

5.4: Supply Chain Procurement

11.3 Managing the Production Process in a Manufacturing Company

Learning Objective

1. Identify the activities undertaken by the operations manager in overseeing the production process in a manufacturing company.

Once the production process is in place, the attention of the operations manager shifts to the daily activities of **materials management**, which encompass the following activities: purchasing, inventory control, and work scheduling.

Purchasing and Supplier Selection

The process of acquiring the materials and services to be used in production is called **purchasing** (or *procurement*). For many products, the costs of materials make up about 50 percent of total manufacturing costs. Not surprisingly, then, materials acquisition gets a good deal of the operations manager's time and attention.

As a rule, there's no shortage of vendors willing to supply parts and other materials, but the trick is finding the *best* suppliers. In selecting a supplier, operations managers must consider such questions as the following:

- Can the vendor supply the needed quantity of materials at a reasonable price?
- Is the quality good?
- Is the vendor reliable (will materials be delivered on time)?
- Does the vendor have a favorable reputation?
- Is the company easy to work with?

Getting the answers to these questions and making the right choices—a process known as supplier selection—is a key responsibility of operations management.

E-Purchasing

Technology is changing the way businesses buy things. Through *e-purchasing* (or *e-procurement*), companies use the Internet to interact with suppliers. The process is similar to the one you'd use to find a consumer good—say, a forty-two-inch LCD high-definition TV—over the Internet. You might start by browsing the Web sites of TV manufacturers, such as Sony or Samsung, or electronics retailers, such as Best Buy. To gather comparative prices, you might go to a comparison-shopping Web site, such as [Amazon.com](https://www.amazon.com), the world's largest online retailer. You might even consider placing a bid on eBay, an online marketplace where sellers and buyers come together to do business through auctions. Once you've decided where to buy your TV, you'd complete your transaction online, even paying for it electronically.

If you were a purchasing manager using the Internet to buy parts and supplies, you'd follow basically the same process. You'd identify potential suppliers by going directly to private Web sites maintained by individual suppliers or to public Web sites that collect information on numerous suppliers. You could do your shopping through online catalogs, or you might participate in an online marketplace by indicating the type and quantity of materials you need and letting suppliers bid on prices. (Some of these e-marketplaces are quite large. Covisint, for example, which was started by automakers to coordinate online transactions in the auto industry, is used by more than two hundred and fifty thousand suppliers in the auto industry, as well as suppliers in the health care field.)Jingzhi, "Covisint.com," <http://www.sftw.umac.mo/~jzguo/pages/covisint.html> (accessed November 2, 2011). Finally, just as you paid for your TV electronically, you could use a system called **electronic data interchange (EDI)** to process your transactions and transmit all your purchasing documents.

The Internet provides an additional benefit to purchasing managers by helping them communicate with suppliers and potential suppliers. They can use the Internet to give suppliers specifications for parts and supplies, encourage them to bid on future materials needs, alert them to changes in requirements, and give them instructions on doing business with their employers. Using the Internet for business purchasing cuts the costs of purchased products and saves administrative costs related to transactions. And it's faster for procurement and fosters better communications.

Inventory Control

If a manufacturer runs out of the materials it needs for production, then production stops. In the past, many companies guarded against this possibility by keeping large inventories of materials on hand. It seemed like the thing to do at the time, but it often

introduced a new problem—wasting money. Companies were paying for parts and other materials that they wouldn't use for weeks or even months, and in the meantime, they were running up substantial storage and insurance costs.

Most manufacturers have since learned that to remain competitive, they need to manage inventories more efficiently. This task requires that they strike a balance between two threats to productivity: losing production time because they've run out of materials, and wasting money because they're carrying too much inventory. The process of striking this balance is called **inventory**, and companies now regularly rely on a variety of inventory-control methods.

Just-in-Time Production

One method is called just-in-time (JIT): the manufacturer arranges for materials to arrive at production facilities *just in time* to enter the manufacturing process. Parts and materials don't sit unused for long periods, and the costs of "holding" inventory are significantly cut. JIT, however, requires considerable communication and cooperation between the manufacturer and the supplier. The manufacturer has to know what it needs, and when. The supplier has to commit to supplying the right materials, of the right quality, at exactly the right time.

Material Requirements Planning

Another method, called **material requirements planning (MRP)**, relies on a computerized program both to calculate the quantity of materials needed for production and to determine when they should be ordered or made. Let's say, for example, that you and several classmates are planning a fund-raising dinner for the local animal shelter. First, you estimate how many people will attend—say, fifty. Next, you plan the menu—lasagna, garlic bread, salad, and cookies. Then, you determine what ingredients you'll need to make the food. Next, you have to decide when you'll need your ingredients. You don't want to make everything on the afternoon of the dinner; some things—like the lasagna and cookies—can be made ahead of time. Nor do you want to buy all your ingredients at the same time; in particular, the salad ingredients would go bad if purchased too far in advance. Once you've made all these calculations and decisions, you work out a schedule for the production of your dinner that indicates the order and timing of every activity involved. With your schedule in hand, you can determine when to buy each ingredient. Finally, you do your shopping.

Though the production process at most manufacturing companies is a lot more complex than planning a dinner (even for fifty), an MRP system is designed to handle similar problems. The program generates a production schedule based on estimated output (your food-preparation timetable for fifty guests), prepares a list of needed materials (your shopping list), and orders the materials (goes shopping).

The basic MRP focuses on material planning, but there's a more sophisticated system—called **manufacturing resource planning (MRP II)**—that goes beyond material planning to help monitor resources in all areas of the company. Such a program can, for instance, coordinate the production schedule with HR managers' forecasts for needed labor.

Work Scheduling

As we've seen, manufacturers make profits by transforming inputs (materials and other resources) into outputs (finished goods). We know, too, that production activities, like all business activities, have to be *controlled*: they have to be monitored to ensure that actual performance satisfies planned performance. In production, the control process starts when operations managers decide not only *which* goods and *how many* will be produced, but *when*. This detailed information goes into a **master production schedule (MPS)**. To draw up an MPS, managers need to know where materials are located and headed at every step in the production process. For this purpose, they determine the *routing* of all materials—that is, the work flow of each item based on the sequence of operations in which it will be used.

Key Takeaways

- Once the production process is under way, the attention of the operations manager shifts to the daily activities of **materials management**, which encompasses materials **purchasing**, **inventory control**, and work scheduling.
- Because material costs often make up about 50 percent of total manufacturing costs, vendor selection and material acquisition gets a good deal of the operations manager's time and attention.
- In recent years, the purchasing function has been simplified through technology advances, including e-purchasing and **electronic data interchange (EDI)**, which process transactions and transmit purchasing documents.
- Commonly used inventory control methods include **just-in-time (JIT) production**, by which materials arrive just in time to enter the manufacturing process, and **material requirements planning (MRP)**, which uses computer programming to determine material needs.
- To schedule jobs, managers create a **master production schedule (MPS)**.

Exercise

What is e-purchasing (or e-procurement)? How does it work? What advantages does it give a purchasing manager? How does it benefit a company? How does it change the relationship between purchasing managers and vendors?

Unit 5 Discussion

#1

Choosing suppliers for your supply chain is often a challenge. Do you put all your eggs in one basket or look to fulfill your needs through multiple vendors? Using the information provided over choosing a good supplier, apply the criteria to the purchase of a new car. Discuss your answers to the following questions: Is the quality good, is the vendor reliable, does the vendor have a favorable reputation, is the company easy to work with? Based on your answers, which of the vendor would be your choice? Why?

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