

Opsession presents,

OPERATIONS AND SUPPLY CHAIN

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THE OPERATIONS CLUB
OF MDI GURGAON



Management
Development
Institute

OPERATIONS MANAGEMENT

Chapter 1

Introduction

Operations management (OM) is the set of activities that creates value in the form of goods and services by transforming inputs into outputs. It deals with the design and management of products, processes, services, and supply chains. It considers the acquisition, development, and utilization of resources that firms need to deliver the goods and services their clients want. Some of the functions performed by an operations manager include supply chain management, product design, forecasting, quality control, and delivery management.

Operations management (OM) involves utilizing resources from staff, materials, equipment, and technology. Operations managers acquire, develop, and deliver goods to clients based on client needs and the abilities of the company.

Operations managers handle various strategic issues, including determining the size of manufacturing plants and project management methods and implementing the structure of information technology networks. Other operational issues include the management of inventory levels, including work-in-process levels and raw materials acquisition, quality control, materials handling, and maintenance policies.

The combination of understanding and coordinating the work of a company are central to becoming a successful operations manager.

What Is the Purpose of Operations Management (OM)?

Operations management is concerned with controlling the production process and business operations in the most efficient manner possible. Operations Management professionals attempt to balance operating costs with revenue to maximize net operating profit.

Key Skills of an Operations Manager

- People Management Skills
- Organizational Skills
- Analytical Skills
- Maintaining Quality Standards
- Technical Skills
- Motivational Skills
- Decision-Making Skills

Common Operations Concepts

1) Lean manufacturing

Lean manufacturing is a production system that focuses on reducing waste, creating customer value and seeking continuous process improvement. This is achieved by applying lean project management principles, techniques and tools. The lean methodology was first implemented in the Toyota production system (TPS) which revolutionized the company's manufacturing process.

2) Six Sigma

Six Sigma is a disciplined, data-driven approach and methodology for eliminating defects (driving toward six standard deviations between the mean and the nearest specification limit) in any process – from manufacturing to transactional and from product to service. The statistical representation of Six Sigma describes quantitatively how a process is performing. To achieve Six Sigma — statistically — a process must not produce more than 3.4 defects per million opportunities. Here, opportunity means each instance wherein one may commit a mistake. And a defect occurs when you commit that mistake. Greater the sigma level, higher is the standard deviation, which in layman terms represents capacity of the system to accommodate the changes.

3) Lean Six Sigma

Lean Six Sigma combines the strategies of Lean and Six Sigma. It is a fact-based, data-driven philosophy of improvement that values defect prevention over defect detection. It drives customer satisfaction and bottom-line results by reducing variation, waste, and cycle time while promoting the use of work standardization and flow, thereby creating a competitive advantage. It applies anywhere variation and waste exist, and every employee should be involved.

4) Total Quality Management

Total Quality Management (TQM) is a Management Approach of an organization centered on quality based on participation of all its members and aiming at long term success through customer satisfaction, and benefits to all members of the organization and to society. TQM is based on continuous improvement and involves a cultural change in the organization.

What Is Quality?

Quality has several definitions. Early definitions were "fitness for purpose" and "conformance to specifications". Quality is also defined as the totality of characteristics of an entity that bears on its ability to meet the stated and implied needs of the customer (ISO 9000).

5) Just-in-Time Manufacturing

Just in time (JIT) manufacturing is a systematic way to eliminate waste in manufacturing. Waste is anything other than the minimum amount of resource required to make a product. Any activity that does not add value to the product can be treated as waste. Wastes are classified into seven types (also called seven Muda). These are waste from over production, Waste of waiting time, Transportation waste, Inventory waste, Processing waste, Waste of motion and waste from product defects.

6) Production System

Production is defined as the step-by-step conversion of one form of material into another form through chemical or mechanical process to create or enhance the utility of the product to the user. It is that part of an organization, which produces products of an organization. It is that activity whereby resources, flowing within a defined system, are combined and transformed in a controlled manner to add value in accordance with the policies communicated by management.

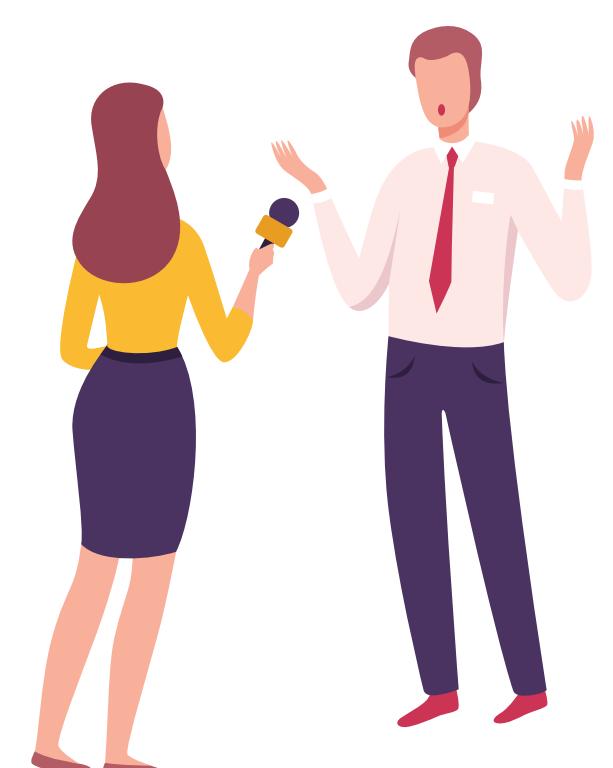
7) Planning & Forecasting

Planning is the process of thinking about the future course of action which is required to achieve a specific goal. It explains about what course of action is required to be taken, when is the right time, by whom and where. Also, it explains the best scenario, the worst scenario, and the most expected case etc.

Forecasting is process of using past and present data and analysis of trends for predictions of the future. It helps the organization to cope with the future uncertainties. It is more advanced term of prediction. Forecasting is done with certain assumption based on the experience of management, their knowledge, and judgment. An error in assumptions may result in forecasting error.

Commonly asked interview questions

- Why MBA in Operations?
- Are you aware of the different roles of an operations manager?
- What factors will you take into consideration for setting up a plant for a new product if you are the Operation Head?
- How will you plan operation activities of particular product?
- How to manage a budget of a startup that is not currently growing? What do you do to cut costs?
- How does Operations Management affect the end customer?



SUPPLY CHAIN MANAGEMENT

Chapter 2

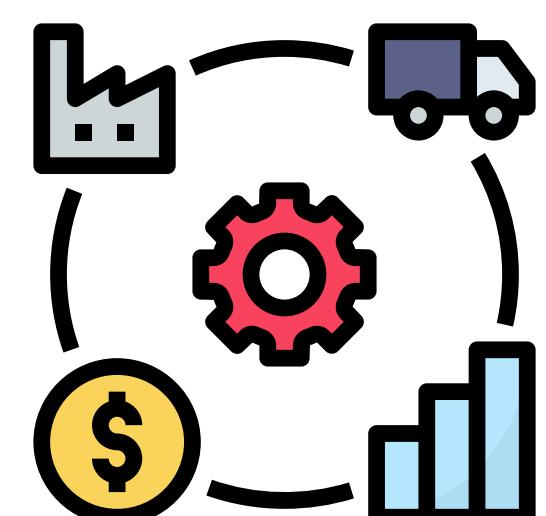
Introduction

Supply chain management is the management of a network of all business processes and activities involving procurement of raw materials, manufacturing and distribution management of finished goods SCM is also called the art of management of providing the Right Product, At the Right Time, Right Place and at the Right Cost for the customer.

Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies.

In SCM, the supply chain manager coordinates the logistics of all aspects of the supply chain which consists of five parts:

- The plan or strategy
- The source (of raw materials or services)
- Manufacturing (focused on productivity and efficiency)
- Delivery and logistics
- The return system (for defective or unwanted products)



The supply chain manager tries to minimize shortages and keep costs down. The job is not only about logistics and purchasing inventory. According to Salary.com, supply chain managers “oversee and manage overall supply chain and logistic operations to maximize efficiency and minimize cost of organization's supply chain.”

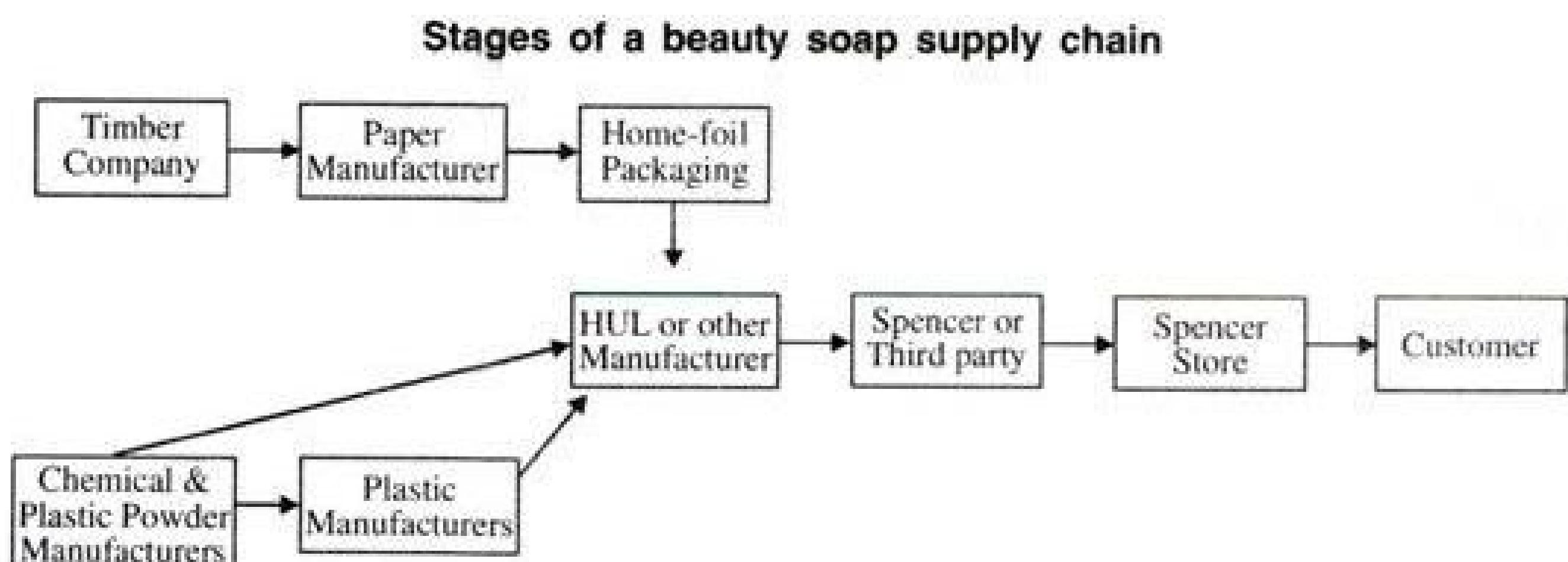
Productivity and efficiency improvements can go straight to the bottom line of a company. Good supply chain management keeps companies out of the headlines and away from expensive recalls and lawsuits

Examples of Supply-Chains

1) Beauty Soap

Consider a customer walks into Spencer Store to purchase beauty soap. The supply chain begins with the customer and his need for beauty soap. The next stage of this supply chain is the Spencer retail store where the customer visits. Spencer stocks its shelves using inventory that may have been supplied from a finished goods warehouse managed by Wal-Mart or received from third party (vendor). The vendor in turn is stocked by the manufacturer [say Hindustan Uni Liver (HUL)].

The HUL manufacturing plant receives raw material from a variety of suppliers who may themselves have been supplied by lower tier suppliers. For example, packaging material may come from Home- foil (an aluminium foil company) while Home-foil receives raw material to manufacture the packaging material from other suppliers. This forms a typical supply chain



2) E-Commerce

On the basis of the demand planning, the demand forecast for a product is generated. The supply is planned and the orders are purchased from supplier/Brands which are then stored in the warehouses/fulfilment centre (often referred to as first mile) of the company. This process is done before the customer actually places the order.

When the customer places an order, the products stacked in the fulfilment centre are packed and then sent to sort centres/ Segregation Hub (Often referred to as Middle mile) for segregating the products based on geographic location of their delivery. At last, they are received at last mile sort centres, which are then picked up by delivery men for the delivery at final destination.

Supply Chain Terminology

1) Inventory Management

Inventory management refers to the process of ordering, storing, using, and selling a company's inventory. This includes the management of raw materials, components, and finished products, as well as warehousing and processing of such items.

2) Logistics

It is the science of obtaining from, producing and distributing material and product in the proper place and in the proper quantity. Logistics management activities typically include inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfillment, logistics network design, inventory management, supply/demand planning, and management of third-party logistics services providers.

3) Lead Time

Lead time is the period between the initiation of any process of production and the completion of that process. A more conventional definition of Lead Time in the Supply Chain Management realms is the time from the moment the supplier receives an order to the moment it ships it in the absence of finished goods or intermediate (Work in Progress) inventory—it is the time it takes to manufacture the order without any inventory other than raw materials or supply parts

4) Bottleneck

A bottleneck is a point of congestion in a production system (such as an assembly line or a computer network) that occurs when workloads arrive too quickly for the production process to handle. The inefficiencies brought about by the bottleneck often creates delays and higher production costs. The term "bottleneck" refers to the typical shape of a bottle and the fact that the bottle's neck is the narrowest point, which is the most likely place for congestion to occur, slowing down the flow of liquid from the bottle. Example: Traffic Jams



5) Cycle Time

The total time required to complete a transformation from one status to another. Total cycle time is composed of many elements, often broken into active (running or operating) time and idle (queue or wait) time

1. Semi-Conductor Shortage

The global semiconductor chip shortage that started last year, is still plaguing various industries. While it is normal for capacity within the industry to have its ups and downs, the severity of the shortage has not been taken lightly by industry players and governments around the world.

In the beginning, the shortage was partly due to stronger demand for more advanced chips from the consumer electronics and computer industry through Covid-19. For context, worldwide semiconductor sales declined between 2018 and 2019, but by 2020, sales grew 6.5%. The rapid growth continued into 2021, and according to trade organisation the Semiconductor Industry Association, sales for May 2021 were 26% higher than the same time last year.

Demands from consumer products weren't the only factor. By mid-2020 onwards, there was a surge in demand for semiconductor content in the auto industry, driven by the adoption of technologies such as driver assistance systems and autonomous driving. In fact, Intel projects that semiconductors will account for over 20% of the input costs for new premium cars, up from 4% in 2019. Therefore, it is not surprising that manufacturers are struggling to keep pace, especially given how the pandemic that led to a global lockdown has exposed pressure points in the global chip supply chain.

What can be done?

- Government policy is needed to boost the long-term competitiveness of the semiconductor industry, by expanding domestic semiconductor manufacturing activity and help the OEM industry prosper
- OEMs with smaller and critical component requirements can partner with similar entities and approach chip foundries and OSAT players as a combined entity to gain some leverage
- OEMs can pre-invest in a commoditized part of the chip supply chain and foundries, to get a guaranteed long-term supply

2. Suez Canal Blockage

On one of the world's busiest trading routes, the Suez Canal, a 1,312-foot long freight container ship was wedged in, blocking itself and all marine traffic for six days. The route is crucial to global supply as it connects Asia with Europe before continuing onwards to the East Coast of America. It is estimated that this unfortunate situation with the Panama-registered Ever Given ship costs the global economy a 400 million USD per hour.

The canal's temporary blockage created a domino effect of global supply chain disruptions, exacerbating already congested ports, railyards, and distribution centers; further straining containership shortages; and delaying shipments, including the delivery of raw materials that will also impact downstream production and the manufacturing of all kinds of consumer goods

Ultimately, the ship was dislodged around 9 a.m. ET on March 29th after more than 10 tugboats arrived on the scene, along with specialized dredging equipment and expert salvage teams all working together to free the 220,000-ton vessel.

But while traffic has now resumed in the key waterway, the repercussions after days of halted movement will continue to be felt.

Future Measures

- **Regional Sourcing** - Build a network of suppliers that are closer to home—or at least closer to your own facilities, wherever they may be around the world. Using a more regional network can help guard your company against the risk of global disruptions, whether they be pandemics, canal blockages, or other unforeseen events. Keeping suppliers and supplies nearby can also help you keep inventories low. More on inventory control in a minute
- **Seeking Partnerships**- With an established partnership or relationship with a supplier, that supplier can help steer you to material alternatives.
- **On Demand Production**- Finally, digital manufacturing suppliers that provide on-demand production can bring speed and cost savings to your company's supply chain. Digital manufacturing, which automates the manufacturing process, enables faster speeds and makes getting products or parts “on-demand” a reality. You can opt for on-demand production in low volumes, creating a supply chain that's driven by your customers' demands, not your supplier's lead times, thereby also gaining greater control of your inventory and warehousing costs, and delivering the right products at the right time at the right total cost to your customers.

THANK YOU AND ALL THE BEST!



ABOUT US

THE OPERATIONS CLUB
OF MDI GURGAON

Opsession, the Operations club at MDI has been the unifying platform for the students interested in pursuing a career in the field. The Club has evolved from a representation of the growing interest in the field of operations management to one that actively contributes to the knowledge repository of the students with monthly newsletters, annual magazine, simulation games, flagship events, industry exposure, live project opportunities and much more.



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