

# INVENTORY MANAGEMENT

By: Floyd D. Hedrick, Library of Congress, Washington, D.C.  
Frank C. Barnes, P.E., Ph.D., University of North Carolina at Charlotte  
Edward W. Davis, University of Virginia, Charlottesville  
D. Clay Whybark, Indiana University, Bloomington  
Murray Krieger

Editor: Jeannette Budding, Communications Manager  
National Association of Purchasing Management

*Management and Planning Series*

---

This publication is a merger of former SBA publications, *Purchasing for Owners of Small Plants*, *Buying for Retail Stores* and *Inventory Management*.

While we consider the contents of this publication to be of general merit its sponsorship by the U.S. Small Business Administration does not necessarily constitute an endorsement of the views and opinions of the authors or the products or services of the companies with which they are affiliated.

*All SBA programs are provided to the public on a non-discriminatory basis.*

---

## TABLE OF CONTENTS

### INTRODUCTION

### SUCCESSFUL INVENTORY MANAGEMENT

### THE PURCHASING PLAN

### CONTROLLING INVENTORY

### DEVELOPMENTS IN INVENTORY MANAGEMENT

### TIPS FOR BETTER INVENTORY MANAGEMENT

### SPECIAL TIPS FOR MANUFACTURERS

### APPENDIX

---

### INTRODUCTION

"Inventory" to many small business owners is one of the more visible and tangible aspects of doing business. Raw materials, goods in process and finished goods all represent various forms of inventory. Each type represents money

tied up until the inventory leaves the company as purchased products. Likewise, merchandise stocks in a retail store contribute to profits only when their sale puts money into the cash register.

In a literal sense, inventory refers to stocks of anything necessary to do business. These stocks represent a large portion of the business investment and must be well managed in order to maximize profits. In fact, many small businesses cannot absorb the types of losses arising from poor inventory management. Unless inventories are controlled, they are unreliable, inefficient and costly.

---

## **SUCCESSFUL INVENTORY MANAGEMENT**

Successful inventory management involves balancing the costs of inventory with the benefits of inventory. Many small business owners fail to appreciate fully the true costs of carrying inventory, which include not only direct costs of storage, insurance and taxes, but also the cost of money tied up in inventory. This fine line between keeping too much inventory and not enough is not the manager's only concern. Others include:

- ! Maintaining a wide assortment of stock -- but not spreading the rapidly moving ones too thin;
- ! Increasing inventory turnover -- but not sacrificing the service level;
- ! Keeping stock low -- but not sacrificing service or performance.
- ! Obtaining lower prices by making volume purchases -- but not ending up with slow-moving inventory; and
- ! Having an adequate inventory on hand -- but not getting caught with obsolete items.

The degree of success in addressing these concerns is easier to gauge for some than for others. For example, computing the inventory turnover ratio is a simple measure of managerial performance. This value gives a rough guideline by which managers can set goals and evaluate performance, but it must be realized that the turnover rate varies with the function of inventory, the type of business and how the ratio is calculated (whether on sales or cost of goods sold). Average inventory turnover ratios for individual industries can be obtained from trade associations.

---

## **THE PURCHASING PLAN**

One of the most important aspects of inventory control is to have the items in stock at the moment they are needed. This includes going into the market to buy the goods early enough to ensure delivery at the proper time. Thus, buying requires advance planning to determine inventory needs for each time period and then making the commitments without procrastination.

For retailers, planning ahead is very crucial. Since they offer new items for sale months before the actual calendar date for the beginning of the new season, it is imperative that buying plans be formulated early enough to allow for intelligent buying without any last minute panic purchases. The main reason for this early offering for sale of new items is that the retailer regards the calendar date for the beginning of the new season as the merchandise date for the end of the old season. For example, many retailers view March 21 as the end of the spring season, June 21 as the end of summer and December 21 as the end of winter.

Part of your purchasing plan must include accounting for the depletion of the inventory. Before a decision can be made as to the level of inventory to order, you must determine how long the inventory you have in stock will last. For instance, a retail firm must formulate a plan to ensure the sale of the greatest number of units. Likewise, a manufacturing business must formulate a plan to ensure enough inventory is on hand for production of a finished product.

In summary, the purchasing plan details:

- ! When commitments should be placed;
- ! When the first delivery should be received;
- ! When the inventory should be peaked;
- ! When reorders should no longer be placed; and
- ! When the item should no longer be in stock.

Well planned purchases affect the price, delivery and availability of products for sale.

---

## **CONTROLLING YOUR INVENTORY**

To maintain an in-stock position of wanted items and to dispose of unwanted items, it is necessary to establish adequate controls over inventory on order and inventory in stock. There are several proven methods for inventory control. They are listed below, from simplest to most complex.

- ! *Visual control* enables the manager to examine the inventory visually to determine if additional inventory is required. In very small businesses where this method is used, records may not be needed at all or only for slow moving or expensive items.
- ! *Tickler control* enables the manager to physically count a small portion of the inventory each day so that each segment of the inventory is counted every so many days on a regular basis.
- ! *Click sheet control* enables the manager to record the item as it is used on a sheet of paper. Such information is then used for reorder purposes.
- ! *Stub control* (used by retailers) enables the manager to retain a portion of the price ticket when the item is sold. The manager can then use the stub to record the item that was sold.

As a business grows, it may find a need for a more sophisticated and technical form of inventory control. Today, the use of computer systems to control inventory is far more feasible for small business than ever before, both through the widespread existence of computer service organizations and the decreasing cost of small-sized computers. Often the justification for such a computer-based system is enhanced by the fact that company accounting and billing procedures can also be handled on the computer.

- ! *Point-of-sale terminals* relay information on each item used or sold. The manager receives information printouts at regular intervals for review and action.
- ! *Off-line point-of-sale* terminals relay information directly to the supplier's computer who uses the information to ship additional items automatically to the buyer/inventory manager.

The final method for inventory control is done by an outside agency. A manufacturer's representative visits the large retailer on a scheduled basis, takes the stock count and writes the reorder. Unwanted merchandise is removed from stock and returned to the manufacturer through a predetermined, authorized procedure.

A principal goal for many of the methods described above is to determine the minimum possible annual cost of ordering and stocking each item. Two major control values are used: 1) the order quantity, that is, the size and

frequency of orders; and 2) the reorder point, that is, the minimum stock level at which additional quantities are ordered. The Economic Order Quantity (EOQ) formula is one widely used method of computing the minimum annual cost for ordering and stocking each item. The EOQ computation takes into account the cost of placing an order, the annual sales rate, the unit cost, and the cost of carrying inventory. Many books on management practices describe the EOQ model in detail.

---

## **DEVELOPMENTS IN INVENTORY MANAGEMENT**

In recent years, two approaches have had a major impact on inventory management: Material Requirements Planning (MRP) and Just-In-Time (JIT and Kanban). Their application is primarily within manufacturing but suppliers might find new requirements placed on them and sometimes buyers of manufactured items will experience a difference in delivery.

*Material requirements planning* is basically an information system in which sales are converted directly into loads on the facility by sub-unit and time period. Materials are scheduled more closely, thereby reducing inventories, and delivery times become shorter and more predictable. Its primary use is with products composed of many components. MRP systems are practical for smaller firms. The computer system is only one part of the total project which is usually long-term, taking one to three years to develop.

*Just-in-time* inventory management is an approach which works to eliminate inventories rather than optimize them. The inventory of raw materials and work-in-process falls to that needed in a single day. This is accomplished by reducing set-up times and lead times so that small lots may be ordered. Suppliers may have to make several deliveries a day or move close to the user plants to support this plan.

---

## **TIPS FOR BETTER INVENTORY MANAGEMENT**

### At time of delivery

- ! Verify count -- Make sure you are receiving as many cartons as are listed on the delivery receipt.
- ! Carefully examine each carton for visible damage -- If damage is visible, note it on the delivery receipt and have the driver sign your copy.
- ! After delivery, immediately open all cartons and inspect for merchandise damage.

### When damage is discovered

- ! Retain damaged items -- All damaged materials must be held at the point received.
- ! Call carrier to report damage and request inspection.
- ! Confirm call in writing--This is not mandatory but it is one way to protect yourself.

### Carrier inspection of damaged items

- ! Have all damaged items in the receiving area -- Make certain the damaged items have not moved from the receiving area prior to inspection by carrier.
- ! After carrier/inspector prepares damage report, carefully read before signing.

### After inspection

- ! Keep damaged materials -- Damaged materials should not be used or disposed of without permission by the carrier.
  - ! Do not return damaged items without written authorization from shipper/supplier.
- 

### **SPECIAL TIPS FOR MANUFACTURERS**

If you are in the business of bidding, specifications play a very important role. In writing specifications, the following elements should be considered.

- ! Do not request features or quality that are not necessary for the items' intended use.
- ! Include full descriptions of any testing to be performed.
- ! Include procedures for adding optional items.
- ! Describe the quality of the items in clear terms.

The following actions can help save money when you are stocking inventory:

- ! Substitution of less costly materials without impairing required quality;
  - ! Improvement in quality or changes in specifications that would lead to savings in process time or other operating savings;
  - ! Developing new sources of supply;
  - ! Greater use of bulk shipments;
  - ! Quantity savings due to large volume, through consideration of economic order quantity;
  - ! A reduction in unit prices due to negotiations;
  - ! Initiating make-or-buy studies;
  - ! Application of new purchasing techniques;
  - ! Using competition along with price, service and delivery when making the purchase selection decision.
- 

### **APPENDIX: INFORMATION RESOURCES**

#### **U.S. Small Business Administration (SBA)**

The SBA offers an extensive selection of information on most business management topics, from how to start a business to exporting your products.

SBA has offices throughout the country. Consult the U.S. Government section in your telephone

directory for the office nearest you. SBA offers a number of programs and services, including training and educational programs, counseling services, financial programs and contract assistance. Ask about

- *SCORE: Counselors to America's Small Business*, a national organization sponsored by SBA of over 11,000 volunteer business executives who provide free counseling, workshops and seminars to prospective and existing small business people. Free online counseling and training at [www.score.org](http://www.score.org).
- *Small Business Development Centers (SBDCs)*, sponsored by the SBA in partnership with state governments, the educational community and the private sector. They provide assistance, counseling and training to prospective and existing business people.
- *Women's Business Centers (WBCs)*, sponsored by the SBA in partnership with local non-government organizations across the nation. Centers are geared specifically to provide training for women in finance, management, marketing, procurement and the Internet.

For more information about SBA business development programs and services call the SBA Small Business Answer Desk at 1-800-U-ASK-SBA (827-5722) or visit our website, [www.sba.gov](http://www.sba.gov).

### **Other U.S. Government Resources**

Many publications on business management and other related topics are available from the Government Printing Office (GPO). GPO bookstores are located in 24 major cities and are listed in the Yellow Pages under the bookstore heading. Find a "Catalog of Government Publications" at <http://catalog.gpo.gov/F>

Many federal agencies offer Websites and publications of interest to small businesses. There is a nominal fee for some, but most are free. Below is a selected list of government agencies that provide publications and other services targeted to small businesses. To get their publications, contact the regional offices listed in the telephone directory or write to the addresses below:

#### **Federal Citizen Information Center (FCIC)**

[Http://www.pueblo.gsa.gov](http://www.pueblo.gsa.gov)

1-800-333-4636

The CIO offers a consumer information catalog of federal publications.

#### **Consumer Product Safety Commission (CPSC)**

Publications Request

Washington, DC 20207

[http://www.cpsc.gov/cpsc/pub/pubs/pub\\_idx.html](http://www.cpsc.gov/cpsc/pub/pubs/pub_idx.html)

The CPSC offers guidelines for product safety requirements.

**U.S. Department of Agriculture (USDA)**

12th Street and Independence Avenue, SW  
Washington, DC 20250

<http://www.usda.gov>

The USDA offers publications on selling to the USDA. Publications and programs on entrepreneurship are also available through county extension offices nationwide.

**U.S. Department of Commerce (DOC)**

Office of Business Liaison  
14th Street and Constitution Avenue, NW  
Washington, DC 20230

<http://www.osec.doc.gov/obl/>

DOC's Business Liaison Center provides listings of business opportunities available in the federal government. This service also will refer businesses to different programs and services in the DOC and other federal agencies.

**U.S. Department of Health and Human Services (HHS)**

Substance Abuse and Mental Health Services Administration  
1 Choke Cherry Road  
Rockville, MD 20857

<http://www.workplace.samhsa.gov>

Helpline: 1-800-workplace. Provides information on Employee Assistance Programs Drug, Alcohol and other Substance Abuse.

**U.S. Department of Labor (DOL)**

Employment Standards Administration  
200 Constitution Avenue, NW  
Washington, DC 20210

The DOL offers publications on compliance with labor laws.

**U.S. Department of Treasury**

Internal Revenue Service (IRS)  
1500 Pennsylvania Avenue NW  
Washington DC 20230

<http://www.irs.gov/business/index.html>

The IRS offers information on tax requirements for small businesses.

**U.S. Environmental Protection Agency (EPA)**

Small Business Ombudsman  
1200 Pennsylvania Avenue NW  
Washington, DC 20480

<http://epa.gov/sbo>

Hotline: 1-800-368-5888

The EPA offers more than 100 publications designed to help small businesses understand how they can comply with EPA regulations.

## **U.S. Food and Drug Administration (FDA)**

5600 Fishers Lane

Rockville MD 20857-0001

<http://www.fda.gov>

Hotline: 1-888-463-6332

The FDA offers information on packaging and labeling requirements for food and food-related products.

### **For More Information**

A librarian can help you locate the specific information you need in reference books. Most libraries have a variety of directories, indexes and encyclopedias that cover many business topics. They also have other resources, such as

- **Trade association information**  
Ask the librarian to show you a directory of trade associations. Associations provide a valuable network of resources to their members through publications and services such as newsletters, conferences and seminars.
- **Books**  
Many guidebooks, textbooks and manuals on small business are published annually. To find the names of books not in your local library check Books In Print, a directory of books currently available from publishers.
- **Magazine and newspaper articles**  
Business and professional magazines provide information that is more current than that found in books and textbooks. There are a number of indexes to help you find specific articles in periodicals.
- **Internet Search Engines**

In addition to books and magazines, many libraries offer free workshops, free access to computers and the Internet, lend skill-building tapes and have catalogues and brochures describing continuing education opportunities.