LSCM UNIT 4.2 MODULE 4

Types of supply chain models that can drive supply chain management for a business:

1. **FAST CHAIN MODEL**

The fast chain model is one of the new names in supply chain strategies. It is suitable for businesses that have product lines with short life cycles. For instance, a fashion designer might have a specific line of designs in a season. The business needs to take the fashion line to the market to maximize returns, as it is usually based on current trends. As supply chain efficiency can increase a business’s competitive edge, this model is usually considered the best among the several types of supply chain integration. In other words, one popular supply chain model is the fast chain supply chain, which focuses on quickly and efficiently meeting customer demand. This model is particularly useful for businesses in industries with rapidly changing trends or high levels of competition, such as fashion or technology. This model works best with businesses that must change their products frequently and get them to market quickly before a trend is no longer relevant. Some of the examples involve clothing, fashion accessories, shoes, and active wear. Nike is one of the examples involved in frequent changes in their products, including shoes and active wear. Once the trend declines, Nike sets up a new supply chain for the next inventory of products.

1. **CUSTOM-CONFIGURED MODEL**

A customization is a feature, extension, or modification that requires custom coding and/or some form of special implementation. A configuration is when you use native tools in the system to change its behavior or features. The custom-configured model needs custom setups in the assembly and production stages. It is a mix of agile and continuous flow methods where the product that is being manufactured may require some extra customization, but it needs to operate on an end-to-end basis. It is usually used for prototype design and manufacturing of small batches. The custom-configured model requires additional investment from the company as compared to more traditional models.

One example of where this supply chain strategy make sense is the assembly of personalized products, such as computers and vehicles. Costs absorbed by organizations with respects to inventory and logistics. Some of the costs absorbed by organization with respect to inventory and logistics include: •Facility Costs •Inventory Costs •Transportation Cost •Service Performance Cost •Parameters Used to Monitor Supply Chain Performance

1. **CONCEPTUAL MODEL OF SUPPLY CHAIN MANAGEMENT**

It consists of a network of facilities and distribution options that perform the functions of procurement of materials, transformation of these materials into intermediate and finished products, and the distribution of these finished products to customers in the right time and of the right quantity and quality.

The complete SCM has **three sections** at the macro level

( 1)Supply Relationship Management: The segment of the chain which is concerned with the supply of raw materials ,components and sub-assemblies .This segment is called the SRM which plays the role of supplier relations.

(2) The Conversion system within a factory which is done by the production and operations management function. This macro system is often called the Internal Supply Chain Management or ISCM.

(3) CRM or customer relations management macro system. The CRM System takes care of the market, Selling, Call centre and order management.

The management of the three macro level systems has been very efficiently taken care by leading software corporations like the SAP. , Oracle, BAAN and other Enterprise Resource Planning Systems. Since the Customer Relationship management is focused towards the marketing, Sales and service

 SCM works in a demand driven situation, encourages flow-type production with small batches, reduces idle inventory and idle time in any business by improving overall customer- centric approach.

 The conceptual model of SCM is based on the five basic elements **called Pillars of SCM**. It includes:

1. Customization philosophy
2. Outsourcing of items in which the supplier has competency
3. Multi-tier supplier partnership
4. Third or Fourth party logistics
5. Use of modern IT systems
6. **MATHEMATICAL MODEL**

Mathematical models are used in data analysis to aid in decision-making and other functions in businesses. Discover how mathematical models are used in the business field, including making predictions and optimizing costs. Supply chains become globalized the complexities to manage and control those globalized supply chains will also increase and that usually results in inadequate existing experience and intuition. Therefore, to overcome that inadequacy the use of mathematical models becomes necessary. The attention towards the use of mathematical models to optimize supply chain has been increasing, mainly because of their lower cost and greater capability. In supply chain management the use of mathematical modeling is not specific to any particular level; those can be used at any level (strategic, tactical, or operational), considering the factors like transportation routing, distribution networks, or warehouse operations. Mathematical modeling approaches that are usually considered in supply chain problems include linear programming, mixed-integer/integer linear programming, nonlinear programming, multiobjective programming, fuzzy mathematical programming, stochastic programming, heuristics algorithms, and metaheuristics and hybrid models.

1. **SUPPLY CHAIN SIMULATION**

Supply chain simulation is different than the analytical methods that have gone before it. It provides dynamic details and opportunities for greater insight by expanding the design, analysis, and optimization toolset for supply chain managers. Furthermore, supply chain simulation is becoming a popular choice as the systems under study become increasingly complex. A supply chain simulation shows the behavior of a logistics network over time. The logical rules of a supply chain are represented in a simulation model and then executed over time, making the simulation dynamic. For example, production is started when orders deplete inventory below a threshold. Such rules can be combined, and their relationships investigated as well as tested against disruptive events, like strikes and natural disasters.

Dynamic supply chain simulation models differ from analytical models in several important ways.

An analytical model of a supply chain uses linear equations to describe operations. The benefit of this is that solutions, once found, are optimal. This is also the downside: describing a supply chain in such a way requires simplification and, consequently, the difficulty of modeling increases with complexity. Furthermore, if a solution cannot be found, an analytical model cannot be used. It should also be noted that analytical models deal only with the values they are specified to capture and are of limited use outside their scope.

Dynamic supply chain simulation models capture the rules of operation and enable you to reflect all of the dimensions of your supply chain. The output of a dynamic simulation model shows system behavior over time, and any descriptive statistics of the workings of your supply chain can be collected. Supply chain simulation models cope well with complexity and can consider real-world randomness. If they have a downside, it is that they must be verified to make sure they function as expected.

Simulation can be used to:

* Determine safety stock values in multi-echelon(level) supply chains
* Evaluate inventory policies
* Identify bottlenecks
* Cost service levels
* Test the robustness of your supply chain
* Ask what-if questions regarding, for example, new manufacturing facilities, or transport policies

Together, analytical optimization and dynamic simulation are a powerful combination of methods.

**KEY ISSUES IN SUPPLY CHAIN MANAGEMENT**

Supply chain management provides enterprises, especially manufacturers, with tremendous competitive and business advantages. However, supply chain management is fraught with challenges especially in today’s business landscape.

**Three Key Issues in Supply Chain Management**

Key Issue #1: Globalization

Key Issue #2: Fast-changing Markets

Key Issue #3: Quality and Compliance

**4. Material scarcity**

With the pandemic bringing about a change in customer demands, demand for products has abruptly risen. The dependency on a single supplier for materials, or lack of alternative raw materials, has made it difficult for manufacturers and retailers to meet growing demand. To mitigate material scarcity, some solutions include maintaining good relations with suppliers, finding alternative suppliers, searching for alternative materials, improving the procurement process, and enhancing forecasting methods.

1. **Costing**

Rising costs of raw materials, labour, transportation, and infrastructure investment have affected the overall operating budget of many organisations. To keep operations running and provide customers with good quality products at affordable rates, businesses must make necessary adjustments. The best solution for this issue is implementing cost control measures by efficiently executing plans through constant monitoring.

1. **Usage of multiple channels to market**

With consumers able to buy products across multiple channels, supply chain management needs to develop different processes to tackle the challenges arising from the use of multiple distribution channels. With the help of technology, supply chain managers can manage multiple supply chains, third parties, and other stakeholders to ensure a good customer experience.

Lead times

As consumers today expect faster deliveries, long lead times make it challenging to balance supply and demand properly. Effective planning and setting up a small network of warehouses close to targeted final delivery locations will help prompt product deliveries to end-users.

1. **Data management**

With the increasing adoption of digitisation for supply chain management, a vast amount of data is collected through many data points, making data management difficult. Organisations must implement a suitable data management solution to manage a supply chain effectively.

1. **Exposure to risk**

With supply chains depending on many countries for low-cost manufacturing and labour, awareness about the stability of governments in such countries gains precedence. Changes in leadership, policy, and natural disasters affect the supply chain. To be safe, set up alternative agreements with alternate suppliers, manufacturers, and freight forwarders if existing ones fail to deliver.

1. **Maintaining quality and sustainability**

Quality issues can also be challenging, especially if products are made in other countries. Bringing all stakeholders on board regarding the quality level expected to meet existing regulatory standards is essential. Organisations must also ensure ethical sourcing is maintained and environmental impact is reduced. For more effectiveness, third-party inspection services and software tools can be used for collecting and monitoring supplier safety and environmental information.

1. **The hiring of qualified personnel**

The supply chain management market needs more qualified professionals to handle the tasks. Hiring competent and qualified staff would be highly beneficial for organisations to streamline their supply chain operations. Hiring personnel with a supply chain operations certification would ensure the implementation of essential process improvement techniques.

1. **Quality customer service**

Customer preferences keep changing, and organisations need to adjust accordingly. An effective business strategy is about providing the best service in the shortest time and at the least cost possible. With technology, organisations can provide unique solutions to their customers, thus making a huge difference.

1. **Lack of end-to-end visibility**

Lack of visibility on what is happening in the supply chain can cause delays, disrupting its effective functioning. Similarly, a lack of inventory visibility can lead to excess stock or a shortage. The absence of visibility also means a lack of traceability, affecting the organisation’s brand image and customer relations.

1. **Implementation of technology**

Many organisations are yet to adopt technology to enhance the functioning of their supply chain. The efficient use of technology solutions ensures a competitive edge across supply chain components, including transportation, warehousing, and delivery-point logistics.