CHAPTER 10

THE REA APPROACH TO BUSINESS PROCESS MODELING

This chapter presents a discussion of the REA approach to business process modeling. This is followed by a discussion of the shortcomings of traditional database applications. The third section looks more deeply into the development of an REA model. A thorough example of how the REA process is carried out is presented.

The objectives of this chapter are:

- to recognize the limitations of traditional database systems;
- to be aware of the benefits of adopting an REA approach to information systems compared to a traditional approach;
- to be aware of the implications of REA for the accounting profession;
- to be aware of the steps involved in preparing an REA model of a business process;
- to appreciate the importance of identifying the attributes of entity relations in relational database design; and
- to appreciate the difference between an REA model representation of a business process and an ER diagram representation.
I. The REA Approach

Information systems should support the information needs of all users in the organization, not just the accountants.

A. User Views

The first information system used in many organizations was the financial accounting system. While necessary for an organization, it is not adequate to meet the needs of all users of information. As discussed in Chapter 9, a user view is the set of data that a particular user needs to do his or her job.

For some people, the accounting system provides that data. For others, it does not. One response to other needs has been the creation of other information systems, often totally unrelated and unconnected. Hence, often the same information is entered in many systems. Also, different information systems may provide different, and conflicting, answers to the same question.

The trend is toward enterprise-wide information systems. These will be database systems based on the relational database model and will be event driven, not accounting focused.

B. The REA Model

The REA model is an alternative view of accounting. The model is built upon an organization's resources, events, and agents, and how these are related. Application of the REA model yields a centralized (relational) database. User views can be created for all users of organizational information, not just accountants.

The key elements of the REA model are:

- **resources**—economic resources are the assets of the organization that are both scarce and under its control;
- **events**—economic events are phenomena that affect changes in resources; and
- **agents**—economic agents are individuals and departments that participate in an economic event.

Events can be divided into three classes, operating events, information events, and decision/management events.
C. Advantages of the REA Model

Use of the REA approach can yield:

- more efficient operations by helping identify non-value-added activities, by storing financial and nonfinancial data in the same central database, and greater support for management decisions;
- increased productivity through the elimination of non-value-added activities;
- competitive advantages.

D. Value Chain Analysis

Value chain analysis distinguished between an organization’s primary activities and its support activities. Organizations must focus on using its resources to achieve organizational objectives.

II. Database Applications

This section explains a traditional database using order entry and cash receipts activities from the revenue cycle. The aim is to identify shortcomings.

A. Order Entry and Cash Receipts System

Recall what you know from Chapter 4 about the revenue cycle activities. Fig. 10-1, on page 535, looks very similar to Fig. 4-17. Using databases instead of flat files permits us to focus on events not just accounting numbers.

Fig. 10-2, on page 537, shows the data elements of the database tables shown in Fig. 10-1. Read the description of each table carefully. Note how data we regard as integral to the accounting system can easily be generated!

B. Purchases and Cash Disbursements

Again, Fig. 10-3, on page 539, resembles Fig. 5-17. Read carefully.

C. Limitations of Events-Based Systems

Although better than traditional flat-file systems and event-based, the tables developed collect only financial data. No nonfinancial data is collected. Worse yet, non-economic events are not recognized.
D. Traditional Approach to Modeling Business Processes

Traditional modeling of business processes is represented in Fig. 10-5, on page 542. The REA Approach follows.

III. Developing an REA Model

This section outlines the steps in developing an REA model. A fundamental issue involves identifying business events. As previously presented, these can be of three types: operating, information, and decision/management. In one sense, these form a “vicious circle” – d/m triggers o which triggers i which triggers d/m events. Follow carefully the discussion of how to classify events. Good examples are given.

To present the process of developing an REA model, an example of a bookstore is used. Follow the five-step process carefully:

1. Identify operating events.
2. Put them in sequence.
3. Identify resources and agents.
4. Identify links between resources, events, and agents.
5. Assign cardinalities (Recall the discussion in Chapter 9.)

Once these steps are complete, the design of the relational database from and REA model follows in the same manner as it would from traditional entity-relationship diagrams.

IV. REA Models versus ER Diagrams

This section compares REA and ER modeling. Of particular note, while ER models include operating, information, and decision/management events, REA models include only operating events. REA models permit better focus on control. ER is view oriented. REA is event oriented.

A. Defining Entity Attributes

By now, defining entity attributes should seem clear. The text will consider operating events, resources, and agents. The data elements suggested are both financial and nonfinancial. This is done for procurement and sales. Once attributes are defined, database tables can be designed.
B. Creating User Views

Defining user views requires knowing user information needs. This process builds on discussion in Chapter 9.

Review Questions for Chapter 10: 1-18

Discussion Questions for Chapter 10: 1-13