Effective inventory management for small manufacturing clients; Management advisory services practice aids. Small business consulting practice aid, 04

American Institute of Certified Public Accountants
Effective Inventory Management For Small Manufacturing Clients
NOTICE TO READERS

MAS practice aids are designed as educational and reference material for the members of the Institute and others interested in the subject. They do not establish standards or preferred practices. The standards for MAS practice are set forth in the Statements on Standards for Management Advisory Services (SSMASs) issued by the AICPA. However, since the services described in this series of practice aids are management advisory services, the standards in the SSMASs should be applied to them, as appropriate.

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Preface

This MAS practice aid is one in a series devoted to the management advisory services most often provided to a CPA’s small business clients. Even though the same services may also be provided to large clients, practitioners’ experience indicates that providing advice and assistance to small, closely held businesses often involves considerations different from those involved in similar engagements for larger businesses. Small businesses frequently do not have or do not need the breadth of financial and accounting expertise present in larger businesses. Hence, the nature and depth of the data gathering and analysis to be done by the practitioner in services provided to small and large businesses may differ. Most important, the personal plans, finances, and desires of the small business owner may have a significant impact on current and future operations of a small business, and the practitioner must take them into consideration when providing advice and assistance.

MAS small business consulting practice aids do not purport to include everything a practitioner needs to know or do to undertake a specific type of service. Furthermore, engagement circumstances differ, and, therefore, the practitioner’s professional development may cause him to conclude that the approach described in a particular practice aid is not appropriate.
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Introduction

Many small business owners do not maintain satisfactory inventory policies, methods, or controls as their businesses develop. Informal methods of accounting for goods and services that were appropriate in the past may have become ineffective. Therefore, a practitioner may be requested to provide advice or technical assistance for a client's inventory control and management procedures and for activities relating to purchasing, receiving, manufacturing, and production.

By serving as an important buffer, inventory policies and procedures allow the manufacturer to balance the timing of customer demand (or shipping schedules) with production schedules and supplier deliveries. Without this buffer the client cannot operate competitively because inventories are necessary for all manufacturing operations to function efficiently.

Maintaining appropriate levels of inventory will allow a client's business to acquire, produce, and deliver its products more economically, but such maintenance has associated costs. Those costs include storage space, interest cost of the inventory investment, obsolescence, loss by theft or error, security, handling, and insurance. Balancing the efficiency of always having goods on hand with the cost of carrying these goods is an important goal of proper inventory management.

Clients consider inventory acquisition important because it is often the largest use of working capital and significantly impacts the current and future operations of businesses. The practitioner should, therefore, be aware of the characteristics of efficient inventory control presented in this practice aid. The practitioner should also have a thorough understanding of the client's business and industry practices in order to make appropriate recommendations.

Scope of This Practice Aid

The purpose of this practice aid is to assist the practitioner in helping a manufacturing client improve inventory management. The practitioner may find the accounting and physical controls matrixes (appendixes B and C) particularly useful in identifying specific problems and suggesting possible solutions.

All the steps discussed in this practice aid need not be performed in every case since a practitioner will have a varying degree of previous knowledge about each client who requests services. In addition, clients may desire varying levels of practitioner participation in identifying and solving inventory problems, ranging from an MAS engagement under-
taken to perform a study to an MAS consultation to discuss what the client's staff has discovered.¹

An MAS practitioner would not assume the role of management by authorizing the implementation of any suggested changes. Assumption of such responsibility might impair the independence necessary for other accounting and auditing services rendered to the client.

Engagement Approach

The steps in an MAS engagement to assist a client in improving inventory policies and procedures may be organized as follows:

1. Accepting the client
2. Performing a preliminary survey
3. Reaching an engagement understanding
4. Conducting the engagement

The well-planned engagement is divided into logical work phases, which provide the practitioner with a mechanism for billing portions of the engagement as it progresses, rather than billing at completion. The assignment of personnel as well as budgeted or anticipated time would be phased, too, to facilitate continuous review. Engagement planning would also include report or product processing time.

The time required to complete each step of such an MAS engagement may vary, depending on the circumstances in the engagement, such as prior client contact. A brief discussion of each step of the engagement follows.

Accepting the Client

In determining whether to undertake an engagement, the practitioner reviews the circumstances of a prospective client's request. In initial discussions with the client, the practitioner might seek to learn pertinent information by asking the following questions:

• Who referred the prospective client?
• Has the prospective client previously engaged an accountant, and if so, why is a new one being sought?

¹. MAS engagement and MAS consultation are defined in Statement on Standards for Management Advisory Services (SSMAS) No. 1, Definitions and Standards for MAS Practice (New York: AICPA, 1981).
• Is the prospective client seeking to establish a continuing relationship with the practitioner or asking for one-time-only assistance?
• How long has the client been in business?
• Who are the owners/partners?
• What is the nature of the client’s current business?
• What is the financial history of the current business?
• Does the management team have the experience or education to make the business a successful one?
• Were there any earlier business ventures, and if so, what were their results?
• With whom does the client bank?
• What law firm does the client use?

In deciding whether to accept the engagement, the practitioner should be guided by these additional considerations:

• Would acceptance of the client be in keeping with professional standards and with the practitioner’s policies?
• Does it appear that the practitioner will be able to assist the client?

Performing a Preliminary Survey

In some instances the practitioner may be requested to submit a proposal explaining the services to be provided, the approach to be taken in performing the services, and the associated costs. A preliminary survey provides such data for the proposal or other form of understanding with the client.

The time devoted to a preliminary survey may be less for an existing client due to the practitioner’s familiarity with the client’s operations, personnel, and other key factors. The client’s desired results constitute the critical factor in all services rendered.

During the preliminary survey, the practitioner gathers appropriate information that might affect the client’s inventory problems. Such information may include the following:

• Organizational structure
• Physical facilities
• Capabilities of management and key personnel
• Current accounting information system and paperwork flow
• Records detailing transactions with related parties
• Market strategies
• Product characteristics and production processes
• Other data that might facilitate a better initial understanding of client operations
Based on the information obtained, the engagement approach is planned. The engagement work program, an important result of planning, addresses the who, how, and when for successful engagement completion.

**Reaching an Engagement Understanding**

Assuming the practitioner agrees to assist the client in improving inventory control procedures, the parties' next step is to reach an initial understanding regarding services to be performed, including the objective, scope, and conduct of the engagement.\(^2\)

The practitioner would communicate to the client, orally or in writing, the services, the manner in which they will be rendered, and their cost. The practitioner might include the following in the engagement understanding:

- An introduction describing the request for services and the preliminary survey
- Identification of the client’s need for service
- Benefits the client anticipates from the proposed service
- Scope of services to be provided (usually a phase-by-phase analysis of how the services will be rendered, client personnel who will be involved, feedback to the client on the engagement’s progress, and client engagement responsibilities)
- Identification of a client liaison (from management) for the engagement
- Cost of services, including manner of billing and expected payment
- The product to be delivered to the client

**Conducting the Engagement**

An engagement to assist in improving inventory control procedures usually involves the following four phases:

1. Fact-finding
2. Diagnosis of problems
3. Formulation of recommendations
4. Final report

Fact-finding

To identify a client's inventory management problems, the practitioner assesses the client's current operations. The practitioner would survey the people who work with, manage, and need information about inventories. Questionnaires, checklists, interviews, and observation can be used in performing the surveys. Which techniques are selected will depend on the size and organization of the client's business. The practitioner also reviews financial and management information to determine key inventory indicators (that is, inventory ratios, levels, and turns). Based on initial fact-finding, the practitioner can begin identifying problems.

Diagnosis of Problems

Diagnosing weaknesses and deficiencies in an inventory control system can be complex. A wide variety of inventory-related problems, which may manifest themselves in many different ways, can impact the client's business. Appendix A, "Characteristics of Effective Inventory Management," provides the practitioner with a summary of key elements that may be lacking in the client's system, but it is not intended to be all-inclusive.

To further assist the practitioner in diagnosing inventory management problems, two matrixes have been developed (see appendixes B and C). One matrix addresses accounting controls and the other, physical controls. The left-hand margin of each matrix lists the symptoms of inventory control problems; their corresponding probable causes are listed across the top of the page. Each symptom can be related to its probable causes by noting the probable causes indicated with an X. The numbers listed in parentheses next to the probable causes refer to subsection numbers in appendix A.

Formulation of Recommendations

After reviewing the pertinent facts and diagnosing the problems, the practitioner can formulate recommendations to solve the problems. These recommendations would be developed in conjunction with the client liaison who worked with the practitioner during the earlier phases of the engagement. The recommendations would reflect the findings.

Final Report

The product of an engagement to improve a client's inventory management will be an oral or written report summarizing the practitioner's findings and recommendations. The report also addresses implementation of the various recommendations.
Conclusion

Effective inventory management is vital to the prosperity of all manufacturing businesses. However, many companies are burdened with excessive storage, shrinkage, handling, or other unnecessary expenditures resulting from inadequate inventory management controls. Recognizing this fact, clients frequently request practitioners' assistance in identifying inventory problems and developing inventory management and control procedures. During the course of an engagement, a practitioner may identify other problems in the client's operations that may require further assistance in an extended or new engagement.
APPENDIX A

Characteristics of Effective Inventory Management

Solutions to many inventory problems are related to six key areas of effective inventory management:

A. Purchase order control (See subsections 1-11.)
B. Materials control (See subsections 12-20.)
C. Security (See subsections 21-25.)
D. Production reporting (See subsections 26-32.)
E. Inventory cost control (See subsections 33-51.)
F. General controls (See subsections 52-59.)

A. Purchase Order Control

1. Purchase order control provides for replenishing stock and supplies on a centralized procurement basis. It includes economic order quantity (EOQ) techniques, whenever possible, to minimize the costs of purchasing and storing inventory. Sufficient material requirements planning (MRP) is performed to provide proper scheduling of purchases and receipt of goods. A smooth and efficient flow of production is maintained to reduce the possibility of excessive inventory buildup, which would unnecessarily drain organizational resources. Effective purchase order control includes the characteristics that follow.

2. Sufficient centralization to assure that purchase orders for single items are not duplicated. Assigning responsibility for purchasing to one buyer or purchasing agent supports greater management control over purchasing and inventory stock levels. This can reduce inventory write-offs associated with overpurchases and inventory stock-outs. Centralization of purchasing contributes to timely and effective utilization of inventory information.

3. Use of standing purchase orders, if appropriate, when price or quantity discounts can be taken. Issuing standing purchase orders in conjunction with available price or volume discounts can provide greater opportunities for reducing the cost of inventory and supplies. Additionally, the increased use of standing purchase orders reduces costs associated with carrying excessive stock when inventory is not purchased on a regular basis. It is also possible to reduce future carrying costs by coordinating the scheduled delivery of materials with the expected usage (that is, the “just in time” principle).

4. A policy of competitive procurement that seeks out qualified vendors. Competitive procurement enables the purchaser to regularly compare and evaluate different sources of inventory and supplies. The policy may include the evaluation of price, product quality, and delivery schedules.

5. A reporting system that provides feedback to the purchasing agent on inventory shortages or quality problems. An effective reporting system can facilitate purchasing decisions by improving regular communication between the shipping and receiving department, production personnel, and the purchasing agent. It permits the purchasing agent to benefit from the most current inventory information.
6. **Inclusion of terms of sale on purchase orders.** Purchase orders that include terms of sale fix responsibility for excess deliveries, damages during shipment, uncovered shortages after receipt, F.O.B. point, freight insurance, liquidated customs charges, failure to ship, and timely shipment of an ordered quantity. This procedure reduces the potential for misunderstanding between the vendor and the purchaser over purchase terms, and it encourages agreement on terms and conditions by both the vendor and the purchaser.

7. **A system distinguishing on-order and back-ordered purchases.** A control system reduces excessive inventory by showing requisitions for items already on order or back ordered and thus avoids duplication.

8. **Use of a standard methodology for determining economic order quantities.** Determining EOQ may involve a highly quantitative method or may be based on a less analytical model. The method chosen would reflect company policy on bottom-line quantity decisions, and it would establish procedures for authorizing inventory quantities that vary from the company norm. Documentation of purchase decisions and the correction of inconsistent purchasing practices are realized as a result of establishing formal EOQ methods.

9. **Determination of inventory stock-out costs.** The cost of maintaining an inventory quantity can be weighed against the cost of being out of stock on a particular item. An out-of-stock condition may be acceptable for some items if a short lead time exists or production can be switched to another item. An out-of-stock condition may not be acceptable for other items if production or sales would be curtailed.

10. **Methods for determining order quantities and order frequency criteria.** Deciding when and how much to order is significant in controlling inventory units. Two methods for anticipating quantities and frequencies are economic order quantity (EOQ) formulas and material requirements planning (MRP) procedures. Both techniques anticipate material needs for the production being scheduled. They reflect minimum safety stock policies of the company. The acceptability and costs for an out-of-stock condition are considered in determining the safety stock policies.

    EOQ techniques are quantitative and analytical. The factors used evaluate safety stock buffers, average periodic usage, delivery lead times, and unit storage costs.

    MRP techniques consider projected manufacturing schedules when order quantities and frequency criteria are computed. Product manufacturing schedules extended to material requirements address seasonal factors, delivery lead times, and safety stock buffers.

11. **Effective purchasing to control inventory requires management involvement.** It is based on periodically revised minimum order points and EOQ. The procedure may be performed manually (for example, by means of index file cards) or through a review of computer reports if inventory records are maintained by an EDP system.

### B. Materials Control

12. At the core of effective inventory management is proper materials control, which depends on maintaining accurate records to establish inventory security procedures and cost controls. A business lacking such controls may
experience excessive inventory shrinkage and loss of revenue due to inventory stock-outs.

13. A materials control system responds to these problems and is closely coordinated with purchase order control. Like purchase order control, materials control may be maintained manually by using a card system or, depending on the volume and activity of transactions, may be computerized. In recent years computerized materials control systems have become common due to the development of increasingly sophisticated materials control software for microcomputers. An effective materials control system usually includes the features that follow.

14. **Perpetual inventory records.** Perpetual inventory records maintain information about additions and deletions to inventories as well as the balance on hand. When inventory is counted, in either a complete physical or cycle count, the quantities on hand should be promptly reconciled to the perpetual records. (See subsection 17.)

15. **Receiving reports.** To account for material received, a formal control document is used as part of the receiving function. A receiving report indicates the quality and quantity of incoming materials and identifies unacceptable goods that can be returned to the supplier.* Receiving reports are distributed (a) to persons responsible for inventory control so that they can update the perpetual inventory records and (b) to the accounting department so that its staff can compare quantities received with quantities billed.

16. **Physical materials controls.** Cycle-count inventory procedures enable the client to periodically check the quantities on hand with perpetual inventory records. This procedure is frequently performed during normal business operations and provides an additional tool for the client to better control inventory.

    Adequate space is required so that inventory can be arranged in an orderly and identifiable manner. Each inventory item is assigned a specific location in the storage facility to avoid confusion that could result from mixing different items. Storing the same inventory items in separate locations is avoided, when possible, to minimize uncertainty regarding actual quantities on hand.

17. **Procedures for physically counting quantities on hand.** Periodic cycle counts and annual physical inventories of quantities on hand are important inventory controls. Counting procedures can include recording quantities counted on tags or tickets that are attached to the inventory. Counts are double-checked to ensure accuracy. Quantities are extended and reconciled to the general ledger. A book-to-physical adjustment is recorded, if appropriate.

18. **Materials requisition forms.** Materials requisition forms control the withdrawal of materials or supplies from stock. A separate form is prepared for each withdrawal; it identifies the name of the person authorizing the withdrawal and the department to which the withdrawal will be charged. Copies of all requisition forms are forwarded to (a) personnel responsible for maintaining perpetual inventory records and (b) the accounting department for month-end summarization and recording in the appropriate general ledger account.

19. **Bills of lading.** A bill of lading or a similar document is used to authorize

*If large volumes of materials are received, verification of a sample group may be appropriate, depending on the client's circumstances.
shipments or transfers of any product or material leaving the company. It provides an immediate record of the transaction and is forwarded to materials control personnel and the accounting department so that perpetual inventory and accounting records can be updated.

20. ** Provision for perishable and dated merchandise.** Adequate provision must be made to protect perishable merchandise from adverse weather and other environmental conditions. In some cases environmentally controlled rooms are required to preserve or age merchandise such as food. Procedures for stock rotation would be established so that the oldest items will be moved first (FIFO). The practitioner may wish to consider an analysis of the scrap account or a similar account for perishable goods to evaluate whether the client’s procedures are adequate and are being followed.

C. Security

21. Adequate inventory security requires the interaction of two controls—physical controls and accounting controls. Physical controls safeguard inventory against unauthorized access, while accounting controls ensure that inventory records properly reflect the actual inventory on hand. Effective inventory security includes characteristics such as those that follow.

22. **Limited access.** Physical access to inventory storage areas is restricted, by policy, to authorized personnel only. Authorized personnel, selected on the basis of job function, are easily identifiable and bonded. When outside personnel (for example, truckers) have access to inventory, they are supervised at all times while in the storage area.

23. **Storage security.** All inventory facilities are physically secured against unauthorized access. The storage area is separated from the shipping and receiving area and the production area.

24. **Adequate documentation.** All inventory movements, especially those that result in postings to accounting records, are supported by documentation. Documents are prenumbered so that all records of materials movement are controlled, and they are detailed to ensure identification of the items being moved. Dates are recorded to help post movements to the correct accounting period. Documents are reviewed and approved by supervisory personnel to ensure accuracy.

25. **Segregation of functions.** Personnel maintaining accounting or inventory records should not be responsible for the movement of inventory. Barring collusion, assigning inventory movement to personnel who do not maintain control records reduces the potential for unauthorized recording to conceal misappropriation.

D. Production Reporting

26. In manufacturing environments, production-reporting procedures are important for effective inventory management. Production data related to materials costs, scheduling, engineering, quality control, and other areas are referred to management for review. Accounting personnel receive current production and
cost information so that general accounting records can be accurately maintained. Characteristics of effective production reporting follow.

27. **Shrinkage control reports.** Management and other appropriate personnel receive scrap, shrinkage, or damage reports so that inventory-level reductions of raw materials and components can be compared to actual production use. Shrinkage is analyzed according to causes, such as physical deterioration (natural causes), improper handling, and theft. The disposition of damaged products is reported with the items identified as reworked, sold for scrap, or trashed. Results are compared to established shrinkage goals.

28. **Bill of materials.** A bill of materials is a list of raw materials and components required for production. It must be reviewed periodically to ensure proper ordering of materials and efficient production methods. This review reduces the incidence of mistaken purchases of materials and avoids unexpected inventory stock-outs.

29. **Capacity requirements reports.** Capacity requirements reports compare the proposed production schedule's requirements to the load center's production capacity. This helps identify operations that can become bottlenecked if the production plan were implemented. By identifying potential problems before production is begun, management has more time to take corrective action and thus avoid delays due to capacity constraints.

30. **Production reports.** Issuing periodic production reports (daily or weekly, for example) permits comparison of actual work completed with projected schedules as well as with sales and delivery requirements. Production reports include sufficient information to accurately cost work-in-process inventories and project future production levels or completion dates. These reports promptly communicate quantities produced to inventory control personnel who update inventory (perpetual) records.

31. **Quality control.** Depending on the technical specifications of the product and customers' statistical quality control requirements, company procedures may include either sampling, spot inspection, or inspection of each item. Regardless of the number of items inspected, records showing the volume of items and reasons for rejection are continuously updated. Written notes from production supervisors or inspectors explaining the causes of rejection are included. The causes may be inferior raw materials or purchased components, poorly trained personnel, carelessness, machinery problems, or work environment. Customers are a valuable source of information about product quality. Customers' complaint correspondence, sales returns and adjustments, and increased finished inventory of a given product resulting from reduced sales and unusual order cancellations may, if monitored, provide much insight into the quality of products.

32. **Engineering changes.** Controls over engineering reduce production problems that result from a high number of unscheduled changes and unexpected variations in product quality and technical specifications. Engineering changes are written up in detail and require proper management approval before being implemented. The approved changes are then communicated to purchasing, inventory, and production supervisors in sufficient time so that they may acquire any needed materials and plan any necessary procedural changes.
E. Inventory Cost Control

33. As with physical materials controls, proper inventory cost control requires monitoring the dollar value of inventory additions, deletions, and quantities on hand. The system must be reconcilable to the general ledger. Sufficiently detailed and maintained inventory accounts enable personnel to reconcile differences between a priced-out physical inventory and the general ledger and/or inventory cost control records and to isolate overages and shortages. In this regard an inventory cost control/general ledger system would produce dollar information paralleling and checking the physical (unit) information produced by a materials control system. The information may be maintained manually or by computer if a high volume of units or costs exists.

34. There are two major approaches to inventory cost control: job cost and process cost. Each of these approaches may utilize standard (estimated) or actual inventory costs in determining inventory values. Effective inventory cost control has the characteristics that follow.

35. Identification and valuation of cost control elements. Initially cost control elements are identified and evaluated. Inventory amounts on hand are valued in dollars by major category, such as raw materials, work-in-process, and finished goods. The amounts of each category on hand are subject to accounting or inventory cost control, and they are segregated by physical location, for example, warehouse, factory, department, or consigned location in transit.

36. The detail level of such a dollar aggregate or dollar breakdown by physical location is based on the value of the goods being controlled, transportability of the material, and ease of conversion to cash. The cost-benefit of maintaining a desired level of information would be considered in the total evaluation, because maximum accounting and inventory cost control are expensive.

37. Comparison and reconciliation of inventory additions to invoices and the general ledger. A basic inventory cost control technique is establishing that additions to physical inventory correspond to additions to the general ledger. Before additions are entered into book inventory, they are matched to invoices according to unit(s) received, prices, and extensions.

38. In cases where an invoice does not correspond to the physical quantities received or to the recorded price, the invoice would be subject to a debit memo for shortages, scrap, or nonagreed prices. In a standard cost system, purchase price variance is computed when the invoice cost/unit differs from the standard cost. Failure to isolate purchase variance may often be the cause for major inventory dollar discrepancies.

39. In many instances goods are received without an invoice and vice versa. Usually, if the vendor's invoice is received without receipt of goods, the entry would not be recorded in the general ledger until the goods are received.

40. Freight, shortage, and handling-cost accounting. In a "controlled" inventory cost system, the practitioner considers how the entity records inbound freight, storage, customs, clearance handling, and other similar charges. A logical question is—Will the charges be added to the end price of inventory on a percentage basis, or will some sort of specific cost be added to the inventory unit cost?

41. The buildup of such raw materials cost would be reflected in perpetual unit
records, variances, and expensed amounts isolated from amounts "capitalized" in inventory. Again, comparing the unit cost records and the general ledger inventory accounts is very important.

42. Labor and overhead additions to inventory values. Labor and overhead additions to inventory values, whether at a work-in-process or a finished goods stage, should be based on accurate cost records. Inventory records reflect the components of any finished, work-in-process, or raw materials stage of production. Thus, when the physical inventory is valued, those values can be compared to the general ledger values.

43. Standard cost accounting controls. Standard cost accounting controls can be very important to a successful inventory control system. Manufacturing standards usually include a current labor cost estimate based on expected hourly rates and hours of worker productivity. Usage estimates are based on expected material costs and production efficiency. Overhead estimates are based on budgeted indirect costs and projected volume.

44. The detail level in standard cost records and reporting depends on the nature and size of the operation and management's information needs. Variances from standards would be analyzed to a practical degree, based on desired manufacturing efficiency and inventory cost control goals. These variances may include some or all of the following:

- **Material purchase price variance.** The difference between actual cost of purchased materials and standard cost for the same items.
- **Material usage variance.** The difference between actual quantities used and quantities that should have been used at standard cost for the quantity produced.
- **Labor rate variance.** The difference between standard labor hours times the standard labor rate and the standard labor hours times the actual labor rate.
- **Labor efficiency variance.** The difference between standard labor hours times the standard labor rate and actual labor hours times the standard labor rate.
- **Overhead spending variance.** The difference between actual overhead expenses for a specified period and overhead absorbed in inventory based on actual production at standard overhead rates.
- **Overhead volume variance.** The difference between overhead at standard cost for actual production and overhead at standard cost for quantities that should have been produced (that is, standard quantities) during a specified period.

45. Transfers between inventory classifications. An effective inventory cost control system monitors transfers between various inventory classifications and categories. Typically, the transfer may be from raw materials to work-in-process and from there to the finished goods department.

46. Transfers are usually recorded on production tickets, which serve the following purposes:

- Transferring and adding physical inventory from one or more records to others
• Transferring record keeping by the accounting department from one or more ledger accounting classifications to others
• Recording employee production to aid payment of any piecework incentives
• Accumulating efficiency statistics
• Posting variances
• Adding labor and overhead to the dollar value of the unit
• Issuing inventory and accounting for scrap, returned goods, and price adjustments

47. An effective inventory cost control system also generates information about all deletions. This is frequently effected by accumulating data from scrap tickets and memo/shipping tickets. The tickets usually become the basis for maintaining general ledger inventory records, charge backs to vendors, and charge backs to labor and departments on incentive programs.

48. Inventory issues—cost of goods sold. If records of deletions are well maintained, accurate monthly and quarterly income statements can be generated without waiting for a count and pricing out of physical inventory.

49. Inventory records are available to client management in units and dollars so that management can take action when out-of-balance conditions exist. To accomplish this, the following information is useful:

• Usage in last period(s)
• Comparison of usage to forecasts and budgets
• Turnover
• Months of supply on hand
• Minimum order quantities
• Economic order quantities

50. One or more of these statistical information aids would be available so that management can ascertain whether existing inventory is at an appropriate level.

51. In summary, today even the smallest businesses have or can acquire sufficient resources to effect inventory cost control. Previously used gross-profit control techniques, which frequently meet competitive pressures, can be examined and replaced with more effective costing techniques; the latter enable the client to answer the following basic questions, which can greatly impact profitability:

• What is the optimum dollar value of the inventory on hand?
• How much does it cost to carry the inventory?
• What is the actual cost of goods sold (that is, does it reconcile with the inventory at the end of the year)?

F. General Controls

52. Many problems concerning inventory control are not directly related to inventory; for example, problems in other areas of the client’s organization may have a causal relationship to inventory. Some of these problems may be an ineffec-
tive management information system (MIS), lack of a cost-benefit analysis, inaccurate forecasting, inadequate market penetration, excessive selling costs, obsolete and slow-moving inventory, and inefficient or unqualified personnel. Possible methods of solving these problems follow.

53. **Management information system.** Client management can more accurately identify problems if it has an efficient management information system. MIS provides accurate information on day-to-day company operations. The information is most often the result of an effective data processing system, which, depending on the client’s needs, can be either manual or computerized.

54. **Cost-benefit analysis.** When making decisions that require choosing between alternatives, client management seeks the most recent accurate information available. If this information includes a cost-benefit analysis of the various alternatives, it aids the decision-making process. For example, if two product lines are compared, the variable costs and increases in general fixed costs are identified. A selling price is established and a sales forecast is made. A decision based on resulting profit margins can then be reached.

55. **Forecasting.** Forecasting is needed to determine optimal levels of inventory, and it requires an accurate flow of information on the projected demand for goods. Forecasted demand is usually based on historical data generated from within a business and is developed by analyzing averages, trends, and seasonal fluctuations. Information from outside the business can also be used, especially in long-term forecasting. Outside sources include published indexes, which may indicate the spending patterns of the various markets being studied.

56. **Market penetration.** Excessive inventory fluctuation and instability can often be attributed to inadequate market penetration. For example, the size of a client’s sales force may be inadequate for the number of product lines, thus limiting market penetration and creating an erratic demand. Additionally, the product line may be too narrow. In such cases customers will seek other vendors to supply the necessary product.

Market penetration can be determined by comparing the client’s sales to total sales for a particular product in a defined region. From this analysis client management can decide if product lines need to be expanded or contracted or if an adjustment in the sales force will achieve greater market penetration.

57. **Selling costs.** Excessive selling costs will often make marketing a product line prohibitive in certain sales regions. By determining the most efficient method of product distribution, the client may find that it can reduce selling costs and be more competitive in new markets. Many factors are evaluated. The cost-benefit of the transportation alternative within the territory is analyzed. With advice from the practitioner, the client decides whether to maintain a fleet of trucks or use a common carrier in transporting products. A central or regional warehousing system can be used to reduce costs as well. The client may choose either to employ an extensive sales force selling directly to retailers or to rely on wholesalers to market its products.

58. **Obsolete and slow-moving inventory.** The first step in controlling obsolete and slow-moving inventory items is their identification. This requires accurate information, which may come from perpetual inventory records, usage records, and sales forecasts. These records are examined by client management for
significant fluctuations, trends, and ratios (while periodic physical inspections are conducted). Management uses this method, along with sales forecasts, to establish the order points and order quantities that permit efficient inventory management.

59. Personnel. Inventory problems can be compounded by inefficient or unqualified personnel. However, replacing these employees may not always be the best solution; it could lead to discontent and unrest among other employees. One alternative is more comprehensive training and increased supervision, which can increase productivity while maintaining employee morale. Another option is to rotate employees to other duties more compatible with their abilities.
## APPENDIX B
### Accounting Controls Matrix

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>PRONABLE CAUSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Heavy Inventory Buildup (Dollars)</td>
<td>X</td>
</tr>
<tr>
<td>3. Lack of Product Line Cost/Profitability Information</td>
<td>X</td>
</tr>
<tr>
<td>4. Unusually High Materials-handling Expense</td>
<td>X</td>
</tr>
<tr>
<td>5. Excessive Outside Warehousing or Temporary Storage Cost</td>
<td>X</td>
</tr>
<tr>
<td>6. Frequent Job Cost Overruns</td>
<td>X</td>
</tr>
<tr>
<td>7. Cost of Sales Increasing Faster Than Sales Volume</td>
<td>X</td>
</tr>
<tr>
<td>8. Disproportionate Fluctuations in Monthly Cost of Sales</td>
<td>X</td>
</tr>
<tr>
<td>9. Eroding Profit Margin</td>
<td>X</td>
</tr>
<tr>
<td>10. Significant Book-to-Physical Inventory Adjustments</td>
<td>X</td>
</tr>
<tr>
<td>11. Abnormal Inventory Turns (Slow)</td>
<td>X</td>
</tr>
<tr>
<td>12. Significant Increase in Working Capital Requirements</td>
<td>X</td>
</tr>
<tr>
<td>13. Unfavorable Change in Current Ratio</td>
<td>X</td>
</tr>
<tr>
<td>14. Burden Rate Fluctuations</td>
<td>X</td>
</tr>
<tr>
<td>15. Loss of Business Due to Pricing</td>
<td>X</td>
</tr>
<tr>
<td>16. Other Symptoms</td>
<td>X</td>
</tr>
</tbody>
</table>

Note: Numbers presented parenthetically (see Probable Causes above) refer to subsection numbers in appendix A, "Characteristics of Effective Inventory Management," in this practice aid. However, reading should not be limited to reference subsections, since some of the other material may provide additional explanation for a particular inventory problem.
### APPENDIX C

#### Physical Controls Matrix

|------------------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|}
| 1. Unexplained Shrinkage (Units)              | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 2. Lack of Information for Management Decisions (Units) | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 3. Lack of Information for Job Order Status   | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 4. Discrepancy Between Quantities Entering Production and Quantities Produced | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 5. Frequent Product Overruns                  | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 6. Heavy Inventory Buildup (Units)            | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 7. Frequent Stock-out Conditions              | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 8. Inventory Not Arranged/Stored in Orderly Manner | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 9. High Level of Obsolete and Slow-moving Stock | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 10. Excessive Materials Handling              | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 11. Excessive Outside Warehousing or Temporary Storage | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 12. Shipping Schedules Frequently Missed      | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 13. Customer Complaints Regarding Incorrect Shipments | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 14. Significant Book-to-Physical Adjustments (Units) | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 15. High Scrap, Waste, or Spoilage           | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |
| 16. Other Symptoms                            | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               | X               |

**Note:** Numbers presented parenthetically (see Probable Causes above) refer to subsection numbers in appendix A, "Characteristics of Effective Inventory Management," in this practice aid. However, reading should not be limited to reference subsections, since some of the other material may provide additional explanation for a particular inventory problem.
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