CHAPTER 7

THE CONVERSION CYCLE

This is perhaps the most complex chapter so far. The first section presents a discussion of a traditional manufacturing environment similar to most manufacturing systems until very recently. This is followed by the presentation of the characteristics of a new manufacturing environment and discussion of the implications that such new systems have for the AIS. The last part of the chapter describes a world-class company and its information system.

If your background does not include exposure to a manufacturing firm, read this material carefully. If you have some experience in a traditional manufacturing operation, contrast what you know with the new ideas presented.

The objectives of this chapter are:

- to understand the basic elements and procedures that comprise a traditional production process;
- to understand the data flows and procedures in a traditional cost accounting system;
- to be familiar with the accounting controls found in a traditional environment;
- to understand the operating features and philosophies that characterize a world-class company;
- to understand the objectives of just-in-time (JIT) systems and to recognize the implications of maintaining excessive inventories in the world-class environment;
- to recognize the importance of quality in the world-class environment;
- to understand the shortcomings of traditional accounting methods in the world-class environment; and
- to be familiar with the characteristics of a world-class information system.
I. World-Class Companies

In this introduction the idea of a “world-class” company the driving force is the focus on customer satisfaction. This puts new demands on the accounting system. Six areas that must be addressed set the stage for the chapter.

II. The Traditional Manufacturing Environment

This first section should confirm what you have learned in your cost accounting and operations management classes.

A. The Production System

Three possible production methods are discussed: continuous, batch, and make-to-order. Pay close attention to the various documents used in the batch processing system:

- sales forecast,
- production schedule,
- bill of materials,
- route sheet (or master operations list),
- work order,
- move ticket, and
- materials requisition.

All of these documents are needed to authorize inputs and processes and the movement of the work through the production system. Numerous examples are shown in the text.

Fig. 7-8, on pages 360-61, is a flow chart of the batch production process. Follow the narrative closely. Note both the movement of the work and of documents and information. Note also the situations which generate action.

B. Economic Order Quantity Model

This section discusses the importance of managing inventory—to ensure availability while minimizing cost. The familiar EOQ model is discussed to focus on the factors that influence inventory cost.

C. The Cost Accounting System

This section should contain no surprises. Fig. 7-12, on page 366, is concise but good. Note, in particular, the various sources of information.
D. Controls in the Traditional Environment

The discussion of controls follows the outline of SAS 78. These are summarized in Table 7-1, on page 367, and explained more fully in the accompanying narrative. If you have no exposure to a manufacturing environment, read carefully.

III. The World-Class Environment

After a brief discussion of the historical background behind the changes in the manufacturing world, the characteristics of the new manufacturing environment are discussed. Fig. 7-13, on page 369, attempts to represent the change in the source(s) of competitive advantage from the past, traditional, low unit cost approach to the more current focus on customer satisfaction.

A. Manufacturing Flexibility

This section discusses the changes that have occurred in consumer expectations and the need for companies to be able to respond to customer demands.

B. Physical Reorganization of the Production Facilities

The contrast between a traditional factory layout, Fig. 7-14, on page 370, and a flexible production system, Fig. 7-15, on page 371, is worth careful study because the implications are very broad.

C. Automation of the Manufacturing Processes

Most of us are aware of the impact of automation, either directly or indirectly. The main benefits are cost reduction and improved efficiency. This latter is accomplished by the other characteristics of the new environment: reduced inventory, and increased quality.

Fig. 7-16, on page 371, represents the continuum of automation from the traditional manufacturing environment to world-class. Four stages are discussed:

- traditional manufacturing,
- islands of technology (within a traditional setting),
- process simplification, and
- computer integrated manufacturing (CIM), which is complete automation.

Fig. 7-17, on page 373, shows the relationship between the components. This progression is
occurring today. If you expect to work in a manufacturing environment or have manufacturing clients, this material is very important.

D. Automation Through Information Technology.

Information technology (IT) plays a significant role in making the world-class firm successful. This section focuses on the ways IT contributes. The affect of automation on various areas of production is intended to show the role of technology in the stages of design, execution, and planning.

This section discusses CAD (computer-aided design), CAM (computer-aided manufacturing), MRP II (manufacturing resource planning) and EDI (electronic data interchange). The days of the independent and isolated accounting system are gone. An effective information system in the mid-nineties must integrate financial and nonfinancial information.

*Manufacturing resource planning (MRP II)* expands the idea behind material requirement planning to coordinate all the inputs to production, not just materials.

MRP II has now evolved in the next generation of information systems, *enterprise resource planning* systems (ERP). [Coming in Chapter 11!]

E. Reduction of Inventories

This section gives a good explanation of the downside of high inventory levels and the ways that a firm can reduce inventories. This is a good overview of the *just-in-time (JIT)* manufacturing model.

F. Product Quality

One of the most dramatic changes in the “new” environment is related to quality. In the “old days,” quality was *inspected into* the product at the end of production—bad units were pulled. The better approach involves *designing quality into* the product.

IV. Implications for Accounting and AIS

If the manufacturing environment changes, so must the (accounting) information system serving it.
A. Changes in Accounting Techniques

This section identifies the weaknesses of traditional cost accounting and discusses activity-based accounting. This should confirm what you have already learned in cost/managerial accounting. Note, in particular, the shift in the proportion of cost as represented in Fig. 7-23, on page 382. The decline in direct labor costs highlights the impropriety of allocating overhead based on direct labor!

B. Changes in Information Reporting

Traditional management accounting was historical in nature. The new approach includes a shift toward providing management with the information needed to support continuous improvement as an operating philosophy. This includes evaluating activities to determine which add no value to the product in order to eliminate nonessential activities. For necessary activities, cost drivers must be identified, activities improved using benchmarking, and all activities tied to the organization’s critical success factors.

Critical success factors (CSFs) must be identified and performance measures determined. Fig. 7-27, on page 389, illustrates the linking of performance measures to various management levels for one typical CSF. Note that the breadth and degree of aggregation vary according to the management level.

V. The World-Class Information System

Although most organizations are nowhere near world-class, an awareness of where things are headed is important. By the time that you are settled in your first accounting position, many of these “dreams” will be reality. The section first describes a traditional system, then contrasts it with a world-class information system (WCIS). A key element is the discussion of SAP.

A. Characteristics of the Traditional Information System

Pay particular attention to the treatment of the use of PCs in traditional systems. This is very true in many organizations today–greatly under-utilizing the available technology.
B. SAP: An Example of A World-Class Information System

SAP is a German firm that produces integrated business packages. The letters stand for systems, applications, and products (in dataprocessing). The firm’s primary product is R3. It is a current, network-based, database system. Its main modules fall into four categories: finance, logistics, human resources, and business process support, including electronic commerce. Read this carefully. You cannot separate those elements of a business and be successful.

C. Control Issues in the WCIS

Several characteristics of a WCIS lead to control problems: it is paperless, automatic, and networked. Although the main discussion of control will appear in later chapters, the need should be obvious.

Review Questions for Chapter 7: 1-20

Discussion Questions for Chapter 7: 1, 4-8, 10-15, 18-20