UNIT-2 Supply Chain Drivers

Learning Outcomes

By the end of this unit the learner will be able to:

- ✓ Recognize supply chain drivers and ways to optimize them

Unit 2

Supply Chain Drivers

Driving Success

There are some key drivers that impact each process area's efficiency and effectiveness. Here is a brief look at the top five drivers.

Production

The quantity and quality of the product, manufacturing schedule, and manufacturing methods used can all impact the supply chain. Consider:

- Product and material life cycles
- Where materials are going to be sourced from
- Where finished products are going to be distributed to
- What kind of specialization the manufacturing processes requires
- Whether the production of similar items can be consolidated
- How manufacturing products can be optimized

Manufacturing too much product can result in waste, but manufacturing too little can result in lost revenue and inefficiencies. Determining the maximum required product quantity and building facilities to accommodate that capacity is crucial. Building flexibility into manufacturing processes is also important.

Inventory

How much product is stored, how it is stored, and how it is retrieved are key drivers in the Make and Deliver phases of the supply chain. Ways to improve inventory performance might include:

- Improving warehouse setup to streamline how orders are picked, packed, and loaded onto trucks
- Evaluating truckload capacity
- Cross-docking (where materials are unloaded from one truck and directly onto others for distribution)
- Implementing electronic data interchange (EDI) systems, which automates inventory procedures by electronically processing invoices and purchase orders
- Switching to vendor managed inventory where appropriate

Location

Choosing the right location for manufacturing, warehousing, and distribution is crucial to getting products to the right place at the right time. For example, when Wal-Mart started constructing distribution centers in the 1980's, they revolutionized the logistics of their supply chain. Instead of having vendors distribute products to multiple stores, massive distribution centers were built in key locations and distributed products directly to stores. Many companies have adopted and improved this strategy.

To optimize your location, consider whether your organization will benefit from many locations close to your customers (like Wal-Mart) or a few central locations serving a wide area (like Costco). This will involve some of the data that we looked at for production, such as where goods are sourced from, manufactured, and delivered to (warehouses, distribution centers, or directly to stores).

Information

This driver gives you the data to make decisions about all the other drivers, impacting every phase of the supply chain. It serves as the basis for planning, forecasting, and coordinating supply chain activities.

More than ever, companies have complete, accurate, real-time data about all aspects of their supply chain. In addition to specific supply chain software programs, the following types of systems can provide key information and automate processes.

- Electronic Data Interchange (EDI)
- Enterprise Resource Planning (ERP)
- Transportation planning and scheduling
- Logistics management
- Order management (including invoicing, shipping, and receiving functions)
- Inventory management
- Life cycle planning
- Accounting and financial management
- Manufacturing Execution Systems (MES)
- Warehouse Management Systems (WMS)
- Product demand forecasting and planning
- Employee scheduling and time management
- Customer Relationship Management (CRM)
- Sales Force Automation (SFA)
- Enterprise-wide suites that coordinate all types of data, such as SAP
- Online portals to share information within and outside the organization

However, implementing and managing these systems can be expensive, requiring costly software, specialized staff members, and time. Executive-level guidance to ensure that the right systems are in place, providing the right information to the right people, is a critical step for leveraging information to help your supply chain succeed.

Transportation

In the United States alone, companies spent over $836 billion on transportation in 2013. It's crucial that your transportation network is efficient and cost-effective.

There are four main modes of transporting goods: land, sea, air, and rail. There are also commodity-based delivery methods, such as oil pipelines and virtual or digital delivery methods (such as the Internet).

You can decrease your transportation costs by:

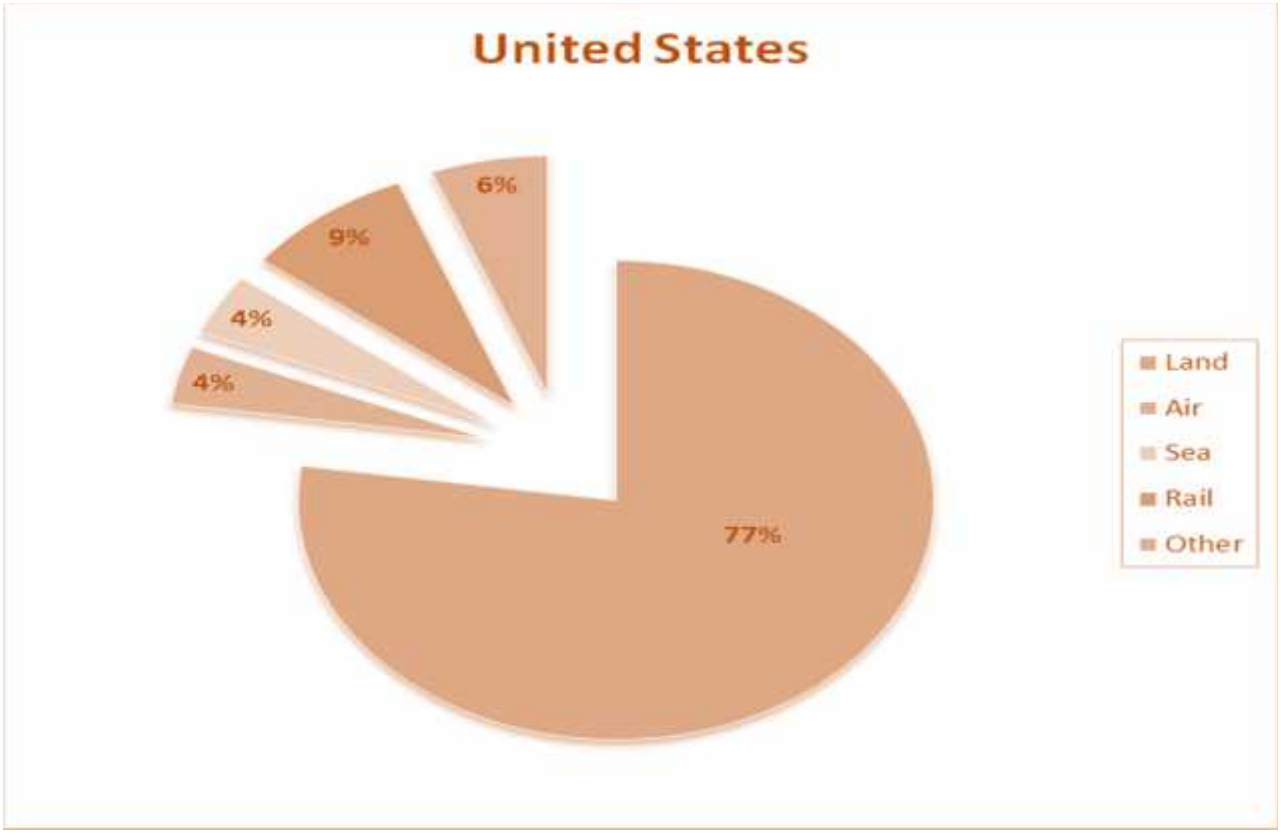
- Shipping full truckloads (FTL) rather than less-than-full truckloads (LTL)
- Analyzing the products that you ship, its value, and customer requirements
- Understanding rules and regulations in the areas that you operate and the associated costs (licensing, insurance, border fees, etc.)
- Choosing the right transportation method(s) and carrier(s) for your needs
- Analyzing shipping patterns and high/low cost areas
- Developing partnerships with other companies, carriers, and distributors
- Developing preferred/core carrier programs
- Using software programs to help gather, measure, analyze, and forecast data
- Using intermodal containers, which can be easily moved from a truck to a rail car or a freight ship

Choosing the Right Transportation Methods

Transportation is arguably the biggest driver behind the success of a supply chain. The method of transportation that you choose will depend on where your supply chain activities take place, your business strategy, your market, and your product. Let's look at some trends in transportation methods around the world.

United States

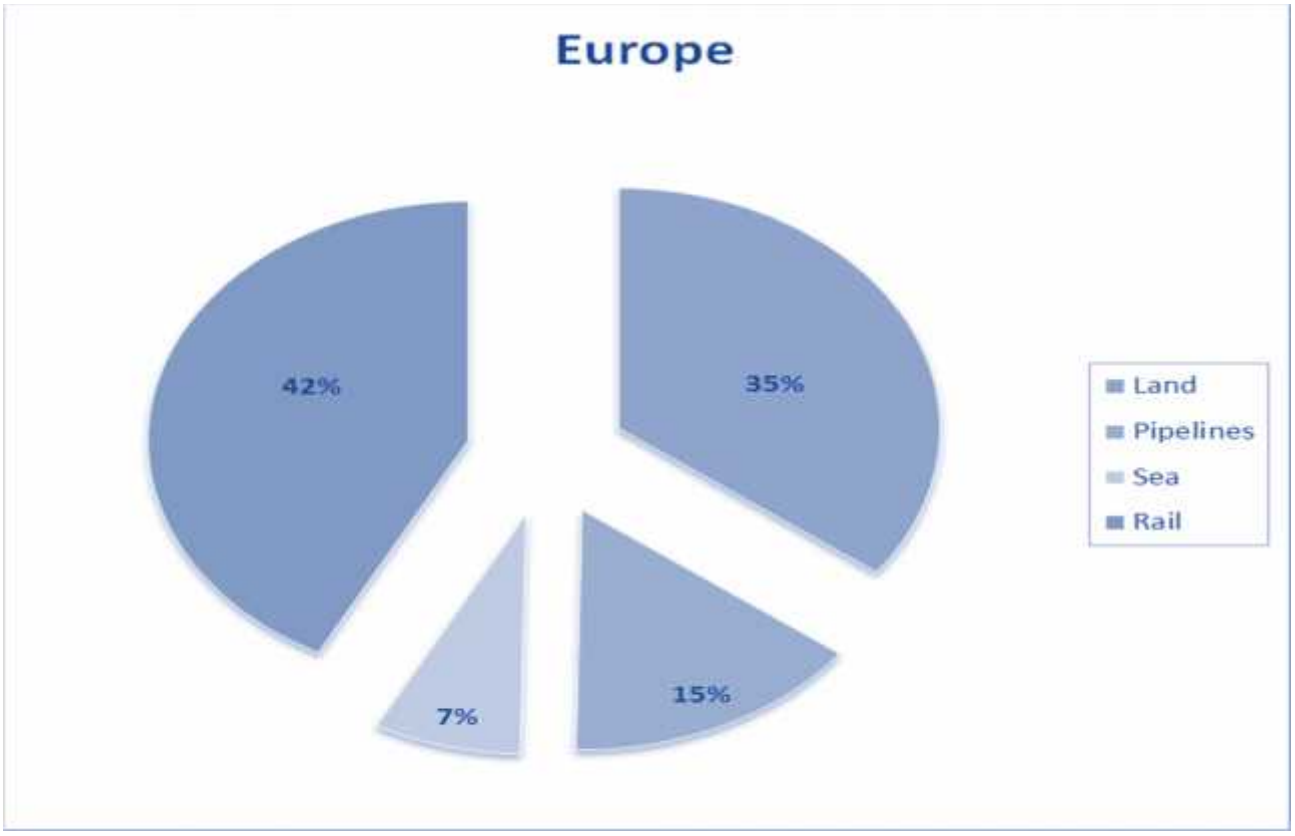
Here is a breakdown of the transportation modes used in the United States in 2013. As you can see, the majority of shipments were transported by land (using trucks and other motor carriers).



(Source: 24th Annual State of Logistics Report, available at http://cscmp.org/member-benefits/state-of-logistics)

Europe

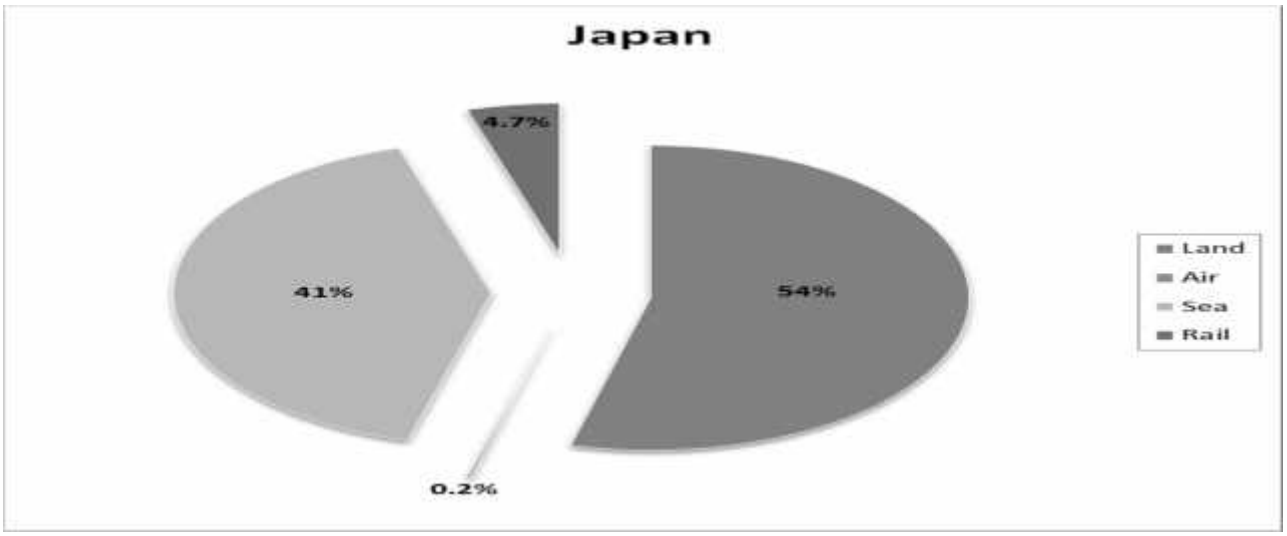
Freight movement in Europe relies much more heavily on rail, although trucking still plays a significant role. Here is the breakdown for 2013.



(Source: European Commission of Mobility and Transport, http://ec.europa.eu/transport/facts-fundings/statistics/pocketbook-2013_en.htm)

Japan

Japan, on the other hand, relies heavily on marine transport. Although land transportation plays a significant role, very little freight is transferred by rail. Here is the specific breakdown for 2011.



(Source: Ministry of Land, Infrastructure, Transport, and Tourism, http://www.stat.go.jp/english/data/handbook/c0117.htm#c09)

Australia

Finally, mainland Australia (excluding Tasmania) has a more equal split between land, sea, and rail. Here is the split from 2009-2010 (the last year when data for rail freight was available).

(Source: Bureau of Infrastructure, Transport, and Regional Economics; https://www.bitre.gov.au/publications/2013/files/INFRA1886_R_BITRE_INFRASTRUCTURE_YEARBOOK_0813_web.pdf)

Aligning Your Supply Chain with Business Strategy

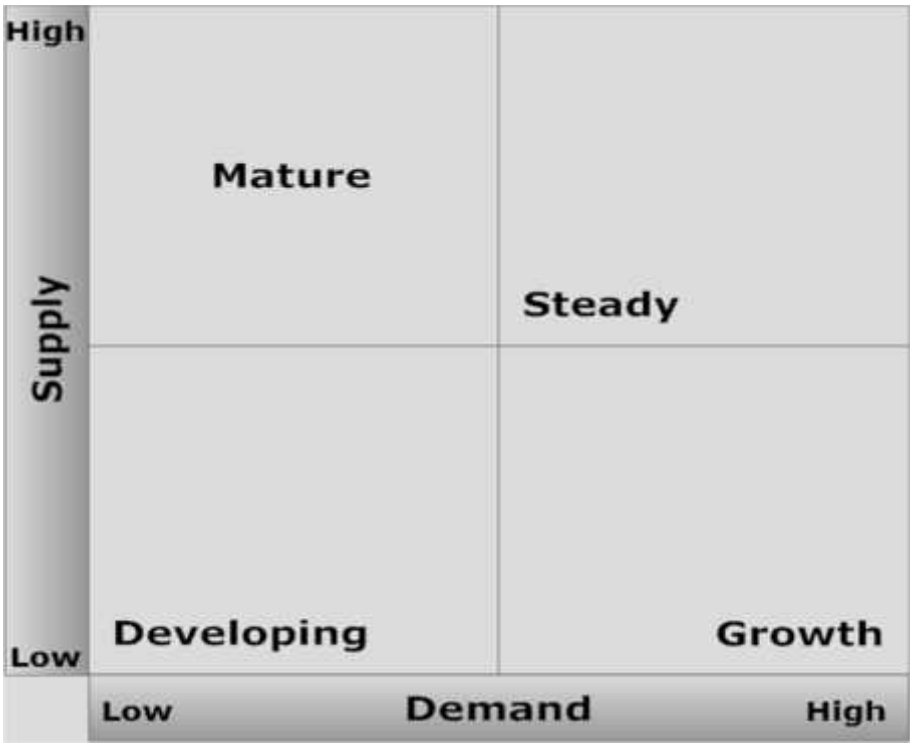
Identifying Your Market

Introduction

Ultimately, your business is all about getting your products and/or services to customers in a responsive, efficient, effective fashion. Designing your supply chain to support your business' strategy can help you achieve those objectives and give you a competitive edge.

Understanding Your Market Type

The first step is to understand the type of market your products and services are in, and the related supply and demand. Here is a diagram outlining the four major market types and what kind of supply and demand they usually have.



Let's take a closer look at each category.

Developing

This is the category that new, unknown products fall into. Supply is low and so is demand. For example, think of a new smartphone that has just been released, but has not attracted major attention yet.

Growth

As the product grows and becomes more well-known, demand will grow. However, supplies may struggle to keep up. At this stage, monitoring, growing, and supporting the supply chain are important steps for the product to succeed.

Continuing with our smartphone example, at this stage it has finally attracted attention. Manufacturing cannot keep up with the demand and customers are anxiously waiting for the product.

Steady

This is the ideal phase for most products. Supply and demand are relatively high. A strong supply chain can ensure constant flow of the product to customers and a steady influx of revenue for the company.

In our example, at this stage the new smartphone has been around for almost a year. All orders have been fulfilled and stores are able to stock the new phone for immediate purchase.

Mature

At this stage, the demand for the product has dropped, but supply may still be high. It's important to pay attention to the supply chain to ensure that manufacturing stops at the right point and that inventory is sold off efficiently to prevent waste and lost revenue.

With our smartphone example, this is the time when retailers put the current smartphone on sale in anticipation of the next version soon being released.

Test Your Knowledge

What market is your product or service in?

Identifying What Your Market Wants and Needs

Once you understand where your product or service fits within the market, you can analyze what the market's requirements are. This might include questions like:

- What service time are customers looking for? Do they expect quick service or is a longer delivery time acceptable?
- What kind of service do customers expect with the product? For example, users downloading a free product on the Internet probably don't expect much support. However, if the software is an expensive, enterprise-level system, expectations will be far higher.
- What is the value of the product and what expectations are inherent with that? For example, if customers order an expensive watch, they probably won't be impressed with low-quality Styrofoam packaging.
- What level of customization do customers expect? For example, in the 1930's a black Model T was one of the only cars available on the commercial market. Now, customers have a much wider variety of choices.
- How long is the life cycle of the product? Today, users often replace their cell phone every year. A purchase like a car or home, however, is a much longer-term investment.

Test Your Knowledge

Considering your own product or service, answer these questions.

What service time are customers looking for?

What kind of service do customers expect with the product?

What is the value of the product?

What expectations are inherent with that?

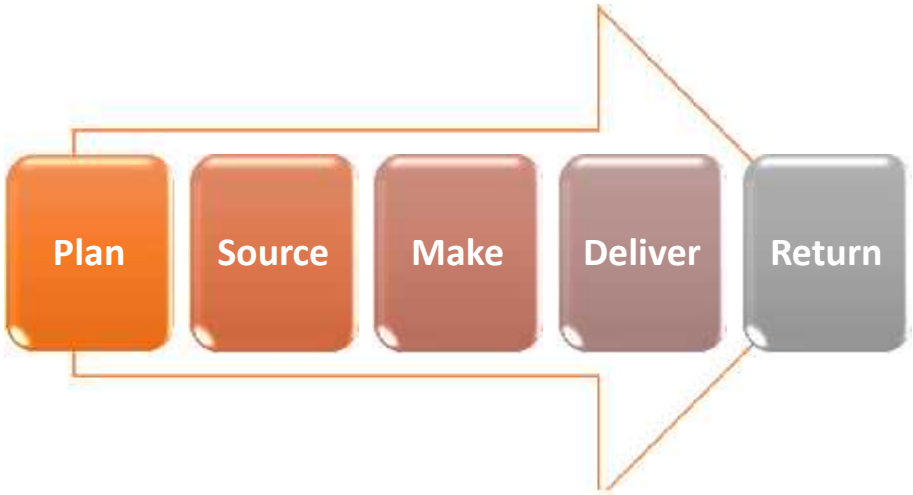
What level of customization do customers expect?

How long is the life cycle of the product?

Looking at Your Role

Drawing Out the Supply Chain

Now, look at the supply chains that your organization is a part of. For each chain, draw out the steps and activities based on the five process areas that were covered earlier.



Identifying Your Role in the Supply Chains

Next, identify your participation in each of these supply chains. Remember our discussion earlier about the five types of supply chain participants:

- Producers
- Distributors
- Retailers
- Customers
- Service Providers

You may have a different role in different supply chains. For example, let's say that you manufacture computer chips. Your supply chains might look like this:

- Customer of parts required for computer chips
- Producer and distributor of computer chips
- Wholesale retailer of computer chips
- Service provider for support to wholesale customers

Test Your Knowledge

What supply chains is your organization a part of?

Analyzing the Data

Identifying Your Strengths and Weaknesses with SWOT

Now that you understand what supply chains you are part of, take a close look at your role in each supply chain. One way to organize this information is using a SWOT analysis.

SWOT stands for the strengths, weaknesses, opportunities, and threats facing your supply chain. The strengths and weaknesses are usually considered to be internal, while the opportunities and threats are generally external. This analysis helps you ask yourself, "Where are you now?" This is really your situation analysis or inventory, and it gives you an opportunity to take stock of the overall health of your supply chain.

One mistake that people make in doing a SWOT analysis is that they look at the whole picture and use very general statements. Make sure that you are ready to spend a bit of time when you undertake a SWOT analysis so that you are producing an accurate description of what is going to affect your supply chain and its supporting strategy. As well, make sure that you are analyzing specific areas. For example, if you have multiple roles in a supply chain, do an analysis for each role.

Sample SWOT

Here is a sample SWOT analysis for Maxim Technology, a producer and distributor of computer chips.

	INTERNAL	EXTERNAL
POSITIVE	**Strengths** • Strong manufacturing processes in place • Defect rate of less than 0.01% • Manufacturing facilities operate at 80% capacity on average	**Opportunities** • New government grants may support better training efforts for staff • Partnership with new research firm may offer alternative materials for producing chips • New rail system near main distribution center could offer alternative transport method
NEGATIVE	**Weaknesses** • Shortage of skilled workers • Difficult to predict product demand • Warehouse processes are outdated • Delivery processes are performed in-house and are not efficient • No unified information management system • Most loads are shipped in less than a full truckload	**Threats** • Supply of materials required can be unstable at times • Political unrest in one of the primary manufacturing areas may disrupt production

Taking the Next Steps

Identifying Where You Want to Be

Now that you have some solid information, you can examine your roles in the various supply chains, determine what aspects support your business strategy, and decide what aspects are not part of your business strategy. You may choose to remove yourself from certain supply chains, outsource particular functions, or change processes to take advantage of your strengths and minimize your weaknesses.

Leveraging Drivers to Support Your Roles

You can also leverage the supply chain drivers that we looked at earlier to improve your supply chain performance.

Driver	Aspects to Consider
Production	• Capacity • Flexibility • Level of specialization

	• Responsiveness
Inventory	• Level of inventory • Range of items kept in stock • Processes used to manage inventory
Location	• Distribution of manufacturing facilities, warehouses, and customers • Centralization or localization
Information	• Collecting timely, accurate, complete data • Determining what data to share with others in the supply chain • Balancing cost of information with data requirements • Using data to automate processes
Transportation	• Determining optimum method and size of shipments based on market information and requirements • Modifying shipment method based on economic and regional factors

Test Your Knowledge

What other aspects would you consider for each driver?

Further Reading:

- ✓ ***Supply Chain Management,By Sunil Chopra,(2007)***
- ✓ ***Supply Chain Management,By James B. Ayers, Mary Ann Odegaard,(2007)***