



# **B A 250: SMALL BUSINESS MANAGEMENT**

## ***Lesson 9: Supply Chain Management and Inventory Control***

Introduction (1 of 10)

## **Supply Chain Management and Inventory Control**

Though not always the most popular work to do, managing the flow of the goods in a business is of utmost importance. It is not cheap to hold large quantities of inventory. According to University of Baltimore professor Hossein Arsham, "inventory control is concerned with minimizing the total cost of inventory" (1996, para. 1). The three costs that need to be monitored (adapted from Arsham, 1996, para. 1) are

- the cost of holding the stock,
- the cost of placing an order (including transportation), and
- the cost of shortage.

A business owner must efficiently manage inventory, which is a valuable but costly asset. Did the business really understand customer demand and purchase the best inventory to meet that demand? This is easier said than done, especially in industries that operate in a complex and dynamic environment. What business owner wants to have shelves full of items that no one wants? In today's global environment, people can easily go to the Internet and find multiple places to purchase exactly what they want. Because of this, businesses should closely monitor and strategically plan for all the information that flows along their supply chains.

Developing products, selecting the optimal vendors, and determining how much inventory to hold are just a few of the activities of an entrepreneur. Supply chain management (SCM) works to give the greatest value to the customer while achieving a sustainable competitive advantage. Management needs to make a conscious effort to develop and run supply chains in the most effective and efficient ways possible.

In this lesson, we will explore how to optimize inventory and improve business operations through effective supply chain management.

## **Learning Objectives**

The readings and questions in the lesson should help you to do the following things:

- Define supply chain management (SCM), total quality control (TQM), purchasing plans, economic order quantity (EOQ), vendors, and discounts.
- Review employee theft, shoplifting, and steps to minimize loss.
- Recall inventory terminology, such as *just-in-time (JIT)*, *inventory costs*, and *reorder point*.
- Explain purchasing activities, the need to choose vendors carefully, and ways to handle slow-moving inventory.

- Evaluate a business's existing SCM process and application of technology as they relate to operational efficiency.

## Key Terms/Concepts

### **80/20 rule**

states that 80% of inventory value comes from 20% of the items in stock; used to focus inventory control on the 20%

### **ABC inventory control**

focuses on the identification and degree of control for each item in the inventory; *A* items have a large dollar-usage volume value, *B* are moderate items, and *C* are low dollar-usage volume items

### **burglary**

the unlawful entry into a business with the intent to commit a felony

### **employee theft**

stealing of business assets by those who work for the business

### **economic order quantity (EOQ)**

an analytical technique to compute the amount of stock to purchase with each order

### **holding (carrying) costs**

the storage, insurance, interest, and spoilage/obsolescence costs of inventory

### **just-in-time**

a process whereby suppliers deliver parts just in time to go into the finished product

### **logistics**

the process of planning, implementing, and controlling the efficient and effective flow of materials, goods, and services from the supplier to producers and consumers; sometimes referred to as supply chain management

### **management information system**

a manual and/or technologically enhanced system for the collecting, recording, processing, and reporting of data for use by management to make decisions

### **network**

a computer system that links a number of computers together so that data, software, and other devices can be shared by those linked

### **ordering costs**

the preparation of purchase orders, analysis of vendors, and processing of orders to obtain inventory

### **perpetual inventory system**

keeping a continuous count of each item added or removed from inventory stock

### **purchasing**

the acquisition of needed materials and equipment of the right quality, quantity, and price at the appropriate time from the right supplier

### **quality**

providing customers with products or services that most effectively serve their intent and that go beyond the expected standards

### **robbery**

the taking of property by force or violence

### **security audit**

a review of the business for the specific purpose of identifying aspects of the business that may allow for crime

### **shoplifting**

the taking of business merchandise without paying for it

### **software**

the programming applications, manuals, and procedures that cause the hardware to operate in a certain way

### **supply chain**

manages the production process from raw material purchase through delivery to the customer

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Road Map (3 of 10)

## Road Map

### ***Readings:***

- Complete the readings for Lesson 9 listed in the [course syllabus](#).
- Read the online commentary for Lesson 9.

**Assignments:**

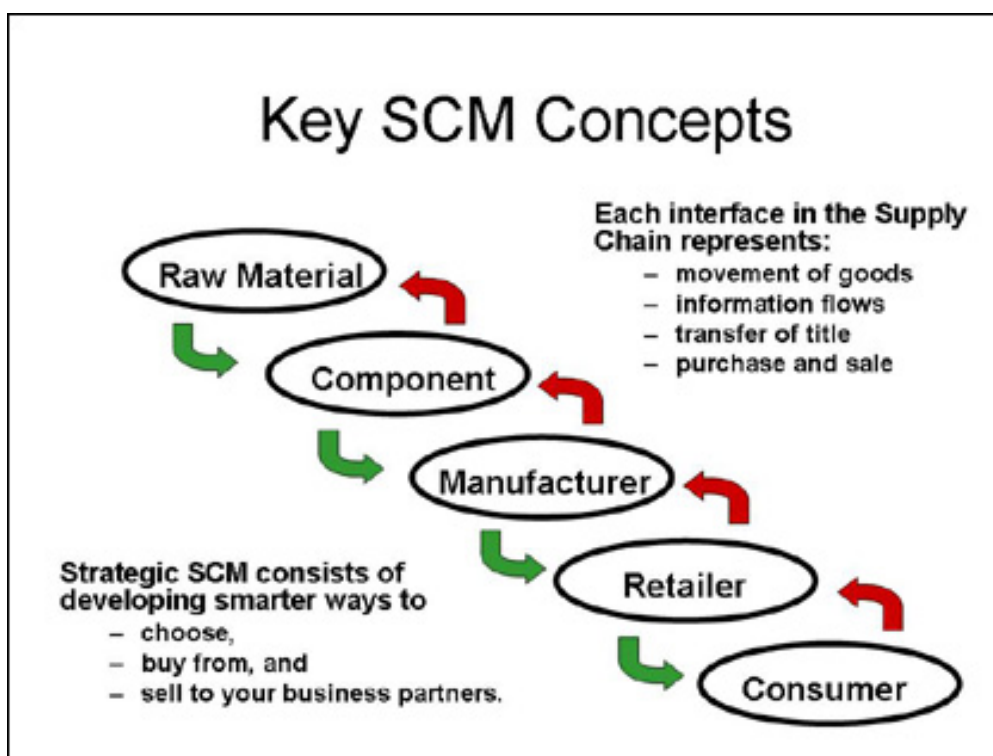
1. Complete Quiz 3.
2. [Service Learning Project Completion](https://cms.psu.edu/section/content/default.asp?WCI=Goto&WCU=CRSCNT&preview=0&MATCH=Service+Learning+Project+Form) (https://cms.psu.edu/section/content/default.asp?WCI=Goto&WCU=CRSCNT&preview=0&MATCH=Service+Learning+Project+Form) form due (from the business).

Supply Chain Management (4 of 10)

# Supply Chain Management

The chain from raw materials to the customer (and everything in between) needs to be managed. Small businesses must take all the necessary steps to manage the supply chain as efficiently and effectively as possible. When the owner takes on this role, he or she is managing the supply chain. This role can be a challenge for the smallest of businesses, as they may not have technology-based systems in place despite technology and the Internet being commonplace. A small business obviously does not have the deep pockets of a large corporation, so one big flaw in judgement could result in a substantial loss and a potential fatal flaw to the bottom line. Because of this, decisions related to what items to purchase, how many items to purchase, who to purchase the items from, and at what price to purchase have become increasingly important for the small business owner.

As can be seen in Figure 9.1, information flows from the beginning to the end of the supply chain and vice versa. This shows how important the customer is to the entire chain. Whether the manager is viewing customer orders, processing orders, making inventory decisions, arranging transportation, or evaluating storage options, strategically approaching the tasks means making decisions that can potentially put you at a competitive advantage. Businesses need to develop smarter ways of managing the supply chain. If a small business can minimize inventories without resultant shortages or lower costs while still providing excellent customer service, then greater profitability can result.



**Figure 9.1. Supply Chain Management Diagram**

Purchasing and Inventory (5 of 10)

# Purchasing and Inventory

## Purchasing

**Purchasing** as a process procures the materials that go into your final product or service in addition to the items used to present the product or service to the customer. Purchasing acquires the inventory that is resold in a retail setting or that is used to produce the product in a manufacturing business. This inventory expense is generally the business's largest operating expense, second only to payroll.

Since purchasing incurs cost for the business, any improvement in purchasing efficiencies can directly influence the bottom line. A small business's ability to manage its relationships with suppliers is critical as it works to limit the cost of holding inventory.

## Inventory

The quality of materials, the timeliness of their availability, and their material cost affects the value that can be attached to your final product or service. If the raw materials are of poor quality, the quality of the final product will be poor. If the cost of raw materials is high, the cost of the final product will increase.

If inventory is properly managed and controlled, it can be a very profitable asset for the business. In addition to obtaining quality inventory, it is important for the business to balance the costs of acquiring and holding inventory with the demand for the final product and the ability to meet customer needs. If this balance is not maintained, the business can be drained of its working capital or rendered unable to meet the customer demand for the product. There are many inventory control systems, such as the **economic order quantity calculation** and the **ABC inventory control valuation process**, that can help improve purchasing processes. By following these and other management and control practices, a business can improve cost effectiveness and profitability.

The philosophy of **just-in-time** (JIT) techniques encompasses several principles that, if followed, can result in greater efficiencies. The basic idea is to have inventory arrive just in time, as opposed to having stockpiles of costly inventory sitting around incurring unnecessary costs. Harley Davidson is a textbook case that implemented JIT into its manufacturing process and subsequently obtained an improved competitive position. Lowered inventory costs and lowered manufacturing costs are just two benefits that can be obtained with a JIT approach. With the availability of technology, even a small business can afford inventory control software that incorporates the benefits of JIT.

## Quality Control

Overriding all of these operational functions is the control of quality. In the competitive world in which most businesses operate, the quality of the product or service is key. The emphasis on quality continues



to increase for each and every business. Consumers continue to demand the best quality at the lowest prices. The production of a quality product or service has become a given—businesses that do not focus on quality will not survive. Businesses must continually work to improve quality and efficiency because their competition is doing the same. To retain and obtain market share, the quality of the products or services must meet and exceed customer expectations.

Sound businesses monitor quality throughout the production process and ask their employees to focus on improving quality and on providing quality customer service with every action. Small businesses continue to rely on their ability to respond quickly to customer needs to create a competitive edge.

The timing and administration of these operational or logistical activities is key for any business, but for the small business—with its limited resources—the efficient and effective operation of these functions can make or break the business. They are just one more piece of the challenge that awaits an entrepreneur wishing to start a small business.



Source: yganko/iStock/Thinkstock

Controlling Crime: Using Technology in Small Business (6 of 10)

## Controlling Crime: Using Technology in Small Business

One of the most frequent and often overlooked causes of small business loss and failure is crime. All forms of crime are being directed toward society's businesses, from theft to spying to terrorism. The small business in particular is more susceptible to crime than larger companies because the loss could be a larger percentage of its profits, making the impact of the crime greater.



Source: Evgeny Sergeev/iStock/Thinkstock

In addition to the tangible loss of assets incurred as a result of crime, the costs to the small business are increased by insurance expenses, preventative security measures, and lost sales opportunities from customers who are afraid to frequent an area or business with a history of crime.

There are many types of crime against business, but the most common types of crime against the small business with respect to inventory include

- **employee theft**, which accounts for the largest portion of business losses due to crime;

- **shoplifting**, the most common form of business crime; and
- **burglary and robbery**, the most rapidly growing forms of crime.

As a step toward business efficiency and profitability, the small business entrepreneur must continually consider proactive steps and preventative measures for deterring crime. Many business owners are so involved with the day-to-day activities of the business that these steps are not considered until it is too late. Many preventative measures are implemented after a crime has taken place, but the riskiness of being reactive instead of proactive can bring a small business to its knees financially.

The best advice concerning crime for any small business owner/manager is to recognize that it exists and to not ignore its potential impact. Prevention itself is the best defense and deterrent for business crime. A business must take practical crime prevention steps to remove the temptation for employees and customers and prosecute criminals when losses occur.

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Information Technology (7 of 10)

## Information Technology

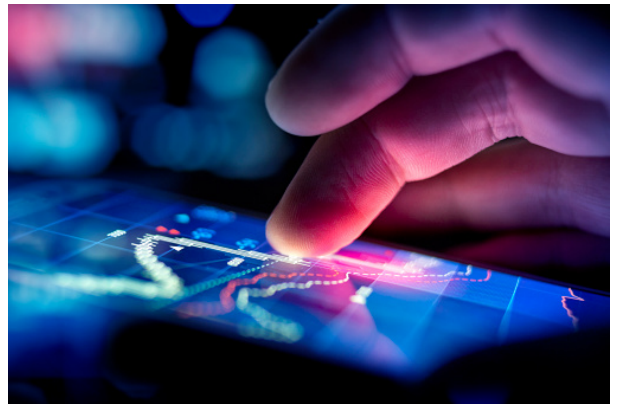
Another area for improved efficiency and profitability is information technology. Information is a powerful tool for improving service to the customer and gaining an edge over the competition. Every business must have information to operate. Data, such as customer information, inventory quantities, invoice totals, pricing and costing values, human resource information, and accounting information, must be stored, reviewed, and reported by a business so that strategic and operational decisions can be made to move the business forward.

The systems in place to collect and tabulate these types of data are the business's **information systems**. Information systems can be manual, computerized, or some combination of the two.

In today's business environment, the cost of technology has declined to such a point that information systems are very attainable for the small business. In fact, the increase in competition has made it a necessity for the small business to make use of computer technology. Computer systems provide a faster and more effective way to review information and analyze data. Software applications, such as word processors, spreadsheets, databases, and the Internet, allow the small business to present itself in a more professional and businesslike fashion. E-commerce provides opportunities for a small business to be more competitive by quickly reaching customers and vendors whether they are down the street or across the globe.

Information technology has become an important and necessary component of success in the present business environment and is one that an entrepreneur will want to carefully consider.

The importance of records and their confidentiality require the constant expansion of security measures. How secure the system is from theft and destruction, how data are stored, and who can access the data should be evaluated. Hackers, viruses, worms, and computer fraud have become commonplace. There continue to be examples in which internal networks have been hacked by criminals and critical information has been destroyed, stolen, or released to the public.



Source: solarseven/iStock/Thinkstock

There are a variety of mechanisms a small business can employ to minimize the risk of information loss and security breaches. Some businesses have very sensitive customer data. Firewalls, scrambling devices, encryption, and even facsimile machines can be utilized to minimize the potential of a system breach. Businesses should also consider insurance that will cover the costs involved in a breach of nonpublic personal information. Failure to employ methods of security can be extremely costly for a small business—in fact, the costs associated with a security breach could wipe out a small business entirely.

Radio Frequency Identification (RFID) (8 of 10)

## Radio Frequency Identification (RFID)

**Radio frequency identification** (RFID) is a technology that is used extensively in retail and manufacturing to track materials. Data are embedded in RFID tags; thus, they are often called **smart tags**.

RFID tags have improved both efficiency and accuracy in recording and tracking inventory. An entire pallet of multiple boxes can be read instantly as it passes through a reader. The data are uploaded to a computer to generate reports on the movement of materials.

To track materials using RFID, businesses may place tags on objects or in a person's identification badge. RFID uses radio waves and integrated circuits with an antenna to exchange information as items pass through readers that are placed at strategic points throughout the business process. There are both active and passive RFID tags. The active tags generate radio waves and send them to the reader. Active tags can be read from a greater distance, up to 100 meters, and are more expensive (approximately \$50.00 each). Passive tags are less expensive (approximately \$0.05 each) and can only reflect radio waves. Passive tags are read at shorter distances of usually one to two meters.

RFID tags are used to

- track inventory in retail business,
- track animals,
- control access through employee badges,
- route luggage in airports,
- collect tolls on roads (as with the E-ZPass),
- track parts in automotive manufacturing,
- track books in library collections,
- record payments by mobile phones,
- monitor railroad locomotive traffic, and
- track and monitor passport usage.

The following video (austlo, 2009) explains the RFID technology and how it's used in business to track inventory.

### Video 9.1. RFID: Technology Video





Time: 00:06:02

No transcript available.

Today's entrepreneur must be aware of many things to maintain the business's efficiency and profitability—crime and computerization, as we discussed in this lesson, are just two more areas that must be considered.

Reference (9 of 10)

## Reference

Arsham, H. (1996). *Economic order quantity and economic production quantity models for inventory management*. University of Baltimore. Retrieved from <http://home.ubalt.edu/ntsbarsh/business-stat/otherapplets/inventory.htm>

austlo. (2009, April 2). RFID: Technology video [Video file]. Retrieved from <https://www.youtube.com/watch?v=4Zj7txoDxbE>

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Lesson Assignments (10 of 10)

## Lesson 9 Assignments

Complete all of the following tasks and readings by the due dates listed in the [Course Syllabus](#):

### Quiz 3

Complete **Quiz 3** (<https://cms.psu.edu/section/content/default.asp?WCI=Goto&WCU=CRSCNT&MATCH=Quiz+3>). It will cover Lessons 7, 8, and 9. See [Course and Projects Overview](#) in the syllabus for quiz details.

## Service Learning Project Completion

Your [Service Learning Project Completion form](https://cms.psu.edu/section/content/default.asp?WCI=Goto&WCU=CRSCNT&preview=o&MATCH=Service+Learning+Project+Form) (https://cms.psu.edu/section/content/default.asp?WCI=Goto&WCU=CRSCNT&preview=o&MATCH=Service+Learning+Project+Form) is due this week. Please remind the business where you completed your Service Learning Project to submit the form you provided them earlier in the semester, if they have not done so already.

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## Looking Forward

Continue working on your Service Learning Project. Your service learning essay 2 is due next week!

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