

Global Competitiveness in Supply Chain

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Abstract

Supply chain is a competitive tool for all organizations in present time. Much importance was not given earlier, but now focus has been shifted and supply chain management has got its due importance. It is said that customer is the king and customer satisfaction is the most important factor for the organizations to survive in this dynamic environment. Product should reach the end customer within minimum possible time and in a right condition. Only a happy and satisfied customer can propagate positive words of mouth, which are the biggest advertising weapon for organizations. An efficient supply chain management system is responsible for delivering products to customers and organizations can get competitive advantage. A reverse supply chain management is also equally important for the organization to take back some products to rectify or as a part of green supply chain management. Paradigm has been changed. Supply chain management started to gain attention in the 1980s and it got its due attention in latter part of the 1990s. Supply chain is a critical factor to determine the success of any organization and all organizations understand this. Now we are using sophisticated predictive models in supply chain process.

Keywords: Global competition, supply chain, communication and transportation, effect of COVID-19 on transportation, customer satisfaction.

INTRODUCTION

Supply chain is a competitive tool and it can be a complete advantage for the organizations. In the 21st century, supply chain is going to determine the success of organizations. From a global perspective, supply chain gained importance long back. It was bit late to arrive in Indian perspective and only in the late 1990s did supply chain gain importance. Currently, COVID-19 pandemic across the world has caused numerous problems. Consumers are suffering most as communication and transportation is on halt. Products and services are not reaching customers in proper time with suitable price. Cost of production is spiking up and finance is stuck across the world. Disposable income is at the lower end. In this condition, supply chain plays an important role to satisfy consumers and gain a sustainable competitive advantage for the organizations [1].

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CUSTOMER SATISFACTION

Measuring customer complaints provides a good start for companies with no formal customer complaints measurement programs. Customer feedback mechanism allows the company to hear the problems with products. Efficient supply chain gives a competitive advantage for the organization to make error-free products and reducing the cost of production. It also helps improve the quality of the products [2].

Right Customer

Understanding and anticipating customer needs helps the organization to connect with the right customers. It actually helps the organizations to connect customer's customer. For example, packaging supplier of Frito Lays may have Wal-Mart as its customer's customer. Delivering to right customers is very important as it saves time, cost and satisfies customer demand [3].

Time, Money and Supply Chain

Time is money is a famous aphorism. This is very simple. But this profound statement suggests that the organization which completes the work quickly, enjoys more profits while slower moving organizations suffer. A supply chain is a system of people, various activities and information, which enables to make a product. Most winning organizations try to integrate supply chain process and make it an efficient one. Basically, supply chain minimizes the cycle time to fulfill customer demand. We have seen that the organizations can gain advantage by moving towards a best value approach [4].

Strategic Supply Chain Management

Traditional supply chain is to build a process of obtaining and moving goods and services. Supply chain is tactical and transactional in nature. Moreover, it is considered as a cost center rather than a revenue driver. It generally focuses on individual operational metrics such as dock to stock time and manufacturing lead time to measure the effectiveness of supply chain system. It has been observed that many organizations do not have a proper system to record or monitor the effectiveness of supply chain system [5].

SUPPLY CHAIN UMBRELLA

- *Purchasing*: It is referred to as one of the most important and central activities of supply chain.
- *Demand and supply planning*: Supply planning is the process of taking demand data and developing supply, production and logistics network.
- *Quality control*: Organizations have come to understand the importance of supplier quality, and it is growing since the past 20 years.
- *Inventory control*: It has got different meanings to different organizations. But primarily, it refers to sourcing, managing and releasing materials.
- *Inbound and outbound operations*: Organizations links between customers and supplier with having specialized traffic and transportation system.
- *Warehousing and distribution*: Before a product reach the customer, it should be stored. Hence warehousing and distribution plays an important role.

Business materials and components are sourced across the world. Most markets are dominated by global companies. Cost reduction is an important factor. Handling assembly operation needs to be smooth. We need to build value chain through supply chain [6].

Trends of Supply Chain

- Global sourcing
- Long-term supplier relationship
- Total cost ownership
- External integration and risk
- Cost reduction
- Outsourcing
- Agile operation

Analytics in Supply Chain

Analytics is a data-driven decision-making process. It is based on relevant and trusted data. It uses visualization tools in the form of graphs, charts and other methods. Supply chain generates huge amount of data in process. Analytics is used to uncover patterns and to generate insights:

- Supply chain analytics can be applied in cognitive technologies such as artificial intelligence in supply chain process. Artificial intelligence can understand, learn and interact like humans, but at much higher capacity and speed [7].
- More advanced form of supply chain analytics is about supply chain optimization. It also helps in innovation, satisfying customer in a better way and identifying gap areas.

World economy is very dynamic and many rules and regulations are being introduced. Supply chain analytics is very important to keep up with ever-changing trade rules and regulations:

- Maintaining flow of goods.
- Analytics software can capture huge data and analyze.
- It helps in better forecasting.
- Supply chain analytics focus on future trend [8].

Predictive Analytics

- Forecasting future
- Preparing changes down line
- How to use resources efficiently.

Importance of Supply Chain

- High return on investment
- Better risks measurement
- High accuracy in planning
- Achieve the lean supply chain
- Futuristic approach

Changes in the Practice

- Earlier ERP (enterprise resource planning) and SCM (supply chain management) platforms were used.
- Physical documents or spreadsheets were common
- Forecasting and demand planning were difficult.
- Exchange of information is better after applying analytics
- Accuracy in planning and forecasting

Supply Chain Planning

Supplier Evaluation

Supplier evaluation is utmost in supply chain planning. Lack of large supplier base or efficient suppliers creates bottlenecks in organization.

Rationalization of Supplier Base

It is important to rationalize suppliers if there are suppliers who are not efficient. Rover is famous car manufacturer in Europe and has got more than 2000 suppliers. But they reduced to 500 suppliers who are supplying whole system of components. Supplier development and supplier management program has to be introduced.

MATERIAL SOURCE PLANNING

MRP2 or material source planning program should be included in material source planning. Supply chain management software ensures that you always have the right amount of product and material to satisfy your customers. Automating the process will help to keep your manufacturing [9] or distribution business within budget and efficient:

- Integrated business planning

- Demand forecasting and management
- Inventory optimization
- Supply chain collaboration
- Partner and supplier collaboration
- Dashboards for status monitoring
- Rapid on-boarding functionality
- Enhanced compliance

STRATEGY

Political

- Environmental protection law
- Taxation policy
- Foreign trade regulation
- Government stability
- Employment law
- Monopolies regulation

Economics

- Business cycle, interest rate
- Money supply, inflation
- Unemployment
- Disposable income
- Energy availability and cost

Select a chain that may include product/service/materials that need improvement in cycle or response time. Need to design a team that includes all parties inside and outside the company, especially other members of supply chain such as suppliers, customers, third-party service providers.

SUPPLY CHAIN DESIGN PROCESS

- Total cost to quality
- Cycle time
- Reliability
- Specific product performance

Positive Externalities

This was an example to set up a unit within a facility and use of positive externalities. Supply chain strategy is basically meant for consumer benefits. It is not meant for the organization or even for supply chain itself. It is about delivering the products at the right place and at the right time and right condition to final consumer. An efficient supply chain needs to decide on how to deliver to final consumer by making a strategy considering all factors. Final point is that the organization needs profit by designing an efficient supply structure and stay active in this competitive environment [10]:

- Philosophy of Toyota is simple tools and solutions to make the process efficient. Huge efforts are put in root cause analysis and permanent problem solving by the use of five whys technique. Employees are given proper practical training and they can easily find out real root cause.
- *Ishikawa diagram*: Fish bone analysis or Ishikawa diagram is widely used in all process of Toyota. There are many simple and beneficial techniques, for example, the process map, Pareto Chart, histogram, run chart, etc. that are being used in Toyota for efficient production and for management of inventory. Other techniques, such as value stream mapping (VSM), line balancing, pull system, etc. are used in Toyota supply chain and inventory management. Toyota is a classic example where all quality control measures are used to optimize inventory utilization.

NETWORKS AND ORGANIZATION

Networks offer different forms of organizations. Need to build flexibility now and prosper for long run. Network organizations are created out of complex structure. A flexible supply chain network needs to establish relationships with stakeholders. It establishes communication and relationships. It can operate in stable structure, flat and without complex hierarchy. Information network provides control and operating network provides feedback. It can take many forms like linear, complex web, star configuration, etc. They are connected with e-hubs, satellite, buyers, suppliers and customers.

Characteristics

1. It a tendency of a network to cluster and referred to as small world network.
2. Information is restricted to a small group of decision makers.
3. External information is very curtailing, but needs efforts to acquire.
4. Link outside of cluster should provide information about industry and environment.
5. Networks also tend to concentrate on linkage around key nodes.
6. Networks with distributed centers have redundant paths between nodes and are less prone to failure.
7. Sometimes it is a complex structure.
8. Some argue that most connections should be loosely coupled to local hubs.
9. Lateral network should work on mutual interdependence to receive all inputs.
10. Limited lines of communication between management and operating units.

Supply Chain Risk and Network Management

Shared Risk

The risk that is external to the organization, but inside a supply chain. Basically it is a risk from customers and suppliers. These risks arise from the following:

1. *Integration risk* from cooperation and includes information flows, payment flows, liability, forecasting and planning.
2. *External risk*: The risk that are external to the supply chain network and arise out from the interaction with environment. Supply chain network is vulnerable to its own risk and risk to the other members of supply chain. It is also prone to risk from outside environment.
3. *Transmitted risk*: The risk is transmitted through supply chain to all its partners. It might so occur that risk is transmitted from one organization to another through its supply chain network.
4. *Strategic view*: Supply chain network risk management needs attention from top and it is a strategic matter to consider. In short, if there is poor supply chain and network risk management, the organization might not stay long as profitable.
5. *Risk in design*: Managers should include risk in their decision-making process. In many cases, managers focus on leanness, efficiency and other issues. But risk is inherent in the network design. So it needs proper attention.
6. *The chain is as strong as its weak link*: Disruption may occur at any point of supply chain and can create a problem. Managers, therefore, need to take care of supply chain network design to avoid risks. Dynamic environment needs coordination with many organizations. Organizations need to produce and deliver goods to different places and different suppliers. Supply chain model is not static and needs to be responsive to change. Continuous improvement is required in supply chain network. Supply chain network should be flexible enough to cope with future uncertainties.
7. Supply chain uncertainty can be of two types:
 - i. Endogenous uncertainty
 - ii. Exogenous uncertainty

Supply chain network plays an important role to deliver goods from one point to another. Supply chain network must be designed to the tune of organization's strategy and business environment. In

spite of that, supply chain network is not flexible in some organization and they blame organizational latency. It means that organizations are not able to root out their problems. Latency comes from various technical resources and supply chain network structure. Southeast Asian organizations keep their distribution base in the United States to reduce the cost. But more than 50% demands come from outside the United States and organizations cannot rework their supply chain structure. Supply chain network structure needs to implement pull-based system. There is a need to create and maintain global supplier relationships.

EXAMPLE OF INTEGRATED SUPPLY CHAIN

- Maruti plant is located in Haryana state in Manesawar industrial area. Maruti has got many suppliers. It had as many as 246 local tier-1 suppliers and more than 20 global suppliers. But Maruti never applied integrated supply chain mechanism to rationalize its supplier base. But after applying integrated supply chain and vendor management system, it was able to produce 3 units of cars in 2013. Also, Maruti Suzuki was able to design a better network for 1204 dealers across India. Moreover, it could efficiently manage more than 3000 service stations across India and also 16 warehouses. Sonakiyo became its preferred supplier for supplying its parts from very nearby areas. So Maruti Suzuki implemented its integrated supply chain management system with rationalized vendor management process. Today Maruti has got many suppliers and its base has blossomed. Maruti has got more than 400 vendors, including global vendors and joint ventures.
- It has removed uncertainties of logistics, infrastructure and supply chain process. Maruti has got three suppliers for parts. To remove uncertainties, work stoppage, transportation challenges, it has increased supplier base which is rationalized. It is applying lean manufacturing and just-in-time logistics. It has achieved manufacturing with minimum cost of production. Maruti has set up center of excellence for its engineers to supervise its supply chain management system.

CONCLUSION

Several disruptive technologies are being used to ensure smooth functioning of an efficient supply chain. A proper and efficient supply chain management system is required for organizations to survive in this dynamic era. Supply chain management system has got strategic importance regarding all areas, including purchasing, warehousing, etc. Agile supply chain framework can reduce time in all process areas and increase productivity. Thus, supply chain management system can be used as a competitive tool. It is imperative to use analytics, data science and predictive models for smooth functioning of supply chain. The paradigm is being already changed.

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