

Developing positive relationship with vendors in business is crucial to the success of the sellers. To be a successful seller one needs to right products. Relationship with credible, experienced suppliers is needed to be created and maintained for carrying out great inventory.

Building good connections is not a easy task because it is built slowly by taking one deal at a time. For building positive relationship with the vendor following seven steps are to be followed.

Communicate

An effective business relationship can be built by nurturing, establishing and maintaining connections. This means that company should have be in touch with vendors regularly. When problems arise company should have to maintain communication.

Pay Promptly

Trust with vendors is built if company follows the conditions mutually accepted. Hence bills are to be paid consistently fully in time.

Provide Lead Time

Company has to keeping informed vendors about new business goals and special promotions early. This provides the inventory supplying company an opportunity to suggest appropriate inventory to the purchasing company to prepare for large orders.

Refer your Vendor to Colleagues

Suppliers appreciate the gesture of such companies which refer them to other business. This can also be a way to show gratitude towards suppliers for doing their job well.

Managing Strong Vendor Relationship.

After establishing a productive relationship with suppliers, purchasing company need to know how to again the relationship to ensure receiving value on a regular basis.

Always Check for Under Delivery and Over Promise

While obtaining order all the suppliers tend to over promise when it comes for execution they tend to under deliver. Purchasing company need to identify few such areas, knock them out and go over the top.

Keep KPIs at the forefront

Key performance indicators (KPIs) can help you in managing projects by offering a clear insight into your partnership. In business, results and performance can often be clouded and hard to measure, but as long as company properly monitor it all, you can easily see if expectations are being met. As long as company have regular KPI reports to present and discuss with vendors and business partners, you can easily identify potential issues and resolve them in record time.

8.4 SUPPLIER RELATIONSHIP MANAGEMENT (SRM)

The emergence of supplier relationship management is credited to Peter Kraljic, a director at the consulting firm McKinsey & Company. He discussed segmenting the supplier base and mapping it against two key dimensions, namely; risk and profitability. He wrote that for organizations to deal with the risks, complexities and potential supply and pricing disruptions "management must learn to make things happen to its own advantage.

He says that Relationship management affects all areas of the supply chain and has a dramatic impact on performance. In many cases, the information systems and technology required for the supply chain management effort are readily available and can be implemented within a relatively short time period, barring major technical mishaps.

Supplier management is typically broken down into four steps.

- a. The companies establish business goals. It's much easier to select and manage vendors when a company has clearly defined performance parameters to compare and contrast.
- b. Select the best vendors that will be able to match company's performance characteristics.
 Every vendor will have its strengths and weaknesses, and choosing the right one is a very critical task to optimizing operational results.
- c. Managing suppliers by the buying company. On a daily basis, vendor managers will need to monitor performance and output, ensure contract terms are being followed, approve or disapprove changes, provide feedback, and develop relationships through effective communication, honesty, and integrity.
- d. Meeting the goals of buying company on a consistent basis. This requires continuous work in influencing vendors to meet performance objectives to ensure profitability.

The relationship between suppliers and customers in the supply chain integration is utmost important. True, it is fundamental, yet it is highly challenging in the supply chain integration. Supplier relationship management is the systematic approach to evaluating vendors that supply goods, materials and services to an organization, determining each supplier's contribution to success and developing strategies to improve their performance. The SRM discipline helps to determine the value each supplier provides and which ones are most critical to business continuity and performance. It also enables managers to cultivate better relationships with suppliers based on each supplier's importance. Supplier relationship management is used by supply chain professionals who regularly deal with suppliers in areas such as procurement, project management and operations.

The concept of Supplier Relationship Management has become widely significant as the buyer and supplier networks have become more global and interdependent and companies are heavily relying more on the strategic suppliers for their overall growth and success. Sometimes called supply chain relationship management, SRM is one of the many disciplines of supply chain management. It is similar to vendor management and procurement processes, but there are key differences. Vendor management generally focuses on establishing costs and service-level agreements between the organization and its vendors, while procurement focuses on the purchase itself i.e., ordering, contracting, invoicing and paying.

8.5 OBJECTIVES OF SUPPLIER RELATIONSHIP MANAGEMENT

Although different industries have differing categories of critical suppliers and each organization has its own unique mix. Notwithstanding the overarching goal of SRM remains the same: The objectives of Supplier Relationship Management are as under;

- a. To streamline and improve the processes that take place between the organization as buyer of products and services and the businesses that supply them.
- b. To develop a mutually beneficial relationship between the organization and its suppliers, especially those deemed most strategic to the organization's brand.
- c. To promote quality, efficiency and innovation.
- d. To not only just cost savings, but also to maximize the value of suppliers to gain a competitive advantage in the market place.
- e. To establish two-way, mutually beneficial relationships between an organization and its suppliers.
- f. To collaborative and relationship-building activities targeted at the most strategic and critical supply partners that deliver great added value to the firm
- g. SRM activities are additional and complementary to supplier performance and contract management activities which are targeted at the majority of suppliers.
- h. To streamline and improve the processes between their firm and its customers.
- i. To develop a mutually beneficially relationship with suppliers specifically who are strategically important to the brand to promote quality, efficiency, innovation along with the various other benefits.

8.6 IMPORTANCE OF SUPPLIER RELATIONSHIP MANAGEMENT

Let us examine a few usefulness of Supplier relationship management in a company

- a) Supplier relationship management has occupied increasingly important position, as buyersupplier networks become more global and interdependent and companies rely more heavily on strategic suppliers.
- b) SRM creates a framework for both identifying the strategic supply partners and organizing the relationship lifecycle.

- c) Its create a common frame of reference to enable effective communication between an enterprise and suppliers and measure supplier performance.
- d) Some suppliers are more critical to business continuity, operational excellence, scalability and ultimately profitability. For example, a smart phone manufacturer's stationery supplier has little influence on profitability, but its main electronics supplier has a huge impact, making it a key strategic partner.
- e) Any risk to the electronics maker's operations is a major risk to the smart phone company.

8.7 TASKS OF SUPPLIER RELATIONSHIP MANAGEMENT

In order to achieve goals of an organisation, it has to adopt SRM program which must be strategic in approach beside, articulating objectives and devising a plan before addressing suppliers. It may be noted that has to focus more this rather than being reactive and engaging suppliers on an ad hoc basis or in response to particular issues. Enterprise leaders, who take a strategic approach, might determine that long-term engagements with specific suppliers are preferable to ensure continuity of supplies, while short-term relationships with other suppliers can best ensure business agility and flexible pricing.

An effective SRM strategy also requires cultivating personal relationships with suppliers and working to build strong, trust and mutually beneficial partnerships when appropriate. That could mean involving them in planning for key initiatives or jointly developing innovations. The team involved in SRM must also work to align everyone in their organization with the goals of the SRM program and ensure compliance with its objectives. They should also have a process for determining the value that the SRM program returns to the organization.

8.8 PROCESS OF SUPPLIER RELATIONSHIP MANAGEMENT

The processes of strategic sourcing related to SRM can vary from one organization to the other. However, SRM generally involves three broad steps:

- Segment suppliers. In this first, foundational step, the organization identifies all of its suppliers and categorizes them based on their importance to the business, thereby ensuring that the suppliers most critical to success get the right amount of attention.
- **Develop a supplier strategy**. In this step, the organization develops a tactical plan for how it will work with each supplier or category of suppliers to ensure the relationships are successful and mutually beneficial. Organizations should start with the category of suppliers deemed most critical but recognize that all suppliers play a role in success and thus also merit

a strategic approach that involves governance and performance management models to align business processes and assign stakeholders according to business goals.

- Execute the supplier strategy. The executives who own the SRM discipline in the organization need to ensure that the strategy is put into action and that they or managers take on day-to-day tasks to operationalize the SRM plans. They should also devise ways to monitor and measure SRM success as well as identify deficiencies and points of failure in the SRM strategy or its execution.
- **Positive relationship;** The overall process and approach help to create a positive relationship between the buyer and the supplier relationships determining that activities engage in with each of the suppliers of the firm. Supplier Relationship Management is used by the various supply chain professionals and experts who involved in areas such as procurement, project management, and operations, deal with the suppliers on a regular basis. Supplier Relationship Management includes both the aspects of business practices and software.

8.9 TYPES OF SUPPLIERS IN SUPPLIER RELATIONSHIP MANAGEMENT

- Wholesalers & Distributors: Wholesalers purchase large quantities of goods in bulk from the manufacturing companies and then resell them in the lower quantities demanding a higher unit price. They usually offer the lowest prices as they are selling the same in large quantities, and are quite hesitant to work with the smaller quantity of orders.
- 2) Manufacturers & Vendors; In this type, the suppliers handle the goods of different companies. The prices might be higher than those of the wholesalers, but they handle small orders from a wide range of manufacturers over a short time period.
- 3) Import Sources; The various types of domestic importers work like domestic wholesalers and sell foreign goods to various companies in the domestic market.

Different Approaches to Supplier Relationships;

Supplier relationships could be divided into four behavioral dimensions and identifies that different approaches to supplier relationships apply in different contexts.

• **Counterproductive:** In counterproductive relationships both parties work against the interest of each other. The nature of this relationship is apparently aggressive. And none of the party cares about their relationships. This situation not only fails to create a new value but also affects their success on a short and long term basis. This relationship is also known as antagonistic relationship in which there is a 'lose – lose' situation. These types of relationships are not

recommended but in real world they also exist, where relationships between suppliers and buyers has gone so much worse and they rely on court to settle disputes.

- Competitive: A competitive relationship is also known with 'win lose', distributive or adversarial relationships. As the name implies in this relationships both the parties are competitively involved in gaining a fixed amount of value instead of those that create a new value. In this relationship both suppliers and buyers aim to maximize value for themselves.
- Cooperative: Cooperative relationships are also known as integrative, and also win win relationships. In this relationship both parties have close ties and work on open sharing of data. These relationships are with those suppliers or buyers that have been working each other for a long time. In cooperative relationships suppliers and buyers helps each other in improving cost, quality, delivery, packaging and other support activities. In this relationship suppliers are also involved at the earlier stage in product development.
- **Collaborative:** It is an also known as creative relationship which includes a small set of suppliers that provides goods and services which are significant to an organization's success. The prime characteristic of this relationship is that there is a willingness between suppliers and buyers to work mutually in order to identify new and innovative ways to perform in the marketplace. Therefore, these relationships represent the most developed and demanding relationships possible between both parties, i.e. buyer and a supplier.

8.10 STRATEGIES FOR SUPPLIER RELATIONSHIP MANAGEMENT

Treating suppliers like partners and planning for disruption are two components of a successful supplier relationship management strategy. One key element of supplier relationship management is dividing suppliers into categories. Segmenting suppliers is a good.

- Suppliers are not just vendors; It is very important to note that suppliers are the partners, and this partnership should be based just on the financial transactions but on the mutual trust and loyalty as well. It is also crucial to make your suppliers feel like they are a part of the company and inform them about business processes such as the launch of new products, promotions plus hear out their concerns and issues as well.
- 2) Technology makes Supplier Relationship Management simple and easy; It is important for the business to invest in good supplier management software to keep the track record of all the information about the suppliers in one place. It is also advised by the experts to install the

software that helps in creating, processing, and tracking the purchase orders and other related functions as well.

- 3) Timely payments are important; every buying company has to make payment on time if not, it loses the suppliers. This business objective will also prove that the company is a reliable customer and easy to work with. If the payment is delayed for any reason whatsoever, then inform the supplier as soon as possible with the next possible date on which they can expect the payment. All the suppliers wishes to get payments on time.
- 4) Relationships with suppliers should be deep and strong; It is important for businesses to maintain strong, clear, and regular communication with the suppliers. Keep them regularly informed and up to date, on your business strategies and plans so that they know where they fit in and how they can help and plan in a strategic and dedicated manner. If the company like their work appreciate and let them know. If something's not working, the company has to address the issue.
- 5) Price and value are interrelated in nature; The Company should get quality materials at the right and valuable price, which increases the profit- financial flexibility and business's growth on its own. The company can buy the goods in bulk quantity and get a better price but will have more stock in accounts, or company can arrange to pay a vendor earlier in order to get a bigger and better discount. Sometimes it is better to pay a little more price which prompt the supplier to render better service by giving good quality products with the delivery as per the scheduled timelines.
- 6) Detailed agreements make relationships with the supplier easier; If the company is buying the goods from a specific supplier on a regular basis, the Supplier Relationship Agreement is mandatory for the business. Make a note of everything that both parties expect from each other such as item description, price per unit, delivery terms, payment terms and other such crucial details and then both parties should sign it. The said agreement can be a very simple or a complicated document depending on the business needs and requirements. A well-documented Supplier Relationship Agreement will reduce the possibility of confusion or disputes in the future dealings.
- **7.** Value mapping: Most organizations still focus primarily on cost-cutting initiatives when it comes to SRM. Through value mapping, businesses can think beyond cost-cutting initiatives and focus

on value drivers such as revenue growth, asset utilization, and risk reduction. Value mapping enables organizations to identify where intervention is necessary or beneficial.

Establishing a minimum amount of mutual trust, understanding, and respect with suppliers through open communication is a minimum requirement to derive tangible business values. A structured and strong supplier relationship management strategy will extract the best value for everyone.

8. Top-down approach: Often, the responsibility of supplier relationship management falls on the shoulders of procurement teams alone. Supplier relationship management strategy is all about craftsmanship; it can never be achieved without onboarding internal stakeholders. Just one rogue individual can collapse the whole process.

Implementation starts at the top and moves down through the ranks of managers and staff. This top-down approach ensures that every stakeholder has a clear understanding of potential benefits that can be derived. An effective SRM strategy aligns seamlessly with process, people, paperwork, and the overall business strategy.

- 9. Spend optimization: Strategic sourcing has reached a saturation point where the returns are diminishing steadily for specific categories. Nearly, all 'low-hanging fruits' have been picked and so extracting value through consolidation and bidding is becoming challenging. Supplier relationship management practices like collaborative supply chain analysis, process reengineering, joint demand management, reduced inventory, and total cost modeling delivers cost savings and optimizes organizational spend.
- 10. Risk mitigation: Organizations of all sizes experience supply chain disruption of some magnitude due to product or service quality issues, dependency, price volatility, and more. However, businesses that have an adequate SRM program in place can better predict and manage those disruptions.

The types of supply risks that an organization faces depends on the corporate and procurement frameworks used. Supplier risk segmentation can help organizations identify risk and mitigate them effectively.

11. Positive ROI: Most procurement teams face difficulties in securing the commitment and funding for their SRM strategy. The major reason is that they have trouble in building a business case that establishes the financial benefits of SRM.

Procurement teams can start calculating benefits by estimating the impact of risk mitigation, value leakage due to non-compliant contracts, and narrating compelling customer stories through case studies. By involving the finance team from day one, procurement teams can capture the impact SRM makes on the organization's balance sheet.

Supplier relationship management (SRM) is a process in business by which an organization systematizes its interactions with individuals or organizes the delivery of raw goods and services. SRM can be implemented through software, making it possible for organizations to effectively perform business transactions, request goods or services and automate the entire process between the organization and its suppliers.

CHECK YOUR PROGRESS

- 1. What is Supplier relationship management?
- 2. What is the main goal of SRM?
- 3. What are the important steps in Supplier relationship management
- 4. What is Supplier segmentation?
- 5. What is Supplier strategy development ?

8.11 SRM SOFTWARE

SRM software offers a variety of functions that enable a strong supplier management operation, including the following key features and capabilities:

- Contact and communication management;
- Invoices and requisitions;
- Order histories;
- Scheduling;
- Performance analytics;
- Procurement intelligence, including supplier risk management;
- Product lifecycle management, such as portfolio strategy management;
- Sourcing;
- Supplier data management, including validating supplier requests;
- Supplier performance management;
- Contract management;
- Catalog management;
- Operational procurement, such as processing purchase orders; and

• External resources, such as product specifications.

8.12 NOTES

_____ _____ _____

8.13 SUMMARY

Developing positive relationship with vendors in business is crucial to the success of the sellers. To be a successful seller one needs to right products. Relationship with credible, experienced suppliers is needed to be created and maintained for carrying out great inventory.

Steps in building positive relationship with vendor are:

1. Communicate

- 2. Pay promptly
- 3. Proved lead time
- 4. Refer your vendors to colleagues
- 5. Managing Strong Vendor Relationship.
- 6. Always Check for Under Delivery and Over Promise
- 7. Keep KPIs at the forefront

Supplier relationship management: also known as SRM, is a systematic approach to assess suppliers' contributions to your business. It helps you determine which suppliers are providing the best influence on your success and ensures they are performing well. Supply chain providing the best influence on your success and ensures they are performing well.

8.14 KEY WORDS

- Long-term
- Relationship
- Vendors
- Suppliers
- Management

8.15 ANSWER TO CHECK YOUR PROGRESS

- 1. Supplier relationship management, is a systematic approach to assess suppliers' contributions to business.
- The main goal of SRM is to improve business processes between the company and its suppliers. By creating a streamlined approach,
- 3. Supplier relationship management comprises supplier segmentation, supplier strategy development, and supplier strategy execution
- 4. Differentiating between suppliers on the basis of opportunities and risks.
- 5. Supplier strategy development is devising an optimal way to interact with suppliers based on business needs.

8.16 SELF ASSESSMENT QUESTIONS

- 1. What is building long- term relationship with vendors? Explain the steps in building long-term relationship.
- 2. Describe Supplier relationship management and explain the steps in developing supplier relationship management.

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BLOCK 3: LOGISTICS AND WAREHOUSE MANAGEMENT

Dear Learner,

In the previous blocks you have learnt about fundamental of Supply Chain Management and importance of value. You have learnt but supply chain effectiveness enhances the value of the product. It integrates several functions of an organization.

Supply Chain Management starts with order management. The orders placed by customers are entered in the company software to initiate processing. For manufacturing, raw material needs to be purchased and have to be brought to company using proper logistics. Similarly finished goods leave company for which company has to rely upon on sound logistic system companies have to give preference to customer service as well.

In this block there are four units:

Unit-9: Customer Order Cycle Unit-10: Logistics Information Society Unit-11: Customer Relationship Management Unit-12: Supply Chain Management Technology

UNIT-9: CUSTOMER ORDER CYCLE

Structure:

9.1	Objectives
9.2	Introduction
9.3	Process View of Supply Chain
9.4	Order Management System
9.5	Benefits of OMS
9.6	Ware House Management System
9.7	Notes
9.8	Summary
9.9	Key Words
9.10	Answer to check your progress
9.11	Self-Assessment Questions
9.12	References

9.1 **OBJECTIVES**

After studying this unit, you should be able to:

- Explain process view of supply chain
- Explain order management system
- Explain benefits of order management system
- Examine ware house management system

9.2 INTRODUCTION

The best companies around the world are discovering a powerful new source of competitive advantage. It's called supply-chain management and it encompasses all of those that bring product to market and create satisfied customers.

The Supply Chain Management Program integrates topics from manufacturing, operations, purchasing, transportation, and physical distribution into a unified program. Successful supplychain management, then, coordinates and integrates all of these activities into a seamless process. It embraces and links all of the partners in the chain. In addition to the departments within organization, these partners include vendors, carriers, third-party companies, and information systems providers.

Within the organization, the supply chain refers to a wide range of functional areas. These include Supply Chain Management-related activities such as inbound and outbound transportation, warehousing, and inventory control. Sourcing, procurement, and supply management fall under the supply-chain umbrella, too. Forecasting, production planning and scheduling, order processing, and customer service all are part of the process as well. Importantly, it also embodies the information systems so necessary to monitor all of these activities.

A typical supply chain may involve a variety of stages and are -

- Customers (end users)
- Retailers
- Wholesalers / Distributors
- Manufacturers (of products or service providers) &
- Component and Raw material suppliers (vendors)

9.3 PROCESS VIEW OF SUPPLY CHAIN

• A supply chain is a sequence of processes and flows that take place within and between different stages and combine to fill a customer need for a product

• Two ways to view the processes performed in a supply chainCycles view and Push/pull view

Cycle view

- Defines the processes involved and the owners of each process
- Process in a supply chain are divided into a series of cycles
- Cycles are performed at the interface between two successive stages of a supply chain
- Supply chain process can be broken down into four process cycles such as
 - Customer order cycle
 - Replenishment cycle
 - Manufacturing cycle
 - Procurement cycle
- Each cycles occurs at the interface between two successive stages of the supply chain
- A cycle view of the supply chain is very useful when considering operational decisions
- It clearly specifies the roles and responsibilities of each member of the supply chain
- It helps the designer to consider the infrastructure required to support the processes

Procurement Cycle

The Procurement Cycle occurs between the manufacturer and supplier. It includes all processes to ensure the availability of materials and components at the time and place required in the production and maintenance schedule. These processes include supplier production scheduling and component manufacturing, shipping, and receiving.

The cycle is triggered by requirements of the manufacturer's production schedule, the maintenance activity's repair schedule, or the restocking policy. This cycle may repeat several times between several tiers of suppliers.

Manufacturing Cycle

The Manufacturing Cycle is found between a manufacturer or repair activity and the next downstream (toward the customer) member of the supply chain. This next downstream member may be a wholesaler, a retailer, or the customer. The cycle begins when a customer, retail activity, or wholesaler places a replenishment order, or when a manufacturer forecasts customer demand. Processes in this cycle include production and maintenance scheduling, and product repair, shipping, and receiving.

Replenishment Cycle

The Replenishment Cycle occurs between the retailer and the distributor or wholesaler and

includes all processes for replenishing retail inventory: retail order entry, fulfilment, and receipt. This cycle begins with the retail order trigger, which is a policy that starts the replenishment order placement.

Customer Order Cycle

The Customer Order Cycle sits at the interface between the customer and retailer and includes all processes for receiving and filling of customer orders: customer arrival, order entry, fulfillment, and receipt."



Fig 1: Supply Chain Process Cycles



Fig 1. Customer Order Cycle



Fig 2: Replenishment Cycle



Fig 3: Manufacturing Cycle



Fig 4: Procurement Cycle

2. Push/Pull View

- Categorizes processes in a supply chain based on whether they are initiated in response to a customer order (pull) or in anticipation of a customer order (push)
- Categorisation is based on the timing of process execution relative to end customer demand
- At the time of execution of a pull process customer demand is known with certainty
- In case of push process at the time of execution of a process demand is not known and must be forecasted
- Pull process reactive process
- Push process speculative process
- Push/pull boundary in a supply chain separates push process from pull process
- Very useful when considering strategic decisions relating to supply chain
- Forces more global consideration of supply chain processes as they relate to a customer order
- More the pull process better the supply chain









9.4 ORDER MANAGEMENT SYSTEM

The modern business world is a complicated one. Processes that used to be straight forward, today include a range of extra challenges. Even something as seemingly simple as making a sale and getting the product to a customer is far more complicated than ever before.

Retailers and businesses must consider a multitude of factors when selling their wares:

- The channels through which consumers are buying
- Shipping options & fulfillment challenges
- Third-party logistics
- Analytics & business intelligence

It's no surprise that many brands need a little assistance. Fortunately, the help that's needed is close at hand in the shape of order management systems (OMS). An OMS is a vital part of operations for ecommerce and other businesses. If you're not up to speed on what an order management system is, it's time to learn.

MEANING

An OMS is the method by which firms handle this vital business process. It can be any tool, platform, or structure to track and control all the elements of the process detailed earlier.

Sales, inventory and fulfillment are often handled by your OMS. That's why an order management system is so critical.

No matter the size or nature of your business, an OMS must fulfill certain functions. How complicated it is to do so depends on your firm and the level at which you operate. That's why some companies need a more comprehensive system than others. But we'll talk more about that later.

1. Track All Orders

Tracking and monitoring orders is perhaps the most fundamental aspect of any OMS. Once an ecommerce brand grows beyond the smallest size, it needs some kind of system to handle orders. Even the most proficient, on-the-ball worker can't keep all order details in their head.

At heart, an OMS is about making life easier for both a brand and its customers. The correct system can create a more seamless customer experience. It can also make inventory management, logistics, and more processes far more intuitive. An order management system becomes even more vital for firms that sell via many channels. The best OMS will track and record orders through your

web store, marketplaces, and other platforms. Centralizing and unifying sales in that way can make a real difference to efficiency and productivity, as well as eliminate errors.

It's not all about digital channels, either. An OMS will also record and handle orders placed over the phone or in-store if you have such a presence. All details of all orders, therefore, become available in one place. You and your staff can check order statuses, make relevant changes, or reach out to customers with greater ease.

2. Monitor & Manage Inventory

The placement and handling of orders impact many other elements of your business. Every order placed and fulfilled, for instance, affects your inventory. Getting inventory management correct is vital for any ecommerce brand.

If you don't have an accurate measure of your inventory, a range of issues can arise:

- Overselling Accepting orders for products of which you don't have adequate stock to fulfill.
 Doing so leads to canceling those orders and disappointing customers.
- Overstocking Thinking you're short of a product and over-ordering replacement inventory. This means you waste valuable warehouse space and could get left with dead stock.
- Inaccurate Forecasting If you don't have accurate inventory figures, it's harder to understand customer demand. You may miss when there's an uptick in desire for a particular product. That could see you run out of stock when you might have pre-empted the increased demand.

An order management system will simplify the inventory tracking process. The best software will update your inventory levels in real-time. That means they change with every order that's placed. That's regardless of the channel by which the purchase gets made.

3. Facilitate Order Fulfillment

So far, your OMS has recorded the orders placed and helped you track the inventory required for them. There's more to ecommerce operations than that, however. Namely, you also must get the ordered products to your customers. An OMS helps in this regard, too.

The best order management system will streamline many logistics processes. Those can include routing orders to the right warehouse, auto printing shipping labels, and much more. Such efficiencies can make a real difference not only to your_warehouse management but your overall productivity.

Having the correct OMS in place is especially helpful for firms that use 3rd-party logistics (3PL) providers. If your OMS integrates with a 3PL's system, order fulfillment is faster and more intuitive. It makes life easier for your firm and the provider with which you're working. That's a win-win, or a win-win-win when you consider the benefits delivered to customers.

4. Encompass Reverse Logistics

All ecommerce businesses know that returns are an inevitability. Approximately 30% of products bought online get returned. That's as compared to less than 10% bought in-store. Handling returned items and dealing with the customers who sent them back is vital to order management.

With the right OMS, reverse logistics becomes much more straightforward. A top-class system gives you many options in this regard. You may, for instance, be able to clone an original order to create a credit instantly. That makes it more straightforward to manage refunds, replacements or reorders.

An OMS, too, makes it more intuitive to fold reverse logistics into inventory management. Depending on what's returned, the system can give you a range of options. It may write off stock that's sent back, quarantine it, or add it back to your inventory on-hand.

Types of systems for order management

As we mentioned earlier, different businesses have different needs for an OMS. Smaller, simpler brands can get by with a less comprehensive system. The more complicated your business gets, though, the more you need a wider-reaching OMS. The following are five of the most common alternatives to choose from:

- 1. Manual order management
- 2. Using an ecommerce platform
- 3. Standalone order management software
- 4. Enterprise retail platform (ERP) software
- 5. A Digital Operations Platform for retail

1. Manual Order Management

Tracking and managing orders manually is inadvisable for all but the smallest companies. You can, however, record all order details yourself in a ledger or via spreadsheets. Doing so will often involve building a comprehensive sheet in Excel or a similar program. That way, you might be able to keep pertinent order details together and up to date. Such manual order management, though, is labor-intensive. It will take a significant number of staff-hours just to keep a system updated. That's time you could be spending on other things. What's more, there's a high potential for human error. Record an order incorrectly, and issues may swiftly snowball.

There are two principal arguments against a manual system. The first is its lack of scalability. Once order volumes increase, manual order management becomes increasingly less viable. When you add extra sales channels, too, aligning everything by hand is tough. You need some help from technology. A complicated master spreadsheet is also far from intuitive. Its creator may find it straightforward to keep it up to date. If they leave the business, though, a new starter may struggle to make head or tail of it. That's not a good recipe for efficiency or productivity.

2. Using an Ecommerce Platform

If you sell online, you'll use an ecommerce platform. It's the solution by which you're able to accept orders from customers who visit your website. Smaller, younger brands also utilize their ecommerce platform as an order management system. Doing so can be effective in limited circumstances. Such platforms do record order details, which are accessible by your sales or customer service team. There's often also a facility to track order statuses, and even update inventory. Relying solely on an ecommerce platform is only an option when the following is true, however:

- All your orders come through your site. There are none via third-party channels.
- Your website and office are closely linked to your warehouse, allowing you to keep inventory and fulfillment details up to date.
- Your customer service staff have full access to the ecommerce platform.
- You don't have any significant growth plans.
- You only need simple order fulfillment processes leaning on your ecommerce platform for order management is less viable, if: You use more than one sales channel.
- Your logistics is more complicated. If, for instance, you have more than one warehouse or sometimes utilize drop shipping
- You plan to scale your brand without compromising your customer experience.

3. Standalone Order Management Software

When looking for a more effective OMS, many firms turn to standalone order management software. This software becomes a part of the firm's retail tech stack and works alongside other solutions. That means things like their ecommerce platform, accounting systems, and more.

Such a standalone tool introduces all the fundamental elements of order management. It lets firms centralize and track order data and makes details of customers and purchases readily accessible. Some of the better solutions, too, have extra functionality. That includes inventory management and warehouse management. The primary limitation of standalone software comes in the area of integration. As mentioned, the software must work alongside many other solutions. It can be tough to align your order management with shipping, accounting, inventory demand planning, POS and other platforms. The result can be miscommunication, data siloes, lack of scalability, and other unwanted issues.

4. Enterprise Retail Platform (ERP) Software

Firms that run into the constraints of standalone solutions often turn to ERP software. This type of system unifies far more business operations and departments. Rather than being specific to order management, ERP software spans many areas. They can include all the following: Inventory management, Warehousing & logistics, Customer relationship management (CRM) & HR & payroll. The principal aim of ERP software is to integrate the many strands of any ecommerce business. It works to break down barriers between different business departments and operations. With an ERP system, a firm suffers less from siloed data. More info is readily accessible to a higher number of people across the organization. Such systems do still have their downsides, however. For one thing, they're typically complicated to implement, configure, and learn. Gartner estimates that 55% to 75% of all ERP projects fail to meet their objectives. What's more, ERP software is often somewhat generic. It's not tailored to specific industries, let alone individual businesses. You may end up, therefore, with a raft of functions you don't need.

5. Digital Operations Platforms Tailored to Retail

A digital operations platform tailored to retail is the option for brands that are serious about order management and other back office operations. These systems encompass all aspects of the order process that we discussed early. That means both the ecommerce process and the so-called 'order to cash' process. These platforms centralize and unify all company data and operations. They connect all the following spokes of your business:

- Multichannel order management
- Inventory management
- Warehousing & logistics

- Controlling supply chains
- Reverse logistics
- ➤ Shipping & fulfillment
- > CRM
- ➤ Accounting
- Business reporting & intelligence
- Forecasting & inventory planning

The best digital operations platforms also provide a further advantage, alongside companywide unification. That is flexibility and agility to your business changes and growth. You can easily adapt your back office workflows to fit your business needs – whether you're enabling a new sales channel or switching to a new business model such as wholesale or DTC.

9.5 **BENEFITS OF OMS**

- 1. Automation
- 2. Reduction of human error
- 3. Accurate real time supply
- 4. Superior customer experience.

CHECK YOUR PROGRESS

- 1. Name the four process cycles of supply chain
- 2. What does the Warehouse Management System includes?
- 3. Name the two ways to view the processes performed in a supply chain
- 4. Differentiate between Pull process and Push process
- 5. What does the Procurement cycle includes?

9.6 WARE HOUSE MANAGEMENT SYSTEM

Warehouse management is the act of organizing and controlling everything within your warehouse – and making sure it all runs in the most optimal waypossible.

This includes:

- Arranging the warehouse and its inventory.
- Having and maintaining the appropriate equipment.
- Managing new stock coming into the facility.
- Picking, packing and shipping orders.
- Tracking and improving overall warehouse performance.
- Most high growth retailers would use automation tools (like some form of Warehouse Management System) to control this part of their supply chain.

However, there are many aspects that can and need to be considered from a manual standpoint. And so we cover this entirely in this guide.

The process of physical handling of goods in and out of the warehouse is an extensive and costly operation. To keep costs as low as possible, it is essential that quantity and placement of the items are accurate. To have efficient warehouse processes, the company must define the warehouse in terms of layout,put-away and pick logic, as well as internal replenishment information.

Warehouse Management Systems is aimed at companies that need to receive and ship products, while maintaining an optimum space usage and knowing specifically where all products are stored at any given time. Goods can either be stored in predefined (fixed) bins or in random (floating) bins, depending on the need for optimization and the expertise of the warehouse personnel.

The WMS granules provide functionality for executing more advanced warehouse processes such as handling items within a warehouse by zone and bin level, handling directed put-away and pick, and the development of an automateddata capture system (ADCS).

The flow of inventory through the warehouse can be divided into three basic processes:

- > Receiving items at the warehouse and making them available.
- > Handling items for internal distribution/movement/production.
- Picking and shipping items to customers or other locations.

Each process can consist of a series of warehouse handling activities. Receiving items involves the physical receiving of items when they arrive at a warehouse and then putting them away (from the receiving area into the stocking/handling area). WMS also provides the cross-docking functionality as part of the receiving process. Cross-docking is a means of saving time and effort by directing items on orders awaiting shipment from the receive zone directly to the ship zone without placing them into storage. Handling items involves repacking or completing items for sale, inventory counting, supplying production, or simply moving for optimization of space. Shipping items involves picking items from inventory and handing them to the shipping agent whom delivers them to customers. To have an efficient operation, warehouse managers must know which items are to be shipped or are to be used in production and which are expected to arrive. In this way they can estimate the expected workload and allocate warehouse resources accordingly. Employees in sales and purchase departments need to be able to see what stage in the warehousing process a particular order has reached. The NAV granules that deal with WMS provide companies with the necessary functionality to organize the receiving and shipping processes and to assist warehouse employees in recording the receipt of goods, picking items for shipping or production, and making shipments. The granules are used for communication between the sales, purchase, production, and warehousing functions. In particular, the release function ensures that only released inbound and outbound orders can be viewed and processed by the warehouse employees. That means that if a sales or purchase order is released, items are available for further processing by WMS.

Warehouse Workflow. The WMS is designed to work with the inbound, outbound and internal flow of items through the warehouse. The following illustration depicts the WMS overall workflow.



9.7 NOTES

9.8 SUMMARY

The order management process is a long and complicated one. It encompasses a sale, warehouse management, inventory, shipping and fulfillment, and more. Businesses have lots of OMS options. They include manual order management, standalone software, or a more comprehensive platform. Companies can choose between manual order management, standalone software, or a more comprehensive platform. Getting the right OMS in place delivers many benefits. They include better scope for automation, fewer errors, and superior customer experience. As long as you understand what you need from an OMS, it's easy to find the right one for you. Define your objectives at the outset. Then, work closely with your chosen vendor throughout implementation. The Warehouse Management System is used to easily receive the items and handle the items. This includes repacking, inventory counting, supplying production, or just moving an item for optimum warehouse space utilization, Pick the items and ship the items.

9.8 **KEYWORDS**

- Order Management software
- Warehouse Management
- Process view of supply chain

9.9 ANSWER TO CHECK YOUR PROGRESS

- 1. Supply chain process can be broken down into four process cycles such as
 - Customer order cycle
 - Replenishment cycle
 - Manufacturing cycle
 - Procurement cycle
- 2. The Warehouse Management System includes repacking, inventory counting, supplying production, or just moving an item for optimum warehouse space utilization, Pick the items and ship the items.
- 3. Two ways to view the processes performed in a supply chainCycles view and Push/pull view
- 4. Pull process is a reactive process while Push process speculative process
- 5. Procurement cycle includes all processes to ensure the availability of materials and components at the time and place required in the production and maintenance schedule.

9.10 SELF ASSESSMENT QUESTIONS

- 1. Identify different views of supply chain
- 2. Explain warehouse management system
- 3. How order management system works?
- 4. What are the benefits of OMS?

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UNIT – 10: LOGISTIC INFORMATION SYSTEM

Structure:

- 10.1 Objectives
- 10.2 Introduction
- 10.3 Logistics Information System
- 10.4 The benefits of implementing LIS
- 10.5 Key components of LIS
- 10.6 Logistic information system requirement and components (Architecture)
- 10.7 Application of information technology in logistic and supply chain management
- 10.8 Notes
- 10.9 Summary
- 10.10 Key Words
- 10.11 Answer to check your progress
- 10.12 Self-Assessment Questions
- 10.13 References

10.1 OBJECTIVES

After studying this unit, you should be able to:

- Explain logistics information system
- Identify the benefits of logistics information system
- Examine the key objectives of logistics information system

10.2 INTRODUCTION

Logistics is concerned with the flow of goods and services facilitated by information support. At present, machines and robots have, to a large extent, eliminated manual work. With advances in information technology, business-to-business (B2B) transactions or business-to-customer (B2C) deals are done through the internet. Presently logistics use the information resources of the enterprise and create a database specifically for its needs consisting of elements like data source, users, etc. Information Systems is an applied science for the processes of the creation and operation of systems that manage information.

Business Process Analysis methodologies are used for the modelling of logistic processes and their information flows that assist in understanding and clearly describing the information relationships between parties and authorities and in defining improvements to the logistic systems. Logistics Information System (LIS) is implementation of solutions for a system of records and reports which may be paper based or electronic. This is a specialized area in logistics that can handle location, work management, and data management in organisations. It mainly includes coordination of demand, supply, movement, and control of material or finished goods.

10.3 LOGISTICS INFORMATION SYSTEM

Logistics Information System (LIS) is a system of records and reports whether paper-based or electronic, used to aggregate, analyse, validate and display data from all levels of logistics system that can be used to make logistics decisions and manage the supply chain.

The objectives of LIS can be understood from the following:

- a) LIS ensures the transformation of logistics functional operations into a process with the goal of pursuing customer satisfaction at the lowest cost. It facilitates planning and control of logistics activities related to order fulfillment.
- b) LIS provides information on goods and tracks the delivery, by giving their status.

- c) Logistics systems depend on outside information and international standards to comply with regulations and use laid down ways of sharing logistic information with others.
- d) The manufacturers and traders monitor the actual products to know whether they will arrive on time and in proper condition at the delivery places, and to be able to take prompt action in case of any lapse.
- e) Transporters focus on the progress and status of the means of transport. In case of any delays or exigencies, transporters can report these to their customers who can consider the impact.
- f) Customs authorities and those responsible for ensuring the safety and security of goods during transportation are given details about the content of goods and their means of transport.

LIS is part of logistics management to manage, control and measure the logistical activities within the organisation and across the supply chain, achieving logistics efficiency and effectiveness. Within an organisation, LIS achieves the following:

- a) Customer satisfaction at the lowest total cost.
- b) Enables planning and control of the logistical activities related to order fulfillment.
- c) Fosters better tactical and strategic decisions for the benefit of the firm andits customers.
- d) Gives information to customers regarding product availability, order status, and delivery schedules.
- e) Enables resource planning thereby reducing the requirements of inventory and human resources.
- f) Provides information to top management to formulate strategic decisions by interface with marketing, financial, and manufacturing information systems.
- g) Links the operations of the business, such as manufacturing and distribution, with the supplier's operations and the customers.
- Facilitates 'virtual' inventory management or electronic inventory management by managing dispersed inventories through information technology. Inventory management becomes centralized and decisions on replenishment and other quantities are taken based on a single stock.

10.4 THE BENEFITS OF IMPLEMENTING LIS

The benefits of implementing LIS are:

a) Improvement in customer service and satisfaction.

- b) Establishing communication within the logistics chain.
- c) Reduction in stock levels and costs particularly of transportation and storage.
- d) Synchronising the processes of supply, production, and distribution.
- e) Handling the problems caused by shortage of materials for production.
- f) Improvement of delivery schedules and lessening probable orders errors.
- g) Reduction of documentation required in supply chain management.

THE MAIN ACTIVITIES OF LIS ARE:

- a) Data flow from external sources.
- b) Processing and storage of information within companies.
- c) Transmission of data for storage\processing to the decision maker inform of reports.
- d) Communication of decisions to customers and their feedback.

10.5 KEY COMPONENTS OF LIS

LIS is designed to manage the flow of materials and information within and between organisations and their business environment. Globally information technology is a critical enabler of the logistics supply chain networks that businesses use to acquire, produce, and deliver goods and services. The key components include:

- a) Logistics Information Portal
- b) Logistics Computing and Simulation
- c) Decision Support System
- d) Database
- e) E-Logistics and E-Commerce
- f) Software applications relating to Customer Relations Management (CRM), Enterprise Resource Planning (ERP), Radio Frequency Identification (RFID) Tags, Transport Management System (TMS), and Warehouse ManagementSystem (WMS)

10.6 LOGISTIC INFORMATION SYSTEM: REQUIREMENT AND COMPONENTS (ARCHITECUTRE)

The effectiveness of LIS is based on real time accurate information enabling a reliable accurate forecast from the raw material suppliers to the ultimate consumer with a large geographical spread. Managing this information is possible only with the use of various systems continuously evolving which need ingenuity foradaption in the LIS.

Information Network: The traditional elements of logistics are integrated by a web of IT networks, and integrated management systems, with virtual and network companies within an information grid. This LIS incorporates all information relating to plans, implementation, and control, for efficient and effective flow and storage of goods and services.

Electronic Data Interchange (EDI): IT plays an important role in providing real time information for proper forecasting and planning of manufacture or for supply of finished products to the end users. EDI can link suppliers, manufacturers, customers, and intermediaries. IT as the key component facilitates speeding up delivery time by transmitting information to the warehouse directly triggering an order for immediate shipment. In global context, EDI links exporters with customs, ports, and transporters for quick processing of customs documents thusspeeding up the deliveries.

Supply Chain Management Software (SCMS): These software modules complete supply chain transactions and manage supplier relationships for controlling the business processes. It can identify the activities that can reduce and eliminate non-value-added activities. It can deliver and market better quality products and services more quickly and cost-effectively to gain an advantage over less efficient competitors. Effective supply chain management systems help businesses to improve the entire supply chain network by reducing waste and shipping delays. SCMS reduces overhead expenses by enabling effective demand planning, improving inventory management, and relationships with vendors and distributors etc.

Enterprise Resource Planning (ERP): It encompasses software technologies in supply chain, bringing together the information from within the firm and from different geographical areas, integrating all businesses of the firm together for efficient use of resources. It is a process used by a company to manage and integrate important parts of its business. It refers to the software and systems to plan and manage all the supply chain, manufacturing, services, financial and other processes of the organisation.

Inventory Management Module: Inventory management being a key component of logistics, firms should manage their inventories efficiently as huge cost is involved in the inventories piling up. Therefore, an IT module for finished goods, semi-finished goods, raw materials, and work in progress inventories is convenientin ordering, based on suppliers or customers' demands.

Transportation Management System: Transportation is a key element of logistics being an important dimension as third-party intermediaries, to link together the suppliers and manufacturers

to final consumers. A range of services are available starting from factory door pick up, custom freight station, rail transportation using high speed wagons from container depot to ports and further movement if needed by sea to port of discharge and again hinterland transportation. In these activities, communication technologies, satellite tracking, bar coding applications, EDI, automated material handling systems etc., are employed.

Data Mining: Data mining is a process used of extracting usable data from a larger set of any raw data by companies to turn it into useful information through understanding a pattern and determine customers' behaviour for repeat sale. By using software to look for patterns in large batches of data, businesses can learn more about their customers to develop effective marketing strategies, increase sales and decrease costs. It implies analysing data patterns by using one or more software. Accordingly, based on the feed-back obtained from dissatisfied customers, services for such customers can be fine-tuned and customised to meettheir requirement.

Data Warehousing: A data warehouse is built by integrating data from multiple sources that support analytical reporting, and decision making. Data warehousing is the process of constructing and using a data warehouse, being the electronic storage of a large amount of information by a business or organisation. These are solely intended to perform queries and analysis and often contain large amounts of historical data. It combines information from several sources into one comprehensive database. For example, in the corporate world, a data warehouse might incorporate customer information from a company's salessystems, website, mailing lists etc.

Customer Relations Management (CRM): It is a technology used to manage interactions with customers by merging practices, strategies and technologies used by companies. Data mining and data warehousing are two important elements of CRM technologies. CRM systems compile customer data across different channels, or points of contact, between the customer and the company, that include the company's website, telephone, live chat, direct mail, marketing tools and social networks. CRM systems can provide the staff dealing with the customers, a detailed information on customers' personal information, purchase history, buying preferences and concerns. CRM technology creates various value-added services for customers, making the interaction more accurate, timely, responsive, and reliable. The basic CRM system could be enhanced by automation of marketing, sales force, contact center and workflow; location-based services, human resource management, etc.The

usage of CRM depends on a company's business needs, resources and goals, as each has different costs associated with it as can be seen by the under mentioned examples:

- a) Contact Centre. The sales and marketing teams procure data and update the system with information relating to customers and revise customer history records through service calls and technical support interactions.
- b) Social Customer Relations Management: To add value to customer interactions on social media, businesses use various social CRM tools that monitor social media conversations, to determine their target audience. Other tools are designed to analyse social media feedback and address customer queries and issues. They capture customer sentiments, such as the likelihood of recommending products and overall customer satisfaction, to develop marketing and service strategies.
- c) Mobile Customer Relations Management: Mobile CRM apps take advantage of features that are unique to mobile devices, such as GPS and voice recognition capabilities, to give sales and marketing employeesaccess to customer information from anywhere.

10.7 APPLICATION OF INFORMATION TECHNOLOGY IN LOGISTIC AND SUPPLY CHAIN MANAGEMENT

The three types of important information in an inventory are:

- 1. Part description/ Numbers
- 2. Quantity
- 3. Location

Identification systems for the codification of packaging inside the ware house by means of codes that can be scanned by automatic devices and there are the fundamental importance for the technical of the following ware house.

Barcodes: barcodes are the optical conversation of a numerical or alphanumerical code which are used to identify the package. It is represented by means of an alternating sequence of vertical bars and spaces. The codes are standardised by industry and usually printed on a paper label or tag. They generally contain a unique identifier, such as part number, which can be referred to a database for required information, such as price or description. The automotive industry requires labels designed to their specifications for layout and the type of code used and include, in addition to the product code, the manufacturer, date of manufacture, and so forth.

The use of bar codes improves the speed of data entry and the accuracy of the data retrieved. These

can reduce errors as they are machine readable symbols and are widely used to gather information at all levels of retailing, distribution, and manufacturing. The error rate for this method is extremely low compared tohuman error, which is estimated to be as high as 3% for repetitive entries.

Technologically there are two kinds of bar code scanning devices:

- a) **Optical scanners:** use a light source that illuminates the surface of the code enabling a suitable sensor to record the variations of the reflected ray.
- b) Laser scanners: repeatedly explore the encoded surface at each passage, taking a series of pictures that allow a greater accuracy of scanning. This allows scanning at high intensity and on moving packages.

Radio Frequency Identification (RFID) Tags

Smart tags are automatic identification system based on radiofrequency technology that work in a way like bar codes. It uses reflected radio waves from a small device or tag to receive its information. It is activated by means of an electromagnetic field generated by the scanner (reader), which is the electronic device used for the exchange of information with the tag itself. The readers canbe portable and are used by operators or are installed on vehicles, integrated with an antenna.

RFID tags are generally more expensive than printed bar codes, but the price is falling rapidly, promoting their wider applications. Hence major retailers are using this method of gathering information.

An RFID tag can be active or passive.

- a) Active tags are provided with an internal battery that powers them and enables large transmission distance (over 400m in the open for some models). They are equipped with an overly complicated electric system that allows the application to be customised based on individual requirements.
- b) Passive tags are more economical and widespread being made of an aluminum or copper antenna, a memory microchip, and a support for the protection of this chip. They do not have a battery and require no maintenance.

Logistic labels

The logistic labels record information both in legible format like characters, numbers and graphic elements and in the form of a barcode with the help of the labels, a logistic unit can be traced throughout the supply chain. For example : A logistic label the serial shipping container code SSCC

facilitates tracing of the physical path of the individual package together with the information flow associated with it. The scanning of the SSCC facilitates checking of the transport documents transmitted in electronic format the shipping and delivering of the products.

The labels contain both human-readable text and scannable symbols giving supplier details, product description, carton quantity, batch no, etc.

QR Code

QR (Quick Response) code is a matrix or two-dimensional barcode which is a machinereadable optical label that contains information about the item to which it is attached. It consists of black squares arranged in a square grid on a white background containing data for a locator, identifier, or tracker that points to a website or application. A QR code uses four standardised encoding modes i.e. numeric, alphanumeric, byte/binary, and kanji (Chinese character) to store data efficiently. It has become popular due to its fast readability and greater storage capacity compared to standard barcodes.

FASTag

FASTag is an electronic toll collection system in India, operated by the National Highway Authority of India(NHAI) employing RFID technology for making toll payments directly from the prepaid or savings account linked to it or directly to the toll owner. It is affixed on the windscreen of the goods carrying vehicles and enables to drive through toll plazas without stopping for transactions. With emphasis on implementing an effective and efficient electronic toll collection framework, FASTag has become popular enabling an efficient, fast, and cashless payment option for collection of toll charge. The integration of FASTags with the electronic way billing (E-way billing) system is an achievement toward a globally approved business and logistics hub. Connecting the electronic way bill (E-way bill) with FASTags can provide better operational efficiencies, making it simple to track the movements of goods by SMS alert especially at each toll plaza.

10.8 NOTES

10.9 SUMMARY

LIS caters to the specific information needs for decision making in the areas of logistics management. The appropriate software designed for the installed system makes it possible to generate reports for users in the required formats. Non value- added activities may be identified and taken out of the system to reduce investment cost. Integrating Logistics and Information Systems results in better awareness on various aspects of logistics. LIS is designed to provides the necessary skills to manage the flow of materials and information within and between organisations and their business environment. It focuses on the use of information technology as a critical enabler of the supply chain networks that businesses use to acquire, produce, and

10.10 SELF ASSESSMENT QUESTIONS

- 1. What is LIS? Explain its objectives
- 2. Describe the requirements of LIS and its components
- 3. State the benefits of LIS.

- 4. Elaborate on the technologies adopted by the LIS
- 5. Describe the technologies applications for LIS

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UNIT – 11: CUSTOMER RELATIONSHIP MANAGEMENT

Structure

- 11.1 Objective
- 11.2 Introduction
- 11.3 Defining Customer Relationship Management
- 11.4 Components of CRM
- 11.5 CRM Marketing
- 11.6 Customer Service Management
- 11.7 Partner Relationship Management
- 11.8 Notes
- 11.9 Summary
- 11.10 Key Words
- 11.11 Answer to check your progress
- 11.12 Self-Assessment Questions
- 11.13 References

11.1 OBJECTIVE

After studying this unit, you should be able to:

- Define Customer Relationship Management
- Explain Components of CRM
- Explain Customer Service Management
- Examine Partner Relationship Management

11.2 INTRODUCTION

CUSTOMER RELATIONSHIP MANAGEMENT

While customers have decidedly become more demanding and more sophisticated in their use of technologies that provide them with almost limitless choices and unprecedented access to information, they have also become more capricious in their buying habits and less inclined to remain faithful to supplier relationships despite their desire for long-term partnership. To counter these marketplace realities, many companies are in a life and death struggle to continuously develop business models that bring their businesses and their supply chains together in the search for the right mechanisms to attract and build sustainable customer loyalty: in short, how they can become more "customer-centric." Realizing this goal in today's fiercely competitive marketplace is, however, easier said than done. Until very recently, most companies focused their energies on selling products and services regardless of who was doing the buying. Nowadays, the tables have dramatically turned. Companies have shifted their strategic focus from "what" they are selling to "who" they are selling to. This dramatic transformation in the goals of customer management from a product to a customercentric focus has coalesced around the customer relationship management (CRM) concept.

11.3 DEFINING CUSTOMER RELATIONSHIP MANAGEMENT (CRM)

There are several comprehensive definition of CRM available. According to Greenberg, the leading CRM guru, CRM is a complete system that

- provides a means and method to enhance the experience of individual customers so that they will remain customers for life,
- (2) provides both technological and functional means of identifying, capturing, and retaining customers, and
- (3) provides a unified view of the customer across an enterprise.

The APICS Dictionary defines CRM as A marketing philosophy based on putting the customer first. The collection and analysis of information designed for sales and marketing decision

support to understand and support existing and potential customer needs. It includes account management, catalog and order entry, payment processing, credits and adjustments, and other functions.

A final definition is from Dyche who feels that CRM is "The infrastructure that enables delineation of and increase in customer value, and the correct means by which to motivate valuable customers to remain loyal – indeed to buy again.

Based on these definitions, CRM is characterized as follows:

- 1. CRM is both a management concept and a software technology. As a management concept, CRM is a philosophy that requires companies to migrate to a customer focused way of doing business. CRM requires a retooling of all business processes that touch the customer, from customer acquisition to financial settlement. Its goal is nurturing a lifetime customer through the establishment of a long-term relationship. As a technology, CRM describes a set of software applications used to manage and analyze marketplace sales, promotion, pricing, and shipment history to gain greater insight and intimacy into customer buying habits. CRM systems can be used "standalone" or as part of an ERP system.
- 2. CRM is a strategic management tool. CRM is a strategic technology focused on increasing profitability, enhancing the marketing plan, and expanding competitiveness by understanding and growing the customer. While the software applications provide marketers with critical tools to gather, segment, and query customer sales data for effective decision-making, its real value resides in the strategic advantage it provides the organization. CRM is a comprehensive toolkit encompassing marketing, sales, service, and supporting technologies focused on forging customer relationships that provide mutual value, revenue, efficiency, and unique solutions to business problems.
- 3. CRM is focused on facilitating the customer service process. Being more responsive to the customer requires that sales and service functions be able to make effective customer management decisions and design strategies enabling superior responsiveness based on their capability to identify what brings value to the customer. In an environment where too much information is just as bad as not enough, CRM provides database analysis tools specific to the needs of executives, marketing, product and brand management, sales, operations, and other functions. Often success requires the availability of metrics and analytical tools that provide a comprehensive, cohesive, and centralized portrait of the customer.

- 4. CRM is focused on optimizing the customer's experience. A fundamental objective of CRM is "owning the customer experience". CRM enables companies to continually win customers through an array of objectives from providing a level of personalized service and customized products to utilizing advertising, ease in ordering a product, or ensuring a service call-back that will positively influence a customer's perception of the buying experience. The end result is to make customers feel they are dealing with a winner and are personally connected to their supplier.
- 5. CRM provides a window into the customer. CRM functions ensure that all fulfillment nodes along the supply chain are provided with critical information about the customer, what that customer values the most, and how they can ensure the customer has a positive buying experience each and every time. CRM enables companies to target the service attributes that each and every customer desires the most by providing all-pervasive, integrated, and insightful intelligence, such as individual buying habits, pricing and promotions histories, channel preferences, and historical contact information.
- 6. CRM assists suppliers to measure customer profitability. Effective customer management requires that companies be able to determine which customer segments, if not each individual customer, are profitable and which are not, what product and service values drive profitability for each customer, and how marketers can architect processes that consistently deliver to each customer the values they desire the most.
- 7. CRM is about partnership management. Market-winning customer management is about knowing the needs, values, and visions of each customer. CRM is about nurturing mutually beneficial, long-term relationships intimate enough to provide improvement opportunities and tailored solutions to meet the short- and long-term goals of both supplier and customer beyond the immediacy of physical product and service delivery. The goal is to build unbreakable customer loyalty regardless of what actions are pursued by the competition.
- 8. CRM is a major facilitator of supply chain collaboration. No customer transaction is executed in a vacuum but is actually an instance in what is often a long chain of events as products and information progress from one supply chain entity to the next. Firms that create integrated, synchronized processes that satisfy the customer seamlessly across the supply channel network will be the ones that will have the most loyal customers, are the most attractive to

new customers, have the deepest collaborative relationships, generate the highest revenues, and have sustainable competitive advantage.

11.4 COMPONENTS OF CRM

CRM is divided into four major functions: marketing-the activities associated with relationship building, creating company branding, identifying the customer, selecting product/ service offerings, and designing promotions, advertising, and pricing; sales-the selling and distribution of products; service-activities encompassing customer support, call-center management, and customer communication; and performance analytics-utilization of database inquiry and reporting tools that reveal information about customers, products, and performance. The mission of CRM is to inform the organization of who its customers are, how to better understand what they want and need, what is the product and service mix to be taken to market, and how to provide the ongoing services and values that provide profitability and expand relationships that increase lifetime customer value. CRM functions also detail the methods that are used to market to the customer base, conduct transactions, respond to customer service issues, collect marketplace metrics, and format customer contact information for review and analysis. These functions also assist in the development of the strategies governing how the supply channel network is constructed and the nature of trading relationships. Finally, these functions provide the information and motivation necessary to continuously reshape the organization's perception of customer service, reengineer vestiges of "silo" management styles, and architect infrastructures that foster customer collaboration. In the past, the functions of marketing, sales, and service were, at best, loosely connected with each other and utilized varying levels of technology to transact business, collect information, and communicate with the customer. Even the software tools that had evolved, such as enterprise resources planning (ERP), were developed in isolation or heavily focused on the transaction engine while leaving the marketing and service component fairly underdeveloped. Marketing in the "Industrial Age" focused on direct contact with the customer and relied heavily on printed matter such as catalogs, direct marketing, and mass media advertising. Until the 1980s, sales had relatively little to do with technology and perceived their function as centered around salesmanship and leveraging personal relationships. Customer service, while always open to adopting the latest technologies to communicate with the customer, was often separated from the product producing and sales functions of the business. Up to just a few years ago, customer service consisted mainly in employing banks of service reps fielding customer inquiries by mail, phone, or fax. Finally, past software applications either did not capture or did not have the functionality to mine the customer and sales databases to retrieve critical information necessary for effective customer management.

While it can be argued that many companies have for years utilized CRM methods to deal with their customers, the rise of Internet technologies has rendered obsolete many of the traditional concepts of customer management through the creation of new technology toolsets that have significantly expanded existing CRM functions and capabilities. Today's Internet-enabled applications provide companies with radically new avenues to gain visibility to customer value, retain and attract new customers, enhance transaction and service capabilities, and generate integrated, customer-centric infrastructures that enable businesses to realize opportunities for profitability while providing the customer with a level of seamless end-to-end service impossible less than a decade ago. In fact, over the past decade or so CRM software has remained one of the hottest segments in the business software solutions marketplace.

THE R/ANGE OF CRM APPLICATION FUNCTIONS

Businesses of all types, from manufacturers and distributors to high tech, banking, and consumer goods, are leveraging CRM technologies as a major part of their digital initiatives to enhance the customer experience. The demand for additional ways of using modern technology to expand customer relationships is driving refreshed or expanded integration and usage of all areas of CRM software. The hottest technology drivers are cloud computing, social networking, mobile devices, big data, and a fifth driver, the "Internet of Things," where sensors connecting things (devices of all types) to the Internet create new services previously not thought of.

Relationship Building

Regardless of the depth of application features available in any one CRM system, the goal of CRM is the development of lifetime customers by enabling the organization to optimize each customer's experience at each supply channel interaction point. A key enabler of CRM is the collection, analysis, and dissemination of customer data that assists each channel node that touches the customer to be intimate with customer preferences, buying habits, brand predilections, length of loyalty, and other factors that show that the entire supply chain is truly involved in building a relationship with each individual customer. CRM tools focus company efforts to design policies and procedures that seek to acquire and retain customers. It may also involve working with customers to

develop ideas on products, services, and delivery resulting in profitable solutions to actual customer problems. The goal of relationship building is to develop customer loyalty or even mutual dependence that results in the emergence of a lifetime customer.

Key CRM tools for relationship building include:

- Real-time updates on contacts, accounts, opportunities, and documents.
- Ability to consolidate account history, customer communications, and contacts. Social media insight.
- Integrated reporting, analytics, data mining, market segmentation, campaign management, and closed-loop reporting.
- Creation of business connections across CRM activities and entities.
- Measuring performance of organizations, business units, teams, and individuals.
- Central software application where all departments of a company can share necessary information to collaborate and provide detailed communication with customers.

11.5 CRM MARKETING

Effective marketing is founded on a simple premise: customers are won by personalizing the communication between seller and buyer. In a pre-industrial economy, selling is always a one-to-one affair and is characterized by personal contact whereby the buyer examines physically the array of available goods and services and the seller negotiates a contract to sell. In the Industrial Age, the concept of brand and mass marketing replaced personal relationship and direct review of available goods and services. Mass marketing meant standardization of products and services, as well as pricing, and assumed uniformity of customer wants and needs. The prospect for marketplace success was focused on the availability and choice of the product and service mixes companies offered. Although by the mid-1990s modifications to the mass marketing approach, such as direct-marketing, target marketing, and relationship marketing, began to point the way toward a return to one to-one buyer-seller contact, marketers lacked the mechanism to initiate what could be termed personal marketing. This approach is defined as the capability of companies to present their goods and services customized to fit the distinct personal interests and requirements of the customer.

With the advent of the Internet, marketers were finally provided with a mechanism to activate personal marketing. Computer networking provided buyer and seller with a medium whereby the interactive, two-way dialogue between customer and supplier, so necessary for the establishment of

true one-to-one relationships, could be established. When it is considered that the cost of gaining a new customer is five to eight times greater than marketing to an existing one, companies capable of leveraging the power of personal marketing are infinitely better positioned to keep their customer base intact. One-to-one marketing involves four steps: (1) Identify best prospects and customers and use CRM tools to mine the customer database to build deep customer relationships; (2) Apply CRM tools to ensure marketing spend is focused on the most valuable customers with high lifetime value; (3) Based on CRM analytical tools, develop a personalized knowledge of each customer's individual requirements and what provides value in their relationship with suppliers; (4) Use CRM and Internet networking tools to customized products, services, and messages that appeal to customers in a personal way; and (5) use CRM marketing processes to reduce customer defection, grow the depth of customer relationships, and focus high effort on high value customer

The major activities of an automated marketing campaign are:

- Promotion
- Cross selling and up selling
- Marketing events
- Customer retention
- Response management.

Sales Force Automation (SFA)

Arising in the early 1990s, SFA was conceived as an electronic method to collect and analyze customer information from marketing and contact center organizations that in turn could be used to advance opportunities for customer retention and acquisition as well as enhancing marketplace relationships and revenues. Today, SFA provides computerized tools to assist the sales function to more effectively manage existing accounts; prospect for new customers; track the impact of pricing, promotions, campaigns, forecasts, and other sales efforts in their pipelines; generate meaningful analysis and statistics from their customer database; become more mobile; organize their contact lists; have real-time customer information in an easily accessed presentation; and evaluate sales personnel performance. Using today's powerful networking technologies, SFA applications are capable of synchronizing data from unconnected sources, such as laptops, mobile devices, and tablets, and utilizing flexible and scalable databases, such as Microsoft SQL or Oracle, and PC and mobile device applications equipped with scoreboards and reporting functionality that provide real-time information sharing. While the SFA marketplace contains a number of software vendors and competing products,

they all possess to some degree the following functionality:

- Contact management
- Account management
- Sales process/ activity management
- Opportunity management
- Quotation management
- Knowledge management

11.6 CUSTOMER SERVICE MANAGEMENT (CSM)

The role of customer care is today considered as the cornerstone of the customer-centric organization. Over the past 25 years, CSM has emerged from a manual person-to-person process, marked by letters and phone calls, to a suite of sophisticated online networked tools located within today's CRM software module. CSM functionality enables sales, support, service, and fulfillment access to complete customer service data in real time. Today's CSM capabilities have been pushed to a new dimension with the advent of exciting new technologies, such as Web-based networking, social media, cloud computing, speech recognition, and video, joined to older technologies, such as phone, caller-ID, fax, e-mail, and EDI. Such applications provide customers with even more opportunities for control of service dimensions while enabling companies to integrate all avenues of customer interaction on a central platform. Self-service opens a new dimension of customer service at less cost while service databases improve knowledge of customer behavior that enable the delivery of customized sales and service one customer at a time. The mission of CSM technologies is to activate open, productive dialogues with the customer that are personalized in that they reflect each individual customer's needs, self-activating in that they permit the customer to successfully self-service their questions, immediacy in that critical information is conveyed in real-time, and intimate in that the customer feels the supplier is sincerely interested in their issues and that the outcome will provide a basis for future sales and service interaction. CSM technologies are separated into four areas.

- Case management
- Case history knowledge data base
- Customer portal
- Time tracking

Customer Experience Management

As detailed earlier in this chapter, the realization that the customer, and not products or

companies, rules the marketplace has become a recognized fact. It is the customer who has assumed the power to direct the design of product and service content, pricing, transaction management, and the medium by which business is conducted. Today's customer expects to be treated as an individual and requires suppliers to provide them with configurable, solutions-oriented product bundles, services, and information custom designed to meet their unique wants and needs. Customers are simply demanding more control over the buying experience that empowers them to design their own solutions, tap into robust sources of information content, and deploy user-friendly tools for order management, self-service follow-up, and financial settlement. Companies have responded to this challenge by leveraging their CRM systems to architect organizations that are more customercentered. While not minimizing the "hard" components of CRM for data collection and analysis, of equal, if not greater importance, is the ability to use CRM to help mold the perceptions and attitudes customers come away with from a buying experience. In a word, customers have come to base equal value on both the products and services they receive and on the feelings and expectations, tangible and intangible, which surround their interaction with a supplier, its organization, and its processes. Today's best supply chains are succeeding by unearthing and nurturing this special intimacy with their customers aimed at capturing their loyalty, as well as unmistakable competitive advantage, by listening to the customer experience.

CHECK YOUR PROGRESS

1. Define CRM

- 2. CRM is a ______ type of management tool.
- 3. Name any three functions of SFA
- 4. What does CRM tools focus ?
- 5. CRM systems can be used "standalone" or as part of an ERP system. (True/ False)

11.7 PARTNER RELATIONSHIP MANAGEMENT (PRM)

Simplistically, the mission of PRM is defined as a business strategy and a set of application tools designed to increase the long-term value of a firm's channel network. The PRM suite of applications assists companies to select the right sales partners and then supports them by offering timely and accurate information and knowledge management resources to deal successfully with channel customers. In addition, PRM enables collective searching for ways to improve sales, productivity, and competitiveness; tools for joint marketing campaigns, lead management, sales

forecasting, order processing, commissions and royalties; and assurance that each trading partner contributes to customer satisfaction. PRM provides tools to automate and enhance communications, processes, and transactions throughout the supply chain system.

Analytics

In today's data-rich business environment, companies are often suffering, not from a want of information about their markets and customers, but from a glut of too much data or what is currently termed "big data." Enterprise systems, marketing and customer service departments, and now social networking and the Internet are burying business analysts in a flood of information. The goal of CRM analytics is to provide companies with statistical, modeling, and optimization toolsets that empower them to deploy real-time dashboards and reporting to analyze, combine, and stratify their data to better understand the state of their businesses and provide drill-down visibility to sales opportunities, customer profiles, sales quote details, and other data to enable quick action.

Supply Chain Performance Management:

The goal of supply chain performance management is business process optimization through monitoring and analysis of key performance indicators. ... This type of analysis allows companies to track various metrics at different organization levels and to take timely actions.

11.8 NOTES

11.9 SUMMARY

Customer relationship management is a technology for managing all your company's relationship and interactions with customers and potential customers, improving relationships. The goal of supply chain performance management is business process optimization through monitoring and analysis of key performance indicators by measuring and monitoring metrics against predefined goals.

11.10 ANSWER TO CHECK YOUR PROGRESS

- **1.** A marketing philosophy based on putting the customer first.
- 2. CRM is a strategic management tool.
- 3. The functions of SFA includes Contact management, Account management and Sales process/ activity management
- 4. CRM tools focus company efforts to design policies and procedures that seek to acquire and retain customers.
- 5. True

11.11 SELF-ASSESSMENT QUESTIONS

- Define CRM. Explain the characteristics of CRM
- Explain the Components of CRM
- Discuss supply chain performance management

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UNIT – 12: SUPPLY CHAIN MANAGEMENT TECHNOLOGY

Structure

- 12.0 Objectives
- 12.1 Introduction
- 12.2 Importance of IT in SCM
- 12.3 Supply Chain Management Business Technologies
- 12.4 Role of IT in SCM
- 12.5 Components of Customer Relationship Management
- 12.6 Green Supply Chain Management
- 12.7 Notes
- 12.8 Summary
- 12.9 Key Words
- 12.10 Answer to check your progress
- 12.11 Self-Assessment Questions
- 12.12 References

12.1 OBJECTIVES

After studying this unit you should be able to:

- Identify Impact of IT in Supply Chain Management
- Explain Demand Chain Management
- > Appreciate green supply chain management

12.1 INTRODUCTION

As the importance of timely, accurate, and robust information increases in the business environment, information technologies have progressively become the key enabler integrating the global supply chain. Today's enterprise must consider computerized technologies not only as a tool to accelerate the speed and productivity of business functions, but also as a key driver that enhances the opportunity for supply chains to continually activate new relationships and operating structures that change the way they compete in the marketplace. Internally, information technologies enable companies to develop databases and implement applications that provide for the efficient management of transactions and the timely collection, analysis, and generation of information about customers, processes, products, services, and markets necessary for effective decision making. Building a real time knowledge repository creates the pathway necessary to seamlessly synchronize the capabilities of individual companies with their customers and trading partners. Externally, information technologies enable supply chain strategists to architect channel networks that are collaborative, agile, scalable, fast flow, and Web-enabled. The goal is to present customers anywhere in the supply chain with a single, integrated response to their wants and needs by creating unique value-chain networks. Connectivity and synchronization at this level require the elimination of channel information silos and the construction of collaborative, channel-wide communication and information enablers directed at a single point: total customer satisfaction.

While it is said that supply chain management is perhaps the single most important driving force in today's global business environment, at the heart of SCM is found the integrative power of information technologies. Deploying this power requires both planners and technologists to rethink their use of the computer. Actualizing the potential of today's information systems requires companies to move beyond traditional paradigms that utilize computerization purely as a means to automate and control business processes. In fact, connectivity enablers, like the Internet, now permit companies to escape from the narrow boundaries of their own information environments to network with a universe of geographically dispersed channel trading partners and create real-time strategies,

operations, and planning systems previously thought unattainable. Today's boundary-spanning technology tools enable companies to harness the explosion of data that continuously emanates from every plane in the supply chain galaxy, integrate it with internal business systems, perform sophisticated analysis of the information, make visible an accurate picture of individual enterprise and supply chain partner performance, and architect revolutionary capabilities and competencies for the generation of new sources of products and services, whole new businesses and marketplaces, and radically new forms of competitive advantage.

12.2 IMPORTANCE OF IT IN SUPPLY CHAIN MANAGEMENT:

Companies pursue several levels of objectives when applying information technologies to supply chain management. Strategic objectives have already been discussed .the following the objectives specified

- Increasing supply chain velocity, agility, and scalability. By providing integrative and networking capabilities, supply chains participants can rapidly form collaborative partnerships to engage in managing new product development, exploit new market opportunities, accelerate product delivery to targeted customers, and leverage the core competencies of channel partners to quickly scale production and distribution resources.
- Provide global visibility of real-time channel information. Combining technologies like the Internet and cloud computing with supply chain software applications provide supply chains with visibility to channel events and the ability to rapidly make informed decisions.
- Tame the supply chain bullwhip effect. Access to real-time channel inventory information enables channel planners to see unnecessary build-ups of channel inventories and to simulate inventory movement to diminish the effects of poor channel forecasting by channel participants.
- Replace supply chain inventory with information. The use of networking technologies providing the entire channel with real-time data allowing planners to respond rapidly to actual shifts in demand without stockpiling inventories.
- Move from push to pull. The ability of networked databases enables companies resident at all channel points that touch the customer to stream demand and substitute push channel replenishment with pull systems that empower planners to rapidly respond to actual shifts in demand.

• Facilitate the formation of new supply chain partnerships and deepen existing partner relationships. The ability to link inter-channel strategies and tactics through information integration and the use of networking for real-time information sharing enables companies to form and grow supply chain relationships.

12.3 SUPPLY CHAIN MANAGEMENT BUSINESS TECHNOLOGIES: FOUNDATIONS

Managing today's globally-networked enterprise requires assembling the array of supply chain business technologies into a comprehensive business system that facilitates the goals and objectives of the business. SCM technologies consist of a wide range of functions from task automation and generation of information used for decision-making to networking the knowledge of people within the organization and externally in the supply chain. The goal of assembling an enterprise business system is not to create monolithic, rigid systems, but rather to configure scalable, highly flexible information enablers that provide enterprises with the capability to respond effectively with value solutions and collaborative relationships at all points in the supply channel network. Today's portfolio of SCM technologies encompass three possible levels of functions and applications. The first is concerned with applications that enable the core functions of a business and are concerned with the integration of internal data and processes. The second dimension is concerned with the integration of a basket of advanced applications that significantly enhance core enterprise functions. The third, and final, dimension is concerned with an array of applications and technologies enabling the networking of the enterprise with businesses located in the supply chain.

12.4 ROLE OF IT IN SCM

It is important to develop a framework that helps a manager understand how this information is utilized by various segments of IT within the supply chain. It is important to note that the use of information in the supply chain has increasingly been enabled by enterprise software. Enterprise software collects transaction data, analyzes these data to make decisions, and executes on these decisions both within the enterprise and across a supply chain. Certainly other parts of IT beyond enterprise software, such as hard ware, implementation of services, and support, are all crucial to making IT effective. Within a supply chain, however the different capabilities provided by IT have as their most basic building block the capabilities of the supply chain's enterprise software. In many ways, software shapes the entire industry of enterprise IT as the other components follow the software lead. It is for this reason that we use enterprise software and its evolution as the primary guide in analyzing it and its impact on the supply chain.

The enterprise software landscape became increasingly overpopulated during the late 1990s. The unprecedented flow of venture capital into new software companies led not just into an increase in the number of software companies, but also the proliferation of entire categories of software.

Customer relationship management

The CRM macro process consists of processes that take place between an enterprise and its customers downstream in the supply chain. The goal of the CRM macro processes is to generate customer demand and facilitate transmission and tracking of orders. Weakness in this process results in demand being lost and a poor customer experience because orders are not processed and executed effectively. The key processes under CRM as fallows.

Marketing: Marketing processes involve decision s regarding which customers, what products to offer, how to price products, and how to manage the actual campaigns targeting customer.

Sell: The sell process focuses on making actual sales to a customer (compared to marketing, in which processes are more focused on planning who to sell to and what to sell). The sell process includes providing the sales force the information it needs to make a sale and then execute the actual sales.

Order management: The process of managing customer orders as they flow through an enterprise is important for the customer to track his order and for the enterprise to plan and execute order fulfillment. This process ties together demand from the customer with supply from the enterprise. Order management software has traditionally been handled by legacy systems or been a part of an ERP.

Call / service center: A call / service center is often the primary point of contact between a company and its customers. A call / service center helps customer place orders, suggests products, solves problems, and provides information on order status.

CRM vs SCM:

Supply chain management strategies enable companies to ensure the business has the materials, information and financial resources it needs to produce quality goods and services in a timely manner. By coordinating the flow of work from vendors to manufacturers and then from distributors to retailers, effective supply management techniques reduce inventory and ensure product availability when required.

Customer relationship management programs are used to ensure parts and service get to customers when needed after sales are completed by automating business processes used for sales, service and support. Integrate supply chain management and customer relationship management functions to maximize your operations.

Supply chain management personnel ensure that all departments in the business get the raw materials they need to complete their work, while customer relationship management personnel deal with customers to make sure they get the support and services they need.

Supply chain personnel work with vendors, while customer relationship personnel work with customers.

For example, at a small veterinary hospital, the supply chain management personnel make sure the veterinarians and technicians have the medical supplies required to conduct routine examinations, perform surgeries and treat medical conditions for clients' animals at the hospital, while customer relationship management personnel work with customers to make sure they get the right medications to administer to their animals at home.

Benchmarking: Benchmarking is the continuous, systematic process of measuring one's output and/or work processes against the toughest competitors or those recognized best in the Industry. The process of continuously comparing and measuring an organisation against business leaders anywhere in the world to gain information which will help the organisation take action to improve its performance.

Features of benchmarking:

- Helps organisations understand strengths and weaknesses
- Helps better satisfy the customer's needs by establishing new standards and goals
- Motivates employees to reach new standards and to be keen on new developments
- Allows organisations to realize what level(s) of performance is really possible by looking at others
- Documents reasons as to why these differences exist
- Helps organisations improve their competitive advantage
- Is a cost-effective and time-efficient way of establishing a pool of innovative ideas.

Benchmarking Process



Outsourcing:

Outsourcing is a practice used by different companies to reduce costs by transferring portions of work to outside suppliers rather than completing it internally.

"The strategic use of outside resources to perform activities traditionally handled by internal staff and resources" - Dave Griffiths

Outsourcing offers many advantages. For instance, outsourcing allows companies to seek out and hire the best experts for specialized work. Using outsourcing also helps companies keep more cash on hand, freeing resources for other purposes, such as capital improvements. It's also often cheaper in terms of salaries and benefits and reduces risks and costs.

Outsourcing can also help a business focus on its core components without distractions from ancillary and support functions. Another advantage -- such as the one involving the fictitious Smith & Co -- involves speed and nimbleness. It's sometimes quicker and more efficient to hire aspecialist to do something than it is to bring your company up to speed.

Many large companies use outsourcing to fill roles in their organization that would be too expensive or inefficient to create themselves. Smaller companies also turn to outsourcing, though the cost savings is sometimes diminished.

Outsourced manufactured components can include building components for aircraft, computer networks or automobiles.

Outsourced service functions can include:

- Call centres
- Payroll and bookkeeping
- Advertising and public relations
- Building maintenance
- Consulting and engineering
- Records
- Supply and inventory
- Field service dispatch
- Purchasing
- Food and cafeteria services
- Security
- Fleet services

Demand chain management:

According to D. Ericsson D.C.M. is a natural next step in the evolution of the Supply Chain Management concept based on the necessity for adaption to changing external and internal conditions and the availability of new tools.

Demand Chain Management is a shift in procurement strategy from a stance of reactive to proactive. It is a shift from processing paperwork to proactively negotiating strategic agreements on behalf of the organization in anticipation of needs based on feedback from users, historic data, and organizational data.

It is about developing strong working relationships with end users, Logistics staff, Accounts Payable staff, and Suppliers to ensure that organizational needs are met on a cost effective, timely basis.

It involves

- Customer relationship management
- Extended supply chain management

Demand Chain Management is about breaking down the barriers via a philosophy shift from a "silo" driven, territorial, "not my department" approach to one of a holistic, strategic, solution driven philosophy.
How is this achieved. Through partnerships. It is all about garnering trust, following through, and being creative in breaking down existing barriers.

How is this achieved?

Get out there! Go visit your users and the individuals you are buying for. See their work environment, the limitations they face, meet with them regularly to follow up on issues, resolution, future needs.

Listen. Your users and partner areas such as Accounts Payable, Central Distribution, Warehousing, as well as Suppliers can provide you with a wealth of information, if you let them. Be creative. Look for creative, strategic solutions to potential problems, talk with the users and get feedback, think outside of the norm. Don't be afraid to do things differently than they have always been done.

Partner and Network with your end users, your counterparts in Accounts Payable, Central Distribution, and Warehousing and in your supply network, build relationships based upon mutual understandings and common goals.

12.5 COMPONENTS OF CUSTOMER RELATIONSHIP MANAGEMENT

Sales Force Automation

Sales Force Automation is the most essential components of customer relationship management. This is one such component that is undertaken by the maximum business organizations. It includes forecasting, recording sales processing as well as keeping a track of the potential interactions.

It helps to know the revenue generation opportunities better and that makes it very significant. The component also includes analyzing the sales forecasts and the performances by the workforce. To achieve an overall improvement in the development and growth of the industry, numerous components work hand in hand to form sales force automation as a consequent unit. Some of the major elements of the same are Lead Management, Account Management, Opportunity Management, Forecasting, Pipeline Analysis, Contact Management, Activity Management, Email Management and Reporting.

Human Resource Management

Human Resource Management involves the effective and correct use of human resource and skills at the specific moment and situation. This requires to be make sure that the skills and intellectual levels of the professionals match the tasks undertaken by them according to their job profiles. It is an essential component not only for the large scale corporations but the medium industries as well. It involves adopting an effective people strategy and studying the skills or the workforce and the growth being generated thereby designing and implementing the strategies needed accordingly with the aim of achieving development.

Lead Management

Lead Management as the name suggests, refers to keeping the track of the sales leads as well as their distribution. The business that are benefitted by this component of CRM the most are the sales industries, marketing firms and customer executive centres. It involves an efficient management of the campaigns, designing customized forms, finalizing the mailing lists and several other elements. An extensive study of the purchase patterns of the customers as well as potential sales leads helps to capture the maximum number of sales leads to improve the sales.

Customer Service

Customer Relationship Management emphasizes on collecting customer information and data, their purchase informations and patterns as well as involves providing the collected information to the necessary and concerned departments. This makes customer service an essential component of CRM.

Almost all the major departments including the sales department, marketing team and the management personnel are required to take steps to develop their awareness and understanding of the customer needs as well as complaints. This undoubtedly makes the business or the company to deliver quick and perfect solutions and assistance to the customers as well as cater to their needs which increases the dependability and trust of the customers and people on the organization.

Marketing

Marketing is one of the most significant component of Customer Relationship Management and it refers to the promotional activities that are adopted by a company in order to promote their products. The marketing could be targeted to a particular group of people as well as to the general crowd. Marketing involves crafting and implementing strategies in order to sell the product. Customer Relationship Management assists in the marketing process by enhancing and improving the effectiveness of the strategies used for marketing and promotion.

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This is done by making an observation and study of the potential customers. It is a component that brings along various sub-elements or aspects. Some of the major elements of marketing are List Management, Campaign Management, Activity Management, Document Management, Call Management, Mass Emails and Reporting. The use of the aforesaid elements varies from business to business according to its nature and requirements as well as the target crowd.

Workflow Automation

A number of processes run simultaneously when it comes to the management and this requires an efficient cost cutting as well as the streamlining of all the processes. The phenomenon of doing so is known as Workflow Automation. It not only reduces the excess expenditure but also prevents the repetition of a particular task by different people by reducing the work and work force that is getting wasted for avoidable jobs. Routing out the paperwork and form filling are some of the elements of the process and it aims at preventing the loss of time and excess effort.

Business Reporting

CRM comes with a management of sales, customer care reports and marketing. The customer care reports assist the executives of a company to gain an insight into their daily work management and operations. This enables one to know the precise position of the company at any particular instance. CRM provides the reports on the business and that makes it play a major role here. It is ensured that the reports are accurate as well as precise. Another significant feature is the forecasting and the ability to export the business reports on other systems. In order to make comparisons, one can save historical data as well.

Analytics

Analytics is the process of studying and representing the data in order to observe the trends in the market. Creating graphical representations of the data in the form of histograms, charts, figures and diagrams utilizing the current data as well as the one generated in the past is essential to achieve a detailed understanding and study of the trends. Analytics is an extremely significant element of Customer Relationship Management as it allows to make in-depth study of information that is required to calculate the progress in the business.

Different components of Customer Relationship Management are associated with different elements mainly, the customer acquisition, improved customer value and customer retention.

Various marketing applications are carved out to acquire more customers whereas data warehousing and analytical tools help the business to hold customers with a better communication and relationship. In order to enhance the customer value among the existing and future customers, there is a number of data warehousing and analytical tools.

Overall, each of the discussed components of Customer Relationship Management is very essential to improve the work structure as well as the market response to the business and their products.

CHECK YOUR PROGRESS

- 1. What is Analytics?
- 2. What is Green Manufacturing?
- 3. What is the goal of CRM?
- 4. What is green distribution?
- 5. What is the advantage of outsourcing?

12.6 GREEN SUPPLY CHAIN MANAGEMENT

Since last couple of decades, environmental issues have been increasing and traveling faster than forest fire, country to region, region to world level territory, which is a serious cause of climate change and global warming. In addition, scarcity of natural resources and air and water pollution badly affect the fauna and flora, human life with different diseases they cause definitely, such like ischaemic heart disease, lung cancer, chronic obstruction pulmonary disease, stroke, Dracunculiasis, Cholera, Hepatitis, Typhoid fever, and Norovirus [2]. While, the green supply chain concept occurs to mitigate environmental degradations and control air, water and waste pollution through the adoption of green practices in business operations. Undeniably, the basic ideology behind green concept is to enhanced environmental sustainability, but firms adopt green concept as "kill two enemies with one bullet". Because green supply chain can reduce the environmental pollution and production costs and it also can spur economic growth, create competitive advantage in terms of greater customer satisfaction, positive image and reputation and provide better opportunity to export their products in pro-environmental countries [1]. The definition of green idea is expanding with new innovations and techniques to protect environmental sustainability, which can be recognized by corporate social responsibility, green

manufacturing, waste reduction, recycling and remanufacturing sustainable/environmental friendly supply chain, green supply chain, etc.

The term sustainable or green supply chain refers to the idea of integrating sustainable environmental processes into the traditional supply chain. This can include processes such as supplier selection and purchasing material, product design, product manufacturing and assembling, distribution and end-of-life management. Instead of mitigating harmful impact of business and supply chain operations, green supply chain involves value addition and/or value creation through the operations of whole chain. Undeniably, reducing air, water and waste pollution is the main goal of green supply chain, while green operations also enhance firms' performance in terms of less waste manufacturing, reuse and recycling of products, reduction in manufacturing costs, greater efficiency of assets, positive image building, and greater customer satisfaction.

Green supply chain makes the applications of the key sustainable development strategy outstand. It emphasizes how green practices can be adopted in firms to mitigate the environmental degradations and increase the economic and operational performance of firms, while <u>Figure 2</u> illustrates a simple model of green supply chain. Khan et al. [2] have explained the concepts of sustainable and green supply chain management:



Figure 1.

Simple model of GSCM.

Application of environmental management principles to the entire set of activities across the whole customer order cycle, including, design, procurement, manufacturing and assembly, packaging, logistics and distribution.

Integrating environmental thinking into supply chain management, including ecological design of products, purchasing green materials and components, reengineering of manufacturing steps towards ecofriendly, reverse logistics management of the product after its useful life.

Integrating environmental consideration onto firms' supply chain including reverse logistics.

Reducing and controlling the harmful impacts of supply chain on the environment.

Adoption of ecological design, sourcing green materials and chemicals, and provide green trainings to employees under ethical leadership.

Green supply chain are integrating ecofriendly concept into supply chain management to improve environmental sustainability with different green practices including, green purchasing, green distribution and warehousing, green transportation with usage of biofuels, green manufacturing processes and the products' end-of-life management

In the World, as the environmental awareness is increasing, firms are facing heavy pressure from different stakeholders including government and customers to mitigate their harmful effect on the environment. Indeed, corporate sector needs to consider integrating their business practices in service and manufacturing industry with sustainability and reducing end-toend supply chain costs to achieve competitive advantage. Since last couple of decades, growing impacts of global warming, climate change, waste and air pollution issues have involved increasing world-wide attention of experts to think more ecofriendly and find optimum possible solution towards "Green". Rath identified GSCM (green supply chain management) plays a part in motivating organizational sustainability. With the environmental concerns rising continuously, GSCM deserves a persistent community concern in developed nations. Further, it has recently woken up the developing nations to the green movement.

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2. The role of critical success factors in GSCM

There is no doubt that green supply chain is a relatively new idea, which is gaining popularity so as to improve environmental performance in the whole chain [5, 14]. We have identified the following six key critical success factors for putting green supply chain management into practice to attain better environmental sustainability

- Ethical leadership/internal management
- Customer management
- Supplier management
- Competitiveness
- Societal
- ➢ Regulatory

Ethical leadership/internal management

Internal environment management contains support and encouragement from senior managers. Internal management is a key critical success factor for enterprises to adopt green practices. Pressure employees bring about, encouragement and support from environmental-protection motivate senior management. Meanwhile, the perception of environmental risks involved could bring positive change in adoption of green practices.

Customer management

In green supply chains, customers play an important and effective part. Indeed, developing nations' firms are facing heavy pressure to adopt green practices in their business operations of supply chain to meet their customers' demand so that they can be competitive in the market . Cooperation with customers becomes very useful to attain fruitful advantages from green supply chain management.

Supplier management

Green supply chain practices are unable to be adopted without active participation of customers and suppliers. Strong collaboration with suppliers enhances incentive systems, boosts the adoption and development of innovative ecofriendly ideas. Technologies, green partnership agreements and openness in implementation of innovative green practices may generate enhancement in operational and environmental performance so as to achieve economic goals of firms.

Competitiveness

A number of published researches showed that competence and relevant elements could play a part in green practices implementation in their supply chain . Competitiveness has been perceived as a significant factor to implement green practices rather than organizations' wish to protect environmental sustainability. Implementing green practices in firms' business operations may also be dated back to additional voluntary for competitive factors.

Social

A number of researchers found the significance of societal factors for attaining environmental friendly practices objectives. With growing attention of regulatory bodies and awareness of customers on environment, firms have to exchange end-to-end information regarding their supply chain operations' effect on local community and people lives . In addition, NGOs

(nongovernment organizations), electronic and social media are more effective in exerting pressure on firms to adopt green practices.

Regulatory

Increasing prominence of environmental concerns has forced regulatory authorities to strict their environmental laws and policies. Governmental bodies have been farming strict environmental laws to control climate change, global warming and pollution; and firms are required to reduce their supply chain's negative effect on environmental sustainability. Hence, it becomes more and more important for firms in supply chain to have conformity with regulations so as to conducting ecofriendly strategies.

Green practices in supply chain management

With numerous green practices adopted, companies in their business and supply chain operations improve their productivity with better environmental growth. While, some well-known green practices are as follows;

Green material sourcing

Green sourcing means sourcing or purchasing materials and components which have such enviable ecofriendly characteristics as reusability, recyclability and nonuse of hazardous/dangerous chemicals. With more and more concerns on environmental protection, procurement professionals have been motivated to reconsider their existing sourcing, purchasing strategy and their impact on environmental sustainability. The role of ecofriendly purchasing is the involvement of recycling and remanufacturing. Min and Gall further emphasized green sourcing supporting waste reduction enhances recycling and remanufacturing and other activities in supply chain. Carter and Rogers did a research to explore the impact of green sourcing on firms' environmental and financial performance. They concluded that owing to the successful adoption of green purchasing strategy, products' cost is reduced and environmental performance and financial performance of firms is increased with positive reputation obtained in the market. Zailani et al. highlighted that ecofriendly purchasing has positive relationship with firms' operational and environmental performance. Yang et al. green purchasing was categorized into five main facets: design operation management, supply chain management, environmental authentication, ecological, and external environmental management. They confirmed that green purchasing improved to the overall firms' performance. The adoption of green purchasing in

supply chain and business operations is a reliable tool in mitigating waste, air and water pollution.

Green marketing

The actions directed to all incorporates and consumers comprise green marketing, a broad range of marketing activities (e.g., planning, production,, process, price, promotion and after-sale service) designed to illustrate the goal of organization to mitigate the harmful effects of their products. Green marketing practice promotes the products with environmental friendly properties. It contains the activities that can satisfy human desires of minimum negative effects on the environmental beauty. In addition, green marketing enhances firms' competitiveness and financial and environmental performance with positive corporate reputation and image.

Green management

Green management practices (GMP) provide a firm with supplementary sources of information that can enhance their business and environmental objectives. Adoption of green management practices help with improved firm image, increased efficiency, environmental compliance improvement, cost savings, achievement of societal commitment and reduction of carbon emissions etc.

Green distribution and warehousing

Green distribution and warehousing can reduce the waste and play an important role in energy reduction and value addition of green products in warehousing significantly improve overall performance of organization with better corporate image. Green distribution helps enterprises to obtain superior financial and environmental performance.

Green manufacturing

Green manufacturing practices are to implement socially and environmentally accountable practices to mitigate harmful effects of manufacturing and increased profitability of firms. Green practices in production improve efficiency of processes. This practice involves the application of the green resources, which may lead towards competitive advantage through reduction in products' cost and improvement in products' quality. Lean and green manufacturing industry both are working for eliminating waste and improving the efficiency of manufacturing processes. Baines et al. highlighted the benefits of green manufacturing: green practices in production processes mitigate the bad effects of manufacturing processes on environmental

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sustainability, while green manufacturing improve operational, environmental and financial performance of firms.

Ecological design

Luthra et al. highlighted that 80% impacts on environment from product and process related could be controlled with the adoption of ecological design in supply chain management. Ecological design incorporates many ideas such like using cleaner technology processes, green raw material and components. Green design of products reduces ecological impacts of products during their life. In addition, green design of products also supports reusing, recycling and remanufacturing of products, which not only helps firms to improve their environmental performance but also provide opportunity to reduce their costs.

Green transportation and reverse logistics

Green transportation and reverser logistics practices provide opportunity to organizations, to improve their image and reduce their costs. Logistics overheads can be saved through promoting transportation system's efficiency and enhancement of customer association also can be obtained to create more profitability. The logistics activities integrated with rehabilitation comprise the practice of reverse logistics (reusing, recycling, and remanufacturing), which can produce the products that can be used again for customers. Green logistics practice helps firms to reduce their environmental impacts with improved quality and cost reductions.

Renewable energy and biofuels

Undeniably, global logistical and supply chain operations mainly depend on energy as well as fossil fuel, which are the main cause of climate change, global warming and pollution with greater carbon and greenhouse gas emissions. Renewable energy and biofuels are required in supply chain operations so as to obtain sustainable environmental and economic growth. Anable et al. highlight that logistics related activities consume greater energy to accomplish their task. Renewable energy and biofuels improve economic performance of firms and also reduce carbon emissions. In addition, fossil fuel is more expensive than biofuels and green energy sources. The strict governmental policies together with customer awareness build pressure on corporate sector to use biofuels and environmental friendly energy in their supply chain operations. The bioenergy mitigates the carbon emissions and also improves profitability of enterprises with better image and reputation building.

The cost minimization is considered as the most important factor for firms to implement green practices in their supply chain operations. The implementation of green supply chain initiatives would help to cut down the costs of packaging, components and materials due to use of reused, recycled and remanufactured products. Khan et al.highlighted that green practices provide opportunity to capture new markets and export to pro-environmental countries, while polluted firms are unable to export their products in pro-environmental countries such as USA, Germany, UK and Poland. Undeniably, green supply chain management practices have been a tool for firms to decrease their products' cost, enhance profitability and increase market share. On the other hand, to improve social performance, firms also adopt green practices in their business activities. Social performance indicates improvement of people's quality life standard without compromising on environmental beauty. In addition, social performance includes the enhancement of firm image and the improvement of environmental sustainability, as well as reduction in environmental risks.

By adopting GSCM practices, firms may enhance their operational performance through improving products quality and improving delivery service. Green supply chain management initiatives also help organizations to improve their environmental performance such as reduction in carbon emissions, elimination of waste from end-to-end supply chain, effective and strong collaboration with suppliers would decrease their communication costs and easily promote reuse, recycling and remanufacturing. Environment management system (EMS) integrated into firms' manufacturing strategy will assist the firms to enhance its ecological performance.

Supply chain sustainability

Supply chain sustainability refers to companies' efforts to consider the environmental and human impact of their products' journey through the supply chain, from raw materials sourcing to production, storage, delivery and every transportation link in between. The goal is to minimize environmental harm from factors like energy usage, water consumption and waste production while having a positive impact on the people and communities in and around their operations. These concerns are in addition to traditional corporate supply chain concerns around revenue and profit. To set the stage for a more comprehensive understanding of supply chain sustainability, here are some foundational definitions and answers to common questions.

Supply Chain Sustainability Statistics

As businesses have put more focus on supply chain sustainability, many have studied trends in this area across industries, countries and areas of impact. Here are several notable statistics:

- **Demand:** Nearly half of U.S. consumers say they would change purchasing habits to reduce their impact on the environment, according to Nielsen.
- Environmental impact: The supply chain accounts for more than 90% of most consumer goods companies' environmental impact.
- Societal risk: listed 148 types of goods from 76 countries produced by child labor or forced labor in 2018, when it released the Comply Chain app to help American businesses eliminate child labor from their supply chains.
- Data systems: A 2019 survey by found that 65% of its corporate members used environmental metrics to inform supplier management and hold their business partners accountable to supply chain sustainability goals.
- Progress: CDP has reported promising progress in cutting greenhouse gases: In its 2019 survey, 29% of 7,000 suppliers to some of the world's largest corporations reported a decrease in emissions.

Supply Chain Sustainability Examples

Outdoor apparel and gear retailers provide particularly helpful models for supply chain sustainability. Some brands make clothes from recycled plastic bottles or collect used garments, repair them and resell them as "upcycled" goods. Patagonia operates an award-winning green distribution center and built a "zero waste" program by reducing the weight of packaging and using sustainable packaging materials. As an industry collaborative, the Sustainable Apparel Coalition's aim is "an apparel industry that produces no unnecessary environmental harm and has a positive impact on the people and communities associated with its activities."

Examples of sustainability cut across industries, per stories from publisher SustainCase. For example, one road builder that previously bought asphalt based on price alone cut shipping distance and related carbon emissions by 40% and achieved a lower total landed cost by buying local supplies. A fast food company redesigned its packaging to avoid repacking in the supply chain, eliminating literal tons of waste. An electronics company requires suppliers to sign a "code of conduct compliance declaration" that highlights integrity and governance.

Three Tiers of Sustainability

Lack of visibility into the supply network is one of the biggest challenges to supply chain sustainability, particularly because businesses usually work with suppliers in multiple tiers.

Many buyers have direct relationships with their Tier 1 suppliers and contract manufacturers. Those Tier 1 companies' suppliers and subcontractors, in turn, are Tier 2 suppliers. And those subcontractors may be working with mines, farms and other providers of raw materials that fall into Tier 3.Companies recently surveyed by Ernst & Young expressed a lack of transparency into the operations of any partners beyond Tier 1. Some buyers lean on their Tier 1 suppliers to cascade sustainable practices onto the Tier 2 companies, the Tier 2 suppliers to monitor the practices of Tier 3, and so forth.

Benefits of Supply Chain Sustainability

Supply chain sustainability benefits not only companies' own interests and those of their stakeholders but also society and the planet at large. Companies have realized that climate change, for example, can put their business continuity at risk with extreme weather disruptions and growing resource scarcities.

Here are five frequently cited business activities that benefit from sustainability:

- 1. Supply chain operations: Recent examples show that energy costs decrease, for example, as companies set emission targets with suppliers and help them identify potential areas for improvement.
- **2. Branding:** Consumers are more concerned than ever about where products come from and how they're produced. Researchers at MIT's Sloan School of Management found that consumers may pay 2-10% more for products that provide supply chain transparency.
- **3. Investor relations:** Institutional investors are keenly aware of the reputational risk of unsustainable supply chain operations. In recent years, the media has reported many irresponsible supply chain practices, and in some cases, it's hurt a given company's stock prices. These accounts have revealed businesses sourcing electronics from overseas, maintaining hazardous working conditions, using suppliers that routinely polluted local rivers, and procuring defective components or toxic materials. It's also worth noting that nearly half of investors in a recent Gallup poll expressed interest in sustainable investment funds.

- 4. Corporate culture: Millennials, in particular, seek greater purpose in their work, according to demographers. Successfully hiring and retaining employees often depends on a company's corporate culture and values, and sustainability plays a key role in that.
- **5. Compliance:** Governments around the world are mandating greater supply chain sustainability, in part to meet the United Nations' 2030 deadline for achieving Sustainable Development Goals, like clean water for all. Government regulations cover many areas, including the traceability of pharmaceuticals, disposal of electronics and avoidance of conflict minerals.

Challenges of Supply Chain Sustainability

Cost is the primary impediment to sustainable supply chains, with smaller companies finding it particularly difficult to afford the upfront costs of making a supply chain more sustainable. However, an investment in something like compact packaging, for example, can lead to a reduction in the size and number of shipments, a lower environmental footprint and cost savings over time.

Other companies find that there simply aren't sustainable options for components, or that they've inherited supply chains from acquisitions that are difficult to shift towards sustainable practices because of complexity or organizational structure. These challenges can be overcome, but 20% of respondents in a survey reported that customers simply weren't interested. This makes it difficult for some companies to justify the added expense or effort.

Supply Chain Sustainability Best Practices

For many companies, sustainability is no longer just something to monitor, but integral to the foundation of their supply chain. CDP reports its members integrate environmental data into procurement tools and processes, using environmental metrics alongside cost and quality stats as they evaluate suppliers.

Other CDP members include specific environmental performance language in contracts and tender documents. Some businesses provide sustainability training to their own procurement managers and suppliers to help the cause.

Four Steps to a More Sustainable Supply Chain

- 1. **Procurement:** Most companies start sustainability programs by looking at energy and water procurement, and by procuring sustainable materials to use in their products.
- 2. **Operations:** Look for operational processes or steps across the supply chain that could be more efficient and reduce resource usage.
- 3. **Retirement:** Avoid excess waste and obsolete items by designing products for upcycling and reuse.
- 4. **Data and communication:** Measure the effectiveness of initiatives in the first three areas, and strengthen any related efforts, by communicating them to customers, supply chain partners and other stakeholders.

12.7 NOTES

12.8 SUMMARY

The advent of information technologies has caused a virtual revolution in the concept and practice of supply chain management. In today's business climate, the importance of timely, accurate, and complete information has increasingly become an important enabler of marketplace advantage. Internally, information technologies enable companies to develop databases and implement applications that provide for the efficient management of transactions and the timely collection, analysis, and generation of information about customers, processes, products, and markets necessary for effective decision making. Externally, information technologies enable enterprises to architect channel boundary-spanning networks that are collaborative, agile, scalable, fast flow, and Web-enabled. Actualizing the potential of today's technologies require companies to move beyond viewing technology as purely a tool for automating business functions. The real value of information technology is found in its ability to enable integration and networking between channel trading partners that provide for revolutionary capabilities and competencies for the generation of new products and services, whole new businesses and marketplaces, and radically new forms of competitive advantage. The ability to leverage the power of information technologies requires a detailed knowledge of basic technology architectures as well as a thorough grounding in the principles of modern system management. Today's system architectures consist of five basic elements: the database (the static and transactional data captured during system processing); transaction management (the performance and recording of daily operations); management control (the performance feedback necessary for purposeful planning); decision analysis/simulation (the use of modeling tools to manage complex processes); and strategic planning (the development of long-term forecasts, market approaches, and business partner alliances). Effectively utilizing these general system features requires a firm grasp of the seven principles of system management: accountability for the entry, maintenance, quality, and integrity of data; transparency as to how the system works and is applied to practical business problems; accessibility to data and retrieval utilities for reporting and decision making; a valid simulation of the way the business actually works; flexibility to perform transactions or manipulate data; and the capability to use system exception messaging for the planning and control of business management processes.

12.9 KEY WORDS

- Green Management
- Green Marketing
- Customer Relationship Management

12.10 ANSWER TO CHECK YOUR PROGRESS

- 1. Analytics is the process of studying and representing the data in order to observe the trends in the market.
- 2. Green manufacturing practices are to implement socially and environmentally accountable practices to mitigate harmful effects of manufacturing and increased profitability of firms.
- 3. The goal of the CRM macro processes is to generate customer demand and facilitate transmission and tracking of orders.
- 4. Green distribution and warehousing can reduce the waste and play an important role in energy reduction and value addition of green products in warehousing significantly improve overall performance of organization with better corporate image
- 5. Outsourcing allows companies to seek out and hire the best experts for specialized work. Using outsourcing also helps companies keep more cash on hand, freeing resources for other purposes, such as capital improvements. It's also often cheaper in terms of salaries and benefits and reduces risks and costs.

12.11 SELF-ASSESSMENT QUESTIONS

- 1. State the objectives of IT on SCM.
- 2. Explain the role of IT in SCM.
- 3. What do you mean by customer relationship management?
- 4. Explain the process of CRM.
- 5. Differentiate between CRM Vs SCM.
- 6. Explain the components of CRM
- What do you mean by Green supply chain management? Explain the simple model of GSCM
- 8. What do you mean by supply chain sustainability? State its benefits.

9. Elucidate the challenges of supply chain sustainability.

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BLOCK-4: MODERN SUPPLY CHAIN MANAGEMENT

Dear Students,

By this time, you must have get a fair idea above Supply Chain Management. You have understood various components of Supply chain.

The Supply Chain is widely used in all transactions including agriculture. The technology has also made a major impact on Supply Chain. For example, Cloud technology has solved the various issues in data storage and management. The internet technology has further enabled as to see the whole world as a global village. It has enabled global sourcing and world wide manufacturing ability, global supply chain management has enable the business to track every part from rook and corners of world.

We shall discuss the latest trend of today i.e., block chain management in this block. In this block let us discuss about the following units Unit-13: Reverse Supply Chain and Agro Supply Chain Unit-14: Cloud Based Supply Chain and Lean Supply Chain Unit-15: Block Chain Technology Unit-16: Supply Chain Finance and Global Supply Chain Management.

UNIT- 13: REVERSE SUPPLY CHAIN AND AGRO SUPPLY CHAIN

Structure

13.1	Objectives
13.2	Introduction
13.3	Reverse Supply chain

- 13.4 Agro Supply Chain
- 13.5 Transportation strategies in supply chain
- 13.6 Notes
- 13.7 Summary
- 13.8 Key Words
- 13.9 Answer to check your progress
- 13.10 Self-Assessment Questions
- 13.11 References

13.1 OBJECTIVES

After studying this unit, you should be able to:

- Explain the reverse supply chain relevance in an organization.
- Describe Agro supply chain and its scenario.
- Explore Transportation strategies in supply chain management of an organization.

13.2 INTRODUCTION

Reverse logistics is receiving an increased attention from Industry and academia. The reason behind is not only economic but also environmental. It involves all the activities required for retrieval of products returned by customers for any reason (end of Life, repair, end of lease and warranty).

The green concept of an organization that is reduce, reuse and recycle companies are willing to adopt reverse logistics. In order to deal with environmental problems government imposes new and stricter environmental regulations which makes the organization to take back their end of life products through a reverse logistics network this helps the company in utilizing the remaining economical value of end of life products. Basically Reverse logistics deals with transportation, production planning, and inventory management.

13.3 REVERSE SUPPLY CHAIN MANAGEMENT

Movement of goods back from customers to vendors or at least on step backwards up in the supply chain because of various reasons like, defect in the product, breakage, defect in the package, tampering of packages which are not supposed to. Etc., Such movement of goods from the point of customers to the point of vendors is called as reverse supply chain..

Why return goods?

- Products that gave failed, but can be repaired or reused.
- Products that are obsolete but still have value.
- Unsold products from retailers.
- Recalled products.
- Parts repaired in the field that still have value.
- Items that have secondary usage, -items that have another usage after they have exhausted their original use or altogether innovation alternate uses
- Waste that must be accounted for and disposed of or used for energy production.

- Products that may be refurbished to a secondary market (market hitherto unexplored)
- Containers that must be returned to their original or some sort of consolidation facility.

Difference between forward and Reverse Supply Chain Management

Difference between forward and reverse supply chain			
	Forward	Reverse	
Definition	• System whose constituent parts	• It is the series of activities	
	includes material suppliers,	required to retrieve a used	
	production facilities, distribution	production from a customer	
	services and consumers linked	and dispose of it properly or	
	together by the feed forward flow of	reuse after processing	
	materials & feedback flow of		
	information		
Characteristics	• Upstream-Convergent	• Convergent in nature from end-	
	• Downstream-Divergent	user to manufacturer	
	• Flow in forward direction	• Reverse flow of used products	
	• Value addition for the product takes	Supply driven	
	place	Relatively slow movement	
	• Inventory is kept in most of the	• Value declines with time while	
	nodes	moving upstream	
	• Customer demand drives the flow	• Very small value addition in	
	speed	some cases	
	• Material handling and transportation	• MH and transportation are not	
	are done with utmost care	with care	
		• Inventory available in different	
		nodes	
Functions	• Meet the demand	Environmental legislations	
	• Value provider	• Economic value from returns	
	• Image enhancer	Green Image	
	• Provides competitiveness	Material Resource constraints	
	• Support new product development	like lead and other precious	

	Backbone of marketing	resources
Visibility of	More transparent, Forecasting is easy	May not be as transparent,
process		forecasting may be an issue
Negotiation	Straight forward	Complicated, Less visibility of
between		costs and other issues
parties		

Examples of successful reverse logistics process

General Motors (GM) Simplified its process for returning automotive parts allowing parts to be returned to a single facility using GMS pre-printed shipping labels. This less costly process enhanced GM's relationships with its customers and supply chain partners.

Volvo: A Swedish car manufacturer, anticipated the Swedish government passing a resolution holding auto manufactures accountable for disposal of vehicles. Volvo implemented a reverse logistics process of salvaging and dismantling cars. The company generated revenues by selling the used metal, plastic and car parts.

Bosch, an automotive and industrial technology company, builds sensors into its power tools that indicate if the motor is worth reconditioning. The sensors reduce inspection and disposition costs, allowing the company to realize profits on the remanufactured power tools.

The benefits of an efficient reverse logistics systems

While many companies consider the return process to be a necessary evil that shouldn't be noticed, companies that implement an effective reverse logistics workflow can reap several benefits.

Some of these benefits are:

Reduced costs: By planning ahead for returns and making the return order right, you can reduce related costs (administration, shipping, transportation, tech support, QA, etc.)

Faster service: This refers to the original shipping of goods and the return / reimbursement of goods. Quickly refunding or replacing goods can help restore a customer's faith in a brand.

Customer retention: Dealing with errors is just as important as making sales. If a customer had a bad experience with your product, you have to make it right. Fulfillment blunders can create educational opportunities. Learn how to keep your customers happy and engaged with your company - even after you've made a mistake.

Reduced losses and unplanned profits: Recover the loss of investment in your failed product by fixing and restocking the unit, scrapping it for parts, or repurposing it in a secondary market. With a good reverse logistics program in place, you don't have to leave money on the table. Take a product that would otherwise just cost your company money and turn it into an unforeseen asset.

13.4 AGRO SUPPLY CHAIN MANAGEMENT

Agribusiness, supply chain management (SCM) implies managing the relationships between the businesses responsible for the efficient production and supply of products from the farm level to the consumers to meet consumers' requirements reliably in terms of quantity, quality and price.

Supply chains are principally concerned with the flow of products and information between supply chain member organizations—procurement of materials, transformation of materials into finished products, and distribution of those products to end customers.

Today's information-driven, integrated supply chains are enabling organizations to reduce inventory and costs, add product value, extend resources, accelerate time to market, and retain customers. The real measure of supply chain success is how well activities coordinate across the supply chain to create value for consumers, while increasing the profitability of every link in the supply chain. In other words, supply chain management is the integrated process of producing value for the end user or ultimate consumer. The supply chains of different agricultural commodities in India, however, are fraught with challenges stemming from the inherent problems of the agriculture sector.

The agri supply chain system of the country is determined by different sartorial issues like dominance of small/ marginal farmers, fragmented supply chains, absence of scale economies, low level of processing/value addition, inadequacy of marketing infrastructure etc. Early processing-based supply chain management success included improved relationships between warehousing and transportation within companies as a result of reduced inventory and better response time to customer requests for products and services. Supply chain management then entered a logistics stage where other functional areas within companies joined forces to incorporate manufacturing, procurement, transportation, distribution, and marketing to effectively compete in the marketplace. This stage was aided by the use of telecommunications,

electronic data interface, and other technological advances that made the transfer of information more transparent across the functional areas between companies.

13.4.1 Food supply chain Networks

A processing-based and organized agri-supply chain functions as a part of a very complex network. Figure 1 depicts a generic supply chain at the organization level within the context of a complete supply-chain network. Each firm is positioned in a network layer and belongs to at least one supply chain, i.e. it usually has multiple (varying) suppliers and customers at the same time and over time.



flows) within the total FSCN (based on Lazzarini et al. 2001) Fig- 1: Schematic Diagram of Supply Chain

13.4.2 The advantages for supply chain members

Individual suppliers, producers and marketers who are associated through a supply chain coordinate their value creating activities with one another and, in the process, create greater value than they can, when they operate independently. Supply chains create synergies in one of three ways: i) They expand traditional markets beyond their original boundaries and thus increase sales volume for members; ii) They reduce the delivered cost of products below the cost of competing chains and thus increase the gross margin for the working capital committed by members of the chain ; and iii) They target specific market segments with specific products and

they differentiate the service, product quality or brand reputation of the products they deliver to these market.

Segments and thus increase consumer perception of delivered value. In this way, they allow chain members to charge higher prices. Generally, supply chains increase market contestability both at the producer end and at the consumer ends of the chain. At the consumer end, chains compete primarily through price, differentiated products and services and differentiated terms of sale. At the producer end of the chain, supply chains compete with one another primarily for "producer affiliation" and core vendor commitments.

13.4.3 Components of an Agri supply chain

Agribusiness, supply chain management (SCM) implies managing the relationships between the businesses responsible for the efficient production and supply of products from the farm level to the consumers to meet consumers' requirements reliably in terms of quantity, quality and price. In practice, this often includes the management of both horizontal and vertical alliances and the relationships and processes between firms. Agri-supply chains are economic systems which distribute benefits and apportion risks among participants. Thus, supply chains enforce internal mechanisms and develop chain wide incentives for assuring the timely performance of production and delivery commitments. They are linked and interconnected by virtue of shared information and reciprocal scheduling, product quality assurances and transaction volume commitments. Process linkages add value to agricultural products and require individual participants to coordinate their activities as a continuous improvement process. Costs incurred in one link in the chain are determined in significant measure by actions taken or not taken at other links in the chain. Extensive pre-planning and co-ordination are required up and down the entire chain to affect key control processes such as forecasting, purchase scheduling, production and processing programming, sales promotion, and new market and product launches etc. Following are the components of an organized agri-supply chain:

- 1. Procurement or sourcing
- 2. Logistic management
 - a. Transportation
 - b. Material management
 - c. On the premise of supplying mostly from production not stock
 - d. Warehousing e. Logistics Network modeling

3. Organizational management

- a. Contracting
- b. Strategic alliances and partnerships
- c. Vertical integration
 - i. Long term storage
 - ii. Packaging technology
 - iii. Cold chain management
 - iv. Energy efficient transport
 - v. Quality and safety
- 4. Application of Efficient Consumer Response (ECR) System a. Electronic scanning of price and product at the point of sale b. Streamline the entire distribution chain

13.4.4 Agri marketing and emergence of coordinated supply chains in India

The agri supply chains in India and their management are now evolving to respond to the new marketing realities thrown by the wave of globalization and other internal changes like rise in the level of disposable income of consumers, change in the food basket of the consumers towards high value products like fruits, vegetables and animal protein. The new challenges of the agricultural economy of the country have now spurred the government agencies to go in for different legal reforms for enabling and inviting private investment in agricultural marketing infrastructure, removing different entry barriers to promote coordinated supply chain and traceability. The amended APMR Act, the major agricultural Marketing Act of the country, being implemented by the different states of India, now contains enabling provisions to promote contract farming, direct marketing and setting up of private markets (hitherto banned). These measures will go a long way towards providing economies of scale to the small firms in establishing direct linkage between farmers, and processors/ exporters/ retailers, etc. Thus, the measure will provide both backward and forward linkages to evolve integrated supply chains for different agri produce in the country.

CHECK YOUR PROGRESS

- 1. What products are returned?
- 2. What is transportation strategy?
- 3. What are the key elements of transportation strategy?
- 4. What is Agribusiness, supply chain management (SCM)

5. What is benefit of reverse logistics?

13.5 TRANSPORTATION STRATEGIES IN SUPPLY CHAIN

Transportation is a very key element of the logistics process and the supply chain which runs from vendors through operations to the customers. It involves the movement of product, service/speed and cost, which are the critical issues in effective logistics. It also impacts with the other two logistics – movement of information and integration within and among suppliers, customers and carriers. A transportation strategy, to be effective in supply chain management, is not playing one carrier off against another. It is not beating down rates. Rather it is a way to respond to the dynamics of the business, its customers, suppliers and operation function.

The strategy, must acknowledge the following elements:

- **Customer requirements:** The supply chain involves continuous and efficient movement of product from vendor to manufacturer to customer. Therefore, the transportation program must reflect and meet the customer's needs. The time and service aspects of transportation are vital.
- **Timely shipment:** Customers demand their shipments be delivered as they require on the date needed, by the carrier preferred, in the proper shipping packaging method and complete, both shipped complete and delivered complete and in good order. Being able to have a transportation program which can do this provides customer satisfaction and can give an organization a sustainable competitive advantage.
- Mode selection: How to move the product, i.e. by air versus surface? What roles do transit time play in supply chain? How will the inventory and service impacts be measured as compared to the freight charges?
- **Carrier relationships:** Volume creates carrier / forwarder attention. Even if you have no strategy, the number of carriers trying to meet with you will make you develop one. Infrequent shipping dictates another approach. The carrier attention with volume creates a competitive interest in any business. But there is another side to this attention, business cannot be divided among many carriers. This may be due to the fact that as one fracture's one's business, the negotiating or leverage position is also affect and one will not be able to develop carrier alliances needed to meet the supply chain service requirements. Developing supply chain responsive programs requires effort by both the carriers and the

organization concerned. Transportation must be responsive and can create a competitive advantage. Doing this means a focus with a carrier – a relationship.

- Measurement: One needs to evaluate how well the strategy and carriers are performing. This takes two approaches. One is measuring. Measuring means comparing performance versus standards. What is the actual delivery to customer performance, on a macro basis, carrier and customer-by-customer basis? A macro measure can hide a problem even if the overall measure is good. With integrated supply chain management, one is focusing on each customer and delivery locations. Cost should be measured. What is the total transportation bill? How well it is being spent? Freight cost data tied with sales and shipping data makes a good database for budgeting and managing costs. It provides data for negotiations, developing good freight costs, for sales and accounting, for studies and other purposes. Most of the ERP and SCM packages take these aspects into account. Bench marking may help in this matter. Benchmarking means learning what other companies do the best practices. Very often benchmarking is not done with a company in one's industry. Competitors are not likely to share information. And best practices are not the exclusive of one industry or company.
- **Regulatory impact:** Regulatory changes can change, for better or worse. This may affect the strategy formulation. The recent regulations in Delhi about CNG vehicles have affected the transportation scenario in a significant manner.
- Flexibility: Change is happening. It is not a question of whether or not it happens. The only question is how quickly it occurs. The strategy has to be ready to change. New customers, new products, new business, new suppliers, new corporate emphasis. Each of these can dramatically change the way strategy is formulated and implemented, accordingly the transportation has to respond to these changes.

13.6 NOTES

_____ _____ _____ 13.7 **SUMMARY**

Reverse logistics is receiving an increased attention from Industry and academia. The reason behind is not only economic but also environmental. It involves all the activities required

for retrieval of products returned by customers for any reason (end of Life, repair, end of lease and warranty).

Movement of goods back from customers to vendors or at least on step backwards up in the supply chain because of various reasons like, defect in the product, breakage, defect in the package, tampering of packages which are not supposed to. Etc., Such movement of goods from the point of customers to the point of vendors is called as reverse supply chain.

13.8 KEY WORDS

- Reverse
- Supply
- Chain
- Agro
- Transportation
- Strategy

13.9 ANSWER TO CHECK YOUR PROGRESS

- 1. Products that gave failed, but can be repaired or reused.
- 2. It is a way to respond to the dynamics of the business, its customers, suppliers and operation function.
- 3. Customer requirements, Timely shipment, Mode selection and Carrier relationships
- 4. Agribusiness, supply chain management (SCM) implies managing the relationships between the businesses responsible for the efficient production and supply of products from the farm level to the consumers to meet consumers' requirements reliably in terms of quantity, quality and price.
- 5. Companies that implement an effective reverse logistics workflow can reap several benefits. Reduced costs, Customer retention and Reduced losses and unplanned profits

13.10 SELF ASSESSMENT QUESTIONS

- 1. "Reverse logistics is receiving an increased attention from Industry and academia", do you agree with this statement? Why?
- 2. Explain the strategies of transportation strategies on supply chain management.
- 3. Explain agro supply chain management.

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UNIT-14: CLOUD BASED SUPPLY CHAIN AND LEAN SUPPLYCHAIN

Structure

- 14.2 Introduction
- 14.3 Cloud based supply chain
- 14.4 Lean supply chain
- 14.5 Notes
- 14.6 Summary
- 14.7 Key Words
- 14.8 Answer to check your progress
- 14.9 Self- Assessment Questions
- 14.10 References

14.1 OBJECTIVES

After studying this unit, you should be able to:

- Explain cloud supply chain and its components
- Identify lean supply chain management and its elements

14.2 INTRODUCTION

Cloud computing is changing the way in which companies deploy and operate ICT based services. This paradigm introduces several advantages compared with traditional data centers, such as a great degree of flexibility, pay-per-use models, and rapid resource provisioning.

Lean thinking has evolved over the years and whilst Industry 4.0 has been the most recent trend, improving your supply chain using Lean methodologies has become a major focus of businesses.

Many supply chain managers today are looking to build more resilient supply chains to cope with major disruptions including:

- What your Chinese supply chain really costs you and how do you improve it?
- Too much firefighting and fixing problems.
- Improving your supplier relationships.
- What does your supply chain really cost?

14.3 CLOUD BASED SUPPLY CHAIN

The cloud computing service model combines a general organizing principle for IT delivery, infrastructure components, an architectural approach and an economic model. The resource acquisition, usage and maintenance capabilities of cloud computing infrastructures enable customers to access and use software Software as a Service (SaaS), Platform as a Service (PaaS) or Infrastructure as a Service (IaaS) offerings that lower their Total Cost of Ownership (TCO) if compared to traditional on and off premise data center models.

The infrastructure which supports cloud computing enhances the customization, flexibility and scalability of resource acquisition, usage and maintenance, such that greater masses and varieties of customers and applications can be served by a single data center. However, even with the technological know-how for sizing and scaling computational resources on demand, many large organizations are hesitant to engage in cloud computing, even if they consider it to be a viable model. One potential reason for this behavior is that they feel uncertain

about the impact of changes on their overall IT landscape and operations. Though the base concept of clouds has been known for decades, it is during the last decade that clouds have really taken off. As future systems will exploit the capabilities of managed services and resource provisioning further, the clouds will probably continue to grow in popularity also in the years to come.

Clouds are of particular commercial interest not only with the growing tendency to outsource ICT, in order to reduce management overhead and to extend existing and limited ICT infrastructures, but even more importantly, they reduce the entrance barrier for new service providers allowing them to offer their respective capabilities to a wide market with a minimum of both entry costs and infrastructure requirements. Thus, new service providers can focus on their main business rather than on building the infrastructure needed. In fact, the special capabilities of cloud infrastructures allow providers the advantage of experimenting with novel service types whilst removing the disadvantage of infrastructure provisioning, thereby reducing or eliminating the risk of wasting expensive resources.

What hinders companies from embracing the cloud, are not only technical hurdles (latency, legal aspects, etc.) and psychological effects (loss of control, etc.), but also the lack of a comprehensive overview of the complete supply chain plus the missing insight into information flow, the monitoring requirements, and the processes of accounting and billing of cloud services. To overcome this gap, this paper introduces the Cloud Supply Chain. The contents of the paper are the results of our experience from building systems for supply chain businesses combined with our experience of building Service Cloud infrastructures within the RESERVOIR EU research project. We present a comprehensive framework of the cloud supply chain and we focus particularly on the infrastructure services, as they are the basis for all cloud services. As such, the presented research strand is based on a fundamental technical background and emerging technology enhanced by essential business research knowledge and future-oriented models. We have combined technical oriented research that has already taken place in RESERVOIR, with the business aspects of service provisioning along the supply chain concept.

The following sections of the paper are structured as follows. First, we define the concept of the cloud supply chain, motivated by the traditional supply chain theory and new settings on the ICT market. Based on that, we then compare traditional and emerging supply chain concepts and include an analysis of functional and innovated products in ICT. Next, we introduce a cloud
service provisioning model which defines the basis for monitoring, accounting, and billing. This section includes the identification of service provisioning sub processes in the supply chain and existing standards.

On this foundation, we then describe the monitoring of cloud services, from which the drill-down into highly dynamic infrastructure monitoring and data representation and communication is done. Based on the information model and monitoring for cloud services, the accounting and billing in the supply chain is described. We provide an overview of the information flow, the billing models, as well as the accounting data management. Finally, we finish the paper with a summary and an outlook of the future research.

14.3.1 The Cloud Supply Chain

Definition

The application of the supply chain concept in the context of cloud computing is innovative and opens a new research field. The following definition, delivers a basis for this: "a supply chain is two or more parties linked by a flow of goods, information, and funds". Applied to cloud computing, we propose the following variation: A Cloud Supply Chain is two or more parties linked by the provision of cloud services, related information and funds. It is important to mention that, as Cachon and Fisher show, sharing of information is not the only thing leading to costs within the supply chain, but also the management and restructuring of services, information, and funds for an optimization of the chain.

In general, a supply chain performs two types of functions, namely:

- i) a physical function comprises the production of the product out of raw material or intermediate parts or components, and the transportation of all components to the right place, and
- ii) a market mediation function ensures that the variety of products reaching the marketplace matches what customers want. While for functional products the physical function dominates, the market mediation function is more important than the physical function for innovative products. Here the mixed characteristics of the cloud supply chain lead to a high importance of the physical function like the provisioning of software services, as this is the core product of cloud services, but moreover the need for a strong market mediation function arises from the modular design of these services.

14.3.2 Components of the Cloud Supply Chain

The cloud supply chain of cloud services needs to be identified and then managed and controlled from both a business and technical perspective. The cloud supply chain represents a network of interconnected businesses in the cloud computing area involved in the end-to-end provision of product and aggregated service packages required by end cloud service customers. Therefore supply chain execution for the cloud is managing and coordinating the (partly) bidirectional movement of services, information and funds across the cloud supply chain. This includes (but it is not limited to it) the actual provisioning of infrastructure services, the monitoring of services like the provisioning of virtual machines and the information processes supporting accounting and billing processes. To capture this complex chain, it is needed to identify and clearly define the following components: the actors and the services exchanged (products along the cloud supply chain), as well as the flow in information and funds. All of these are described in the following sections and shown in the following figure.



Fig. 1. Cloud Supply Chain

Service providers can actually take several roles within the cloud supply chain. They might act as infrastructure1, platform or software providers and directly be in contact with the end-customer. But they might also be a broker (which is a role of the actor service provider) or a business partner of a service aggregators, that uses the provided service and combines or enriches it with another service or new functionality. By doing so a composite service is created. As an example a composite service might be a piece of software that runs as a service on top of a flexible provided platform.

Thus, the product for the end-customer is software as a service provided in a flexible manner. When such a supply network is created, it is even more important to maintain visibility and transparency of all processes and data for monitoring and accounting and billing as one can imagine such an end-product can get easily quite complex and include many actors. The endcustomers usually consume a product, that is a single or composite service, which is provided by a service provider over the cloud supply chain. Products along the Cloud Supply Chain in general a supply chain has to be classified according to the product it supplies.

Fisher classifies products primarily on the basis of their demand patterns into two categories: products are either (a) primarily functional or (b) primarily innovative. On the one hand, functional products fulfill the following 3 criteria: i) to satisfy basic needs that do not change much over time, ii) have predictable and stable demand with low uncertainties, iii) have long life cycles, typically more than two years.

Due to their stability, functional products favor competition, which leads to low product margins and, as a consequence of their properties, to low inventory costs, low product variety, low stock out costs, and low obsolescence. On the other hand, innovative products are characterized by:

- i) additional (other) reasons for a customer in addition to basic needs that lead to purchase,
- ii) Unpredictable and variable demand, difficult to forecast,
- iii) Short product life cycles, typically three months to one year. While companies selling innovative products can achieve higher profit margins for an innovative product compared to a functional one, innovative products require frequent innovations due to emulating competitors.

Furthermore, innovative products will have low volumes per stock-keeping unit (SKU), high stock out costs, and high obsolescence. In general, the products coming out of emerging ICT are to be classified as innovative products, but have certain characteristics of functional products as well. Cloud services should fulfill basic needs of customers and favor competition due to their reproducibility. But they also show characteristics of innovative products as the demand is in general unpredictable (on-demand business model) and have due to adjustments to competitors and changing market requirements very short development circles. So cloud services as a product need to be classified as innovative, while they still feature characteristics of functional products.

Information and funds Regarding information and funds flows that characterize the cloud supply chain, the following can be clearly identified: Funds. The service provider has a payment relationship with the cloud infrastructure provider by the use of IT infrastructure. Typically, the payment follows a pay-per-use model, which is one of the main drivers toward cloud computing adoption compared with the traditional exploitation fixed-rate of IT infrastructure. This flow uses to be unidirectional, from service provider to cloud infrastructure provider. However, sometimes it goes in the opposite direction, e.g. compensation penalties due to Service Level Agreement (SLAs) violations. SLAs allow service providers to protect their investment, allowing them to seek some form of financial compensation should the infrastructure not operate as planned Information. There are several pieces of information that are interchanged between the service provider and infrastructure provider along the different sub processes in the service provisioning chain, analyzed in the following subsection.

CHECK YOUR PROGRESS

- 1. What is the use of Clouds in Supply Chain?
- 2. Who can use Lean Management?
- 3. What does Lean supply chain focus?
- 4. What are the four distinct elements that typically make up Supply Chain a
- 5. What does the cloud supply chain represents ?

14.4 LEAN SUPPLY CHAIN

Lean Supply Chain Management by Definition

Lean supply chain management is the application of Lean Thinking to the end to end supply chain. Traditionally Lean manufacturing was applied within the four walls of a manufacturing enterprise – from the receiving dock to the shipping dock and everything in between. Lean Supply Chain Management extends the application of Lean upstream into the management of suppliers, downstream in to the management of the distribution network and upwards in to the overall integration and management of the supply chain.

In Lean supply chain management, the focus is on the relentless elimination of non-value added time and consequent reduction of lead time at every step of the supply chain from the manufacturing of raw materials by suppliers to the delivery of finished goods to the end user.

The Four Major Elements of Supply Chain Management

There are four distinct elements that typically make up your Supply Chain. These are Integration, Operations, Purchasing & Procurement and Distribution & Logistics. Lean thinking can be applied to every element.

Integration

Refers to the management of communications and information between the stakeholders in the supply chain. Providing timely and effective interactions across the entire supply chain. Think of it as the brains of the supply chain carrying the messages to every part of the chain. Integrating your supply chain will incorporate some form of technology helping manage and connect the stakeholders of the supply chain.

The integration of your supply chain is responsible for making sure tasks are assigned and completed effectively and timely across your manufacturing processes. Often this means exploring new ways of working and a means to nurture collaboration among departments improving collaboration in turn reduces errors saving time and money. Traditionally supply chain integration is managed by ERP software. Forecasts drive complex plans that are designed to ensure that every step of the supply chain is producing what the next step of the process is expected to need according to the forecast. The failure of this top-down approach is the inevitable inaccuracy of forecasts.

The Lean supply chain management approach uses high level forecasts for medium range planning of resources and capacity. However, day to day and week to week execution is managed by simple tools that respond to the changing needs of customers by "pulling" product through the supply chain as it is required. Making this highly responsive approach work requires lead times to be reduced and suppliers and manufacturers to be near to the customer. As a result, the complex global supply chains many companies have created over the past decade are incompatible with a truly Lean supply chain.

Operations

Maintaining robust supply chain management practices is an important strategy for ensuring efficiency and productivity. The day-to-day operation is the skeleton of the manufacturing processes and where the majority of work is performed. Operations plays a major role in Lean Supply Chain Management monitoring processes and ensuring everything is running smoothly across all functions. Business forecasting is used to predict which supplies will be needed by when and by which process. Business forecasting also predicts the effectiveness of products, strategy and customer experience.

Lean supply chain management brings day to day execution closer to the shop floor. Rather than relying on forecasts, simple tools like Kanban cards and first in first out lanes ensure that operations can respond to changes in customer demand in real time. The result is inevitably more responsive operations, lower inventory and fewer unscheduled product changes.

Purchasing & Procurement

You can't make something from nothing. Procurement is the process of finding, evaluating and engaging suppliers to supply your business with resources and inputs. Procurement & Purchasing is the respiratory system of the Lean Supply Chain; it makes sure that the right amount of resources is being used at the correct times by the correct departments in the correct places. Procurement creates relationships with suppliers and also identifies the qualities and quantities needed.

The Procurement Department ensures your business has everything required to manufacture a product or deliver a service including materials, supplies, tools and equipment. The Purchasing Department is one of the more critical functions in your supply chain because without the correct purchasing patterns you may find your materials are not available on time, delaying manufacturing production or accumulating excess WIP and Inventory. A balance between supply and demand is critical for businesses to grow, especially globally. In Lean supply chain management, the focus is on collaboration with suppliers. Rather than procurement playing a zero-sum game by constantly seeking lower prices, Lean purchasing involves building long term, mutually respectful relationships with suppliers.

Distribution & Logistics

The supply chain ends with the delivery of your product or service to the customer. Think of the distribution and logistics network as the blood vessels suppling every facet of the Lean Supply Chain with what it needs and when it needs it. Delivering products or service means having a well-thought-out and optimized distribution and logistics network. Distribution and logistics networks must utilize clearly defined lines of communication between all stakeholders to deliver to the customer in a timely fashion.

In a Lean supply chain the focus on reducing lead times leads to shorter, simpler distribution networks. Lean is also applied in warehouses and freight networks to eliminate non-

value-added waste such as excessive travel times, waiting times and unnecessary double handling of goods. Lean thinking also challenges assumptions around inventory, leading to lower working capital and smaller warehouses.

The Four Elements Working Together

These four elements of supply chain management must work cohesively for every stakeholders' benefit. The four elements working together in unison create a synergy that rewards the customer, employees and ultimately the businesses bottom line. Lean Management Isn't Just for Manufacturing or Automobiles

Lean Management can be applied across a multitude of industries and is not just for manufacturers or automobiles, it can be used by any businesses wanting to optimize their processes by eliminating waste and non-value-add processes. Businesses can find a number of areas in their supply chains to improve such as time, costs, motion or inventory. Identifying these areas can be done with a Value Stream Map.

14.5 NOTES

_____ _____ _____ _____

14.6 SUMMARY

The cloud computing service model combines a general organizing principle for IT delivery, infrastructure components, an architectural approach and an economic model. The resource acquisition, usage and maintenance capabilities of cloud computing infrastructures enable customers to access and use software Software as a Service (SaaS), Platform as a Service (PaaS) or Infrastructure as a Service (IaaS) offerings that lower their Total Cost of Ownership (TCO) if compared to traditional on and off premise data center models.

Lean supply chain management is the application of Lean Thinking to the end to end supply chain. Traditionally Lean manufacturing was applied within the four walls of a manufacturing enterprise – from the receiving dock to the shipping dock and everything in between. Lean Supply Chain Management extends the application of Lean upstream into the management of suppliers, downstream in to the management of the distribution network and upwards in to the overall integration and management of the supply chain.

14.7 KEY WORDS

- Cloud
- Supply
- Chain
- Lean

14.8 ANSWER TO CHECK YOUR PROGRESS

1. Clouds are of particular commercial interest not only with the growing tendency to outsource ICT, in order to reduce management overhead and to extend existing and limited ICT infrastructures,

2. Lean Management can be used by any businesses wanting to optimize their processes by eliminating waste and non-value-add processes.

3. In a Lean supply chain the focus on reducing lead times leads to shorter, simpler distribution networks.

4. The e four distinct elements that typically make up Supply Chain are Integration, Operations, Purchasing & Procurement and Distribution & Logistics.

5. The cloud supply chain represents a network of interconnected businesses in the cloud computing area involved in the end-to-end provision of product and aggregated service packages required by end cloud service customers.

14.9 SELF-ASSESSMENT QUESTIONS

- 1. Explain cloud supply chain management.
- 2. What is lean supply chain management? Explain its elements.

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UNIT-15: BLOCK CHAIN TECHNOLOGY

Structure:

- 15.1 Objectives
- 15.2 Introduction
- 15.3 Block chain technology
- 15.4 Characteristics of block chain technology
- 15.5 Types of block chain technology
- 15.6 Working of Block Chain Technology
- 15.7 Notes
- 15.8 Summary
- 15.9 Key Words
- 15.10 Answer to check your progress
- 15.11 Self-Assessment Questions
- 15.12 References

15.1 OBJECTIVES

After studying this unit, you should be able to:

- Explain block chain technology,
- Identify the characteristics of block chain technology
- Examine the technology of block chain technology

15.2 INTRODUCTION

Today's supply chains are highly complex. They deal with many different variations of products that move through multiple parties. Coordinating SCs is a challenging task. Most of the world's major companies run computerized enterprise resource planning and supply chain management software to manage their SCs. They use technologies such as connected manufacturing equipment and radio frequency identification to track products from their origins until they reach the recycling bins.

Despite this SCs today face many challenges. Often shocks associated with supply and demand disruptions cannot be predicted with a reasonable level of accuracy. It is thus difficult for firms to take proactive actions and minimize the effects or disruption from a crisis.

Total food waste in the United States accounts for at least 30% of the food supply. One estimate suggested that a 1% reduction in foodborne diseases can lead to 700 million from increased productivity in the United States, the economy. The increase will result from the reduction in illness and lost productivity.

Block chain has the potential to effectively address many of the challenges facing SCs. This technology can create SCs with a high degree of adaptability, proactivity, reliability, responsiveness and accountability. It provides a high degree of data visibility. Since a transaction is confirmed by many participants of a network, it increases SC transparency and real and perceived accuracy of transactional data. Block chain can also improve the methods of communication and exchanging information.

15.3 BLOCK CHAIN TECHNOLOGY

Definition

Block chain is a Distributed ledger technology that has additional features. In a block chain, the records related to transactions are shared by means of blocks that form a chain. Every block in a block chain's online ledger has a timestamp, a hash pointer to ink it to the previous

block. Put simply, a hash is a type of cryptographic signature that closes the blocks. The next block stats with the same "hash," which can be viewed as a type of "wax seal"

Block chains thus can be viewed as a secure distributed and decentralized digital ledger or database created by a network of computers, which stores continuous blocks containing transaction information in a secure and verifiable manner. The interaction among the computers is facilitated by purposefully designed software in order to get the computers to agree (or achieve consensus) as to what data to add and store on the database.

15.4 CHARACTERISTICS OF BLOCK CHAIN TECHNOLOGY

Three key characteristics of block chain have been identified-decentralization, immutability, and cryptography-based authentication.

Decentralization

Bhockchain's value proposition is arguably embedded in the decentralization feature. By supporting decentralized models, block chain can make sustainability-related activities more transparent and hence help produce trust. Block chain eliminates the need for a trusted third party in the transfer of value and thus enables faster, less expensive transaction. Even those who are skeptical of the potential of block chain in many other fields and applications are optimistic in its trust - producing capabilities.

Immutability and append-only database

In an append-only database, new data can be appended, but existing data are immutable. The data in a block chain are immutable, and in the context of SCs this is an extremely effective feature. The term immutable comes from object oriented programming, in which data structure and operation or functions that can be applied are defined by programme. Immutable means that once an object has been created and is recorded in a software code, it cannot be modified. Block chain-based transactions are thus indelible and cannot be forged. The immutability feature makes transactions on block chain auditable, which can improve transparency. A party can be given controlled access to relevant data. For instance, block chain's distributed ledger model would allow regulators and authorities to access key data and information.

Cryptography-based authentication

To ensure that only authorized users can access the information, block chain systems use cryptography-based digital signatures in order to verify identities of participants. Users sign transactions with a private key. Such a key is typically a very long and random alphanumeric code. Using complicated algorithms, block chain systems also create public keys from private keys. Public keys make it possible to share information. This feature makes it possible to measure and track relevant outcomes.

15.5 TYPES OF BLOCK CHAIN TECHNOLOGY

There are, broadly speaking, three kinds of block chains: permission less (public), permissioned (private), and hybrid.

Public block chain

A permission less block chain is an open platform. In a way, permission less block chins are like a shared database. Anyone can join. Everyone can read everything. However, a user cannot control who can write. Some examples include Bitcoin and Ethereal. The ethereal network is a public block chain-based open software platform, in which each node can be discovered by and know to other nodes in the network. It has its own crypto currency known as Ether.

Private block chains

Private or permissioned block chains, on the other hand, are restrictive. Access must be granted by some authority. Permissioned block chains can be designed to restrict access to approved actors such as SC partners. Private block chains arguably have more promising applications in SCM.

Hyper ledger

Supply chain	Explanation/context
performance	
dimension	
Reducing cost	• Economic sense to generate a block chain code even for
	small transactions.
	Elimination of paper records
	• Block chain's traceability makes it possible to easily identify
	the source of a problem and engage in strategic removals of
	affected of <i>recalling the entire</i> product line.

Assuring quality	• Verification of CoC discourages SC partners to use low	
of products	quality and counterfeit ingredients.	
	• Real-time feedback can improve product quality	
Increasing	• Exerting pressure on supply chain partners to be more	
dependability	responsible and accountable for their actions.	
Reducing risks	• Exerting pressure on supply chain partners to be more	
	responsible and accountable for their actions	
Reducing risks	• Only parties mutually accepted in the network can engage in	
	transactions in specific touchpoints.	
	• Can ensure that software file downloaded has not been	
	breached.	
Facilitating	• Promotes transparency and ensure that middlemen and other	
sustainable	actors in SCs do not engage in unethical behavior	
practices		
Enhancing	• COVID-19 has forced firms to search for block chain	
Flexibility	solutions to increase flexibility.	

Hyper ledger is a private, permissioned block chain that has no native cryptocurrency. It is an open-source collaborative effort, which was created in 2016 by 30 members including IBM, Accenture, BNY Mellon, Intel and digital asset holdings to advance the use of block chain across various industries. Over half of the companies in the Forbes Block chain 50 list of February 2020 used Hyper ledger.

15.6 WORKING OF BLOCK CHAIN TECHNOLOGY

Every chain consists of multiple blocks and each block has three basic elements:

- The **data** in the block.
- A 32-bit whole number called a **nonce**. The nonce is randomly generated when a block is created, which then generates a block header hash.
- The **hash** is a 256-bit number wedded to the nonce. It must start with a huge number of zeroes (i.e., be extremely small).

When the first block of a chain is created, a nonce generates the cryptographic hash. The data in the block is considered signed and forever tied to the nonce and hash unless it is mined.

Miners

Miners create new blocks on the chain through a process called mining.

In a block chain every block has its own unique nonce and hash, but also references the hash of the previous block in the chain, so mining a block isn't easy, especially on large chains.

Miners use special software to solve the incredibly complex math problem of finding a nonce that generates an accepted hash. Because the nonce is only 32 bits and the hash is 256, there are roughly four billion possible nonce-hash combinations that must be mined before the right one is found. When that happens miners are said to have found the "golden nonce" and their block is added to the chain.

Making a change to any block earlier in the chain requires re-mining not just the block with the change, but all of the blocks that come after. This is why it's extremely difficult to manipulate block chain technology. Think of it as "safety in math" since finding golden nonces requires an enormous amount of time and computing power.

When a block is successfully mined, the change is accepted by all of the nodes on the network and the miner is rewarded financially.

Nodes

One of the most important concepts in block chain technology is decentralization. No one computer or organization can own the chain. Instead, it is a distributed ledger via the nodes connected to the chain. Nodes can be any kind of electronic device that maintains copies of the block chain and keeps the network functioning.

Every node has its own copy of the block chain and the network must algorithmically approve any newly mined block for the chain to be updated, trusted and verified. Since block chains are transparent, every action in the ledger can be easily checked and viewed. Each participant is given a unique alphanumeric identification number that shows their transactions.

Combining public information with a system of checks-and-balances helps the block chain maintain integrity and creates trust among users. Essentially, block chains can be thought of as the scalability of trust via technology.

CHECK YOUR PROGRESS

1. What is Block Chain?

2. List the types of Block Chains

3. Block chain eliminates the need for a trusted third party in the transfer of value (true/False)

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- 4. Bit coin is an example of Public/Private block chain
- 5. What is Mining ?

15.7	NOTES

15.8 SUMMARY

Block chain is a Distributed ledger technology that has additional features. In a block chain, the records related to transactions are shared by means of blocks that form a chain. Every block in a block chain's online ledger has a timestamp, a hash pointer to ink it to the previous block. Put simply, a hash is a type of cryptographic signature that closes the blocks. The next block stats with the same "hash," which can be viewed as a type of "wax seal".

Three key characteristics of block chain have been identified-decentralization, immutability, and cryptography-based authentication.

There are, broadly speaking, three kinds of bock chains: permission less (public), permissioned (private), and hybrid.

15.9 KEY WORDS

- o Block
- o Chain
- o Technology

15.10 ANSWER TO CHECK YOUR PROGRESS

- 1. Block chains thus can be viewed as a secure distributed and decentralized digital ledger or database created by a network of computers, which stores continuous blocks containing transaction information in a secure and verifiable manner.
- 2. Private, Public and Hybrid
- 3. True
- 4. Publilc
- 5. Miners create new blocks on the chain through a process called mining.

15.11 SELF -ASSESSMENT QUESTIONS

- 1. What is block chain technology? Explain in detail with the help of an example
- 2. Explain the characteristics of block chain technology.
- 3. Explain briefly the types of block chain technology.

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UNIT-16: SUPPLY CHAIN FINANCE & GLOBAL SUPPLY CHAIN MANAGEMENT

Structure

16.1	Objectives
16.1	Objectives

- 16.2 Introduction
- 16.3 Supply chain finance
- 16.4 Benefits of Supply Chain Finance
- 16.5 Global supply chain management
- 16.6 Advantages and Disadvantages of Global SCM
- 16.7 Notes
- 16.8 Summary
- 16.9 Key Words
- 16.10 Answer to check your progress
- 16.11 Self-Assessment Questions
- 16.12 References

16.1 OBJECTIVES

After studying this unit, you should be able to:

- Expalin the supply chain finance
- Discribe global supply chain management

16.2 INTRODUCTION

A global supply chain is made up of the interrelated organizations, resources and processes that create and deliver products and services to end customers. In the instance of global supply chains, it is extended around the world. Any company that uses parts and services from another factory overseas faces issue with global supply chain management.

16.3 SUPPLY CHAIN FINANCE

Supply chain finance (or SCF) is a form of supplier finance in which suppliers can receive early payment on their invoices. Supply chain finance reduces the risk of supply chain disruption and enables both buyers and suppliers to optimize their working capital. It's also known as reverse factoring.

Unlike receivables finance techniques like factoring, supply chain finance is set-up by the buyer instead of by the supplier. Another key difference is that suppliers can access supply chain finance at a funding cost based on the buyer's credit rating, rather than their own. As a result, suppliers are typically able to receive supply chain finance at a lower cost than they can otherwise access.

The term 'supply chain finance' is also sometimes used to describe a broader range of supplier financing solutions, including solutions like dynamic discounting, in which the buyer funds the program by enabling suppliers to access early payment on invoices in exchange for a discount. However, the term is more commonly used as a synonym for reverse factoring.

How does supply chain finance work?

In the first instance, the buyer will enter into an agreement with a supply chain finance provider and will then invite its suppliers to join the program. Some supply chain finance programs are funded by a single bank or finance provider, while other programs are run on a multi-funder basis by technology specialists via a dedicated platform. While buyers have traditionally focused on onboarding their 20 or 50 largest suppliers, technology-led solutions now enable companies to offer supply chain finance to hundreds, thousands or even tens of thousands of suppliers. This is made possible by providing user-friendly platforms and streamlined supplier onboarding processes which makes it simple to onboard large numbers of suppliers rapidly and with minimal effort.

Supply chain finance process

Once a supply chain finance program is up and running, suppliers can request early payment on their invoices. From there, the supply chain finance process plays out, which typically looks something like this:

- a. Buyer purchases goods or services from the supplier
- b. Supplier issues their invoice to the buyer, with payment due within a certain number of days (e.g., 30 days, 60 days, or 90 days)
- c. Buyer approves the invoice for payment
- d. Supplier requests early payment on the invoice Funder sends payment to the supplier, with a small fee deducted.
- e. Buyer pays the funder on the invoice due date

Where accounting treatment is concerned, buyers who implement supply chain finance programs will need to make sure supply chain finance is classified as an on-balance sheet arrangement, rather than bank debt.

Supply chain finance example

To make things a little clearer, let's look at a hypothetical example of a supply chain finance solution in action.

A buyer purchases an order of goods from a seller. Typically, the supplier would ship the goods to the buyer, then submit an invoice under their payment terms (of, let's say, net 30). That would leave the buyer with 30 days to pay their invoice.

However, if the supplier wants their invoice paying faster (or the buyer doesn't have the cash available or would rather keep hold of it to use as working capital), they can utilize an existing supply chain finance solution. This then implicates a third party – the financer or lender – who will pay the invoice immediately on behalf of the buyer and then extend the payment terms on which the buyer must pay them back, perhaps to 60 days.

This is a win-win situation, the buyer gets to keep hold of their working capital for longer without spoiling their relationship with the supplier, and the supplier gets to be paid immediately giving them more working capital of their own to deploy. There are plenty of other benefits, too.

Benefits for suppliers

- **Optimize working capital.** By accessing supply chain finance, suppliers can receive payment for their invoices earlier than they would otherwise. As a result, their days sales outstanding (DSO) is reduced, resulting in working capital improvements.
- Access lower cost funding. The cost of funding is usually lower for suppliers than it is if they use other sources of funding, such as factoring, making supply chain finance an attractive way of obtaining funding.
- **Improve cash forecasting accuracy.** When suppliers access supply chain finance, they may gain more certainty over the timing of incoming payments, making it easier to forecast their future cash flows accurately.

Benefits for buyers

- **Optimize working capital.** Buyers can also improve their working capital position with supply chain finance, as many companies choose to implement supply chain finance programs in conjunction with an initiative to harmonize supplier payment terms.
- **Improve supply chain health.** By offering suppliers supply chain finance, buyers can reduce the likelihood of a future supply chain disruption that could affect their own operations.
- Strengthen supplier relationships. Buyers can improve their relationships with suppliers by providing them with access to low-cost funding and may be in a stronger negotiating position as a result.

Flexible funding

While supply chain finance and dynamic discounting are two separate solutions, some companies may wish to access both types of program. For example, some businesses will have surplus cash available at certain times of the year, which can be deployed in a dynamic discounting program – but at other times of the year they may wish to invest cash elsewhere. One option is to implement two separate financing solutions from different vendors – but this may be less than ideal in terms of the supplier experience. Alternatively, vendors that offer

a flexible funding model may allow buyers to switch seamlessly between the two models as the need arises.

16.4 BENEFITS OF SUPPLY CHAIN FINANCE

Supplier	Manufacturer	Dealer
Increases cash flow	Minimizes investment in working capital	Offers working capital for the purchase of inventory
Provides post-shipment financing	Reduces Cost of Goods Sold (COGS)	Lower cost of funds than other working capital products
Early payment reduces financial dependence on the buyer	Automation reduces administration cost	Improves financial discipline due to short duration
Reduces the cost of capital by leveraging buyer's credit rating	Reduces total cost of borrowing	Automation decreases administration cost

Instruments of Supply Chain Finance

Reverse Factoring: This financial instrument permits sellers to sell their drafts relating to a specific buyer to a bank at a discount, instantly after they are approved by buyer

Inventory finance: It allows seller to hold goods in a warehouse for buyer till the time goods are not required.

Purchase order: This is basically an order that is available to the seller based on a purchase order received from a buyer.

16.5 GLOBAL SUPPLY CHAIN MANAGEMENT

Introduction

Firms are creating truly global supply chains because it enables them to reduce their costs. Companies can take advantage of lower production costs and they can outsource to free capital from non-core activities and generate large-scale efficiencies. In addition, the costs of shipping, communications and tariff-related charges have come down over the years.

Going "global" through global supply chains helps facilitate entry into new markets, enables business growth and provides firms with access to new technologies through partnerships with foreign firms.

Global supply chain management involves planning how the entire supply chain will function as an integrated whole, with the aim of generating an optimum level of customer service while being as cost efficient as possible. Other aims include increasing the speed by which your product reaches your customers, as well as flexibility in dealing with customer transactions. It incorporates management processes that integrate the network of suppliers, manufacturers, warehouses and retail outlets so that the right type of goods are sourced, supplied, produced and shipped in the right quantities, to the right locations, at the right time and are received in sound condition. To achieve successful integration, flows of information (such as purchase orders, shipping notices, waybills and invoices), materials (including raw and finished products) and finances (payments and refunds) through the supply chain must be co-ordinated effectively.

History of the Global supply chain

Global supply chain management is directly linked to the rise of globalization. Pinpointing an exact date in history as the advent of global supply chain management is not possible because its origin varies by company.

As companies began looking overseas for inexpensive parts and labor, managers were hired to orchestrate these complex operations.

Global supply chain management trend is evolving as new technologies emerge Instead of vendors mailing their products and assuring its delivery, companies are now able to track the product's exact location through GPS tracking devices.

These devices are imperative for global supply chains.

The father the goods are from the final destination, the riskier its arrival.

Before RFID scan, supply chain managers took inventory weekly or monthly to track sales and supplies. Now , many companies like Wal-Mart track their products with RFID technology, the moment a product is purchased; inventory levels are updated to reflect the sale. A third trend affecting global supply chain management is the lowered barriers of economic trade. The general agreement on tariffs and trade enabled companies to buy products from other countries for lower costs

What are the three things all successful supply chain management needs?

Supply chain management touches all of an organization's functions. To be successful, it requires focused effort across the entire company and collaboration with all outside suppliers and service providers. This means that supply chain management must have a multidimensional approach, involving people, processes and technology. People are key to supply chain management because they are the core of organizations. For successful supply chain management, the people involved must have the skills and knowledge to manage sourcing, manufacturing, storage and transportation of products. They must have a solid view of the company's strategic business vision and know how their role fits into the overall functioning of the supply chain. Processes The processes in supply chain management are the actions taken with the aim of satisfying customers. They include all functions involved in the supply chain: sourcing, distribution, transportation, warehousing, sales and customer service. They also include all actions performed by external companies that are part of the supply chain. Technology is used in the supply chain to connect people and processes. However, people involved in the supply chain will not use technology unless they find it easy to adopt. Careful selection and implementation of the supply chain technologies a company Uses is essential for supply chain success.

What are the three things all successful supply chain management needs?

Supply chain management touches all of an organization's functions. To be successful, it requires focused effort across the entire company and collaboration with all outside suppliers and service providers. This means that supply chain management must have a multidimensional approach,

Involving people process and technology.

People : People are key to supply chain management because they are the core of organizations. For successful supply chain management, the people involved must have the skills and knowledge to manage sourcing, manufacturing, storage and transportation of products. They must have a solid view of the company's strategic business vision and know how their role fits into the overall functioning of the supply chain.

Processes: The processes in supply chain management are the actions taken with the aim of satisfying customers. They include all functions involved in the supply chain: sourcing, distribution, transportation, warehousing, sales and customer service. They also include all actions

Performed by external companies that are part of the supply chain.

Technology: Technology is used in the supply chain to connect people and processes. However, people involved in the supply chain will not use technology unless they find it easy to adopt. Careful selection and implementation of the supply chain technologies a company uses is essential for supply chain success.

Benefits of global supply chain management

In the modern global marketplace, advances in communications and transportation technologies have led customers to expect a steady and regular supply of products in good condition at the lowest possible price, despite the long distances most products, commodities and foodstuffs are shipped. Companies must always be looking for ways to improve the functioning of their supply chains to ensure that their supply meets projected demands cost effectively. If they do not produce sufficient product to meet demand, they will lose customers. If they produce too much product, they must pay for expensive warehousing of the excess inventory, which they might not be able to sell. If supplies are not sourced carefully and production is not monitored, companies might be faced with mass product recalls or returns. These can result in financial ruin for a company.

By managing their supply chains carefully, companies can select the most cost-effective solution at each stage in the chain and can avoid business costs. This provides a company with a real

Competitive edge.

The cost savings provided by supply chain management enhance additional cost-cutting manufacturing methods and strategies that many international companies have already instituted.

These strategies include the following:

Just-in-time (JIT) manufacturing (reducing inventory levels, overall costs, product variability and production times, and also improving product quality) Lean manufacturing (producing goods using less manpower, raw materials, time and space)

Total quality management (embedding awareness of quality in all operational strategies) Global supply chain management has many benefits for a company. It enables business processes to be organized using international organizations that be reduced, companies can react rapidly to unforeseen market conditions, transport strategies can be improved, costs can be minimized and waste can be eliminated. One can get their product to market substantially more quickly. Smalland medium-sized businesses benefit as well. These smaller organizations, especially with niche technologies or specializations, can now sell to multinational organizations or to their suppliers. Many of these large firms have started outsourcing activities that were carried out internally in the past.

Global supply chain system components

International distribution systems: Manufacturing (domestically), Distribution (overseas) International suppliers: Raw materials and components (foreign suppliers), final assembly/manufacturing (domestically).

Offshore manufacturing; Product is sourced and manufactured in a single foreign location, shipped back to domestic warehouses for sale and distribution.

Fully integrated global supply chain: Products are supplied, manufactured and distributed from factories located throughout the world. In a truly global supply chain, it may appear that the supply chain was designed without regard to national boundaries. The true value of a global supply chain is realized by taking advantage of these national boundaries

Objectives of Global Supply chain

International manufacturing sources-whether company owned or external suppliers have in recent years been sought out by managers because of reduced cost, increased revenues, and improved reliability. Manufacturers typically set up foreign factories to benefit from tariff and trade concessions, low cost direct labor, capital subsidies, and reduced logistics costs in foreign markets.

16.6 ADVANTAGES AND DISADVANTAGES OF GLOBAL SCM

Advantages of GSCM

- The main reason for any business to exist is to increase sales and profits.
- When you go global, then the likelihood of increasing sales goes up as you open up your market to consumers all over the world
- This allows business to reduce dependence on their local and national economies.
- With the number of internet users on the rise, global business are able to do business at all hours of the day with consumers form every point on the globe.
- The potential for expansion for business increase as they enter into more markets.
- Diversified business and trading
- Lower supply chain costs
- Reduced cycle time
- Competitive advantage
- Untapped markets
- Enhance speed and efficiency

Disadvantage of Global Supply Chain Management

- The biggest disadvantage of global supply chain management is the heavy investment of time, money and resources needed to implement and overlook the supply chain.
- The decision to outsource a production facility or call center lowers the cost of doing business for a company using global supply chain management, but the decision to outsource or not can lead to consumer backlash.
- Inefficient and undersized transportation and distribution systems.
- Market instability
- Integrating the supply chain and choosing the correct suppliers is much more difficult than one can imagine.
- Not only do companies have to strongly consider price and quality, but they also have to make sure that all the organizations are willing to cooperate to benefit the group.

- Managerial style, objectives, and goals must have a strategic fit between all companies involved and power must be evenly distributed throughout the supply chain or the business will not benefit from the advantages of global supply chain management.
- When entering the global market, business need to be aware that the gains may not be seen in the short term.
- It may be many years before they have to hire additional staff to help launch their companies' efforts.
- Another disadvantage is that they have to hire additional staff to help lunch their companies in the global markets they expand into.
- Companies usually have to modify their products and packaging to suit the local culture, preferences and language of the new market.
- Travel expenses are sure to increase for the administrative staff, as they will now be expected to travel all over the world to oversee their business outlets in other countries.
- Also, companies need to know the regulations and tax laws in foreign countries, which take time and money, and they may need to hire professionals in those countries to help with legal and financial issues.

CHECK YOUR PROGRESS

- 1. What is Offshore manufacturing?
- 2. What is Reverse Factoring?
- 3. What is Supply Chain Finance?
- 4. Why Manufacturers set up forieng factories?
- 5. What are the advantages of GLobal Supply Chian Management?

16.7 NOTES

16.8 SUMMARY

Global supply chain management: involves planning how the entire supply chain will function as an integrated whole, with the aim of generating an optimum level of customer service while being as cost efficient as possible. Other aims include increasing the speed by which your product reaches your customers, as well as flexibility in dealing with customer transactions. It incorporates management processes that integrate the network of suppliers, manufacturers, warehouses and retail outlets so that the right type of goods are sourced, supplied, produced and shipped in the right quantities, to the right locations, at the right time and are received in sound condition.

16.9	KEY WORDS	
٠	Supply	
•	Chain	

- Finance
- Global

16.10 ANSWER TO CHECK YOUR PROGRESS

- 1. Product is sourced and manufactured in a single foreign location, shipped back to domestic warehouses for sale and distribution.
- 2. This financial instrument permits sellers to sell their drafts relating to a specific buyer to a bank at a discount, instantly after they are approved by buyer.
- 3. Supply chain finance (or SCF) is a form of supplier finance in which suppliers can receive early payment on their invoices.
- 4. Manufacturers typically set up foreign factories to benefit from tariff and trade concessions, low cost direct labor, capital subsidies, and reduced logistics costs in foreign markets.
- 5. It enables business processes to be organized using international organizations that be reduced, companies can react rapidly to unforeseen market conditions, transport strategies can be improved, costs can be minimized and waste can be eliminated.

16.11 SELF-ASSESSMENT QUESTIONS

- 1. What is supply chain finance and how does it affect supply chain management
- 2. What is Global Supply chain management? Narrate with the help of an example.

16.12 REFERENCE

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