FW Murphy, a privately held company, is the leading manufacturer of gauges used by a variety of major companies such as Caterpillar. When the youngest son of the founder took over the organization, he had a vision of creating an efficient, state-of-the-art manufacturer. But the information systems were not able to support the management practices the junior Murphy was bringing to the organization. He soon learned, for example, that the current set of business processes and information systems were unable to even determine the manufacturing costs for specific goods. As the new CEO, he quickly pushed the organization to implement first a new integrated manufacturing system, and subsequently the JD Edwards enterprise system, to provide integration of enterprise-wide information. These new systems provided them with a wealth of new information. For example, they discovered that they were selling gauges to Caterpillar, a company that represented a major portion of their business, at a price below the cost of manufacturing. At first it seemed that they would be better off not selling to Caterpillar. Instead, they teamed up with Caterpillar to adjust pricing to an appropriate level and to coordinate manufacturing in a manner that was mutually beneficial to the two organizations.

In this chapter, we focus on the value of integrated systems to providing efficient generation of business information, as well as supplying key management reports needed for effective decision making and organizational management.

**Synopsis**

For many years, business reporting was synonymous with periodic historical reports that drew on the general ledger for their content. These financial reports were the main source of business information for both internal (e.g., management) and external (e.g., investor) decision making. They still are a critical component of a company’s business reporting process, and the general ledger remains a major source of data for decision-making support.

The general ledger is the repository where all financial data comes together for reporting purposes, which is why it is included in this chapter on business reporting. However, more than just general ledger-based reports are needed for most business decisions. Rather, the business reporting that supports an organization’s decision
Review Question
What, in your own words, is business reporting?

The Business Reporting (BR) Process

making must synthesize business information on operational and strategic performance derived from a multitude of sources. Successful managers also make use of a broad range of sources of nonfinancial information, which differ with the decision to be made and the circumstances in which the firm finds itself. The data needed to support such business reporting are captured through various business processes as discussed in previous chapters. Easy-to-use, flexible business intelligence tools are frequently adopted to analyze and synthesize the aggregated data in order to support performance measurement, alternatives evaluation, and competitive analysis needs within this broader view.

This chapter begins by defining the boundaries of business reporting including the general ledger activities, explaining its functions, and examining its organizational context. Then we proceed to a discussion of the logical general ledger system features. Sections on extended business reporting processes and technology follow.

LEARNING OBJECTIVES

- To describe how business processes feed data required for general ledger updates and business reporting
- To explain how the general ledger and business reporting capabilities support an organization’s external and internal reporting functions
- To analyze the limitations of the traditional general ledger approach in contemporary systems
- To describe the extensive business reporting capabilities enabled by enterprise systems, the Internet, and business intelligence software
- To explain the applicability of business reporting to both operational and strategic planning

Process Definition and Functions

Similar to the business processes covered in Chapters 10 through 13, the business reporting process (BR) is an interacting structure of people, equipment, methods, and controls designed to accomplish both operations and information process functions. Unlike other business processes, the BR process has fewer operational functions; it focuses mainly on information functions. While the other processes perform important functions related to their “work” of providing goods and services to customers, the processing and communicating of information is the work of the BR process.

Periodic financial reports are one of the many kinds of reports that result from the BR process. Their importance lies not only in their critical value for internal decisions, but also in the fulfillment of regulatory and other fiscal requirements. The major source of data for financial reporting is the general ledger (GL). Because financial reporting is so vital to every firm, the general ledger updating and reporting process will appear in detail in the following sections. This detailed example illustrates the issues and complexities of the more inclusive BR process, which itself re-
Review Question
What are the primary functions the business reporting process performs?

- Accumulating data, classifying data, and recording data
- Providing for the generation of both ad hoc and predetermined business reports that support operational and strategic decision making
- Preparing general-purpose, external financial statements from data accumulated by other business processes that flow into the general ledger
- Generating Web-based forms of key business reporting information for dissemination via the Internet.

Before beginning your exploration of the BR process, it may be useful to revisit Figure 1.6 (page 18) and think about the competing values of information. Ponder these values as you explore the various types of internal and external information that organizations have and choose to make available to decision makers.

Business Reporting: The Special Case of the General Ledger

While many BR functions support a wide range of managers and decision makers in an organization, some financially oriented business-reporting activities remain in the purview of the finance function. Information Systems typically support *ad hoc* (i.e., on demand) business reporting for the benefit of all decision makers who access data through easy-to-use business intelligence software. *Periodic* (i.e., regularly scheduled) business reports, such as the financial reports produced by the financial function from the data stored in the general ledger, are also supported by the Information Systems function. In this section we focus on the role of the general ledger in the BR process and the interactions between the general ledger and its relevant environment.

Before we begin, we should define a term that is used in this section and throughout the chapter. A *feeder process* is any business process that accumulates *business event* data that are then communicated to and processed within the enterprise system database (and to the general ledger within that database). Accordingly, the feeder processes include all those discussed in the earlier business process chapters, as shown in Figure 14.1. Business event data flow into the enterprise database, from which both periodic and ad hoc reports are produced. The general ledger comprises the accumulation of *financially related* business event data, providing summary-level data to the financial functions.

Consider how the information flows in Figure 14.1 are affected by integrated enterprise systems. The flows from feeder processes to the integrated database permit the consolidation of data, without creating separate physical copies of this data. For example, the general ledger data flows directly from the business processes along with nonfinancial business event data and does not have to be stored separately in its own file or database. The output side from the enterprise systems is much the same, providing information that can be extracted by the respective departments or managers using either pre-established reporting forms or queries of the enterprise system data.
Because financial and nonfinancial data are truly integrated, analysts can focus on the provision of more complex and interesting information that can be used to increase the effectiveness and efficiency of the organization’s operations and strategies. We will explore some of the possibilities within this extended business reporting capability later in this chapter.

As we look to emerging capabilities, we should also consider how the external reporting model is changing. Increasingly, organizations are deciding to make financial information available on the Internet. Currently, there is little standardization to this information between companies. Figure 14.2 (page 498) provides a diagram that synthesizes these various financial information flows in what is labeled the “financial information chain.” Note that the “operational data stores” are the central enterprise system database or other business reporting system data storage. From this data store(s), information is extracted for internal reporting (i.e., the reports on the left hand side of the diagram). Note that for external reporting, however, the information must be first filtered through the chart of accounts and the general ledger. Additional formatting may be required for special-purpose reports, such as those submitted to the Securities and Exchange Commission (SEC) or publication of the statements on the Web. Later in this chapter, we will discuss current efforts to improve the standardization and quality of this information to improve the efficiency and effectiveness of business reporting.

**Budgets and Financial Reporting**

The finance function provides the oversight needed for preparation of required financial reports. Other business reports and analysis, both financial and nonfinancial, are easily accessed by technology supporting business intelligence capabilities. In addition, companies often employ budget analysts to assist managers in the identification and preparation of special reports containing financial plans. Examples of these include departmental budgets and performance reports.

The **budgeting department** advises and assists managers in preparing their budget. The budgeting department should not actually prepare the budget estimates; it should
Offer technical advice to the operating line managers as they develop the budgets for their centers. Good participative management practice argues that the responsibility for budget preparation should fall to the operating center managers who later will be held accountable for budget variations.

Some budget assessment reports are called **performance reports** because they compare actual performance with budgeted expectations. In a hierarchically organized company, as information is reported upward, the level of detail is filtered, meaning that figures are aggregated (summarized) as they are reported to successive management levels. Figure 14.3 shows a specimen **performance reporting** flow for the production arm of an organization.
As we will discuss later in this chapter, major enterprise system vendors support much of this additional business reporting demand for performance reporting. The integration of this functionality allows these reports to be generated easily from information captured by business processes and maintained at the business event level in the enterprise-wide database. Technology Application 14.1 (page 501) gives examples of successful budgeting and reporting systems.

**Horizontal and Vertical Information Flows**

In Figure 1.5 (page 14), the distinction between horizontal and vertical information flows was introduced at a conceptual level. Perhaps now is a good time to review the concepts shown in Figure 1.5 and enhance that figure based on our study of information systems. Figure 14.4 (page 500) is designed to do exactly that.

Along the bottom of Figure 14.4, we can trace the horizontal business event data flows as they progress from left to right through the various operations processes, culminating in the general ledger or BR databases, and resulting in external business reporting. We also see the vertical reporting dimension (in the form of internal performance reports prepared from information supplied by the general ledger, the BR database, and through budgeting) flowing upward in each of the principal functional columns. Again, note that in an enterprise system environment, the distinction between the general ledger and BR databases vanishes, and all business event data can be used as the basis of managerial reports in support of vertical information flows.
Figure 14.4  Horizontal and Vertical Information Flows

The Organization’s Principal Functional Entities

- Purchasing
- Production
- Marketing
- Human Resources
- Finance

The Organization’s Management Levels

- Strategic Management
- Tactical Management
- Operations Management

Operations and business event processing:

- (Purchasing)
- (Production)
- (Inventory)
- (M/S)
- (Personnel)
- (Payroll)
- (Payables)
- (Cash disbursements)
- (Investing)
- (RC)
- (Financing)
- (Cash receipts)
- (GL/BR)

Business Reporting Capabilities

(Budgeting)

NOTES:

- Horizontal flows = general purpose external reports
- Vertical flows = internal performance reports

To simplify the diagram, not all business process interfaces are shown by arrows. For example, inventory issues should flow from inventory through production to the GL.

These are the investing activities and financing activities reported to the GL by the treasurer.
Budgeting and Reporting

Case 1  Vivendi is a French company that provides media, communications, and environmental services in more than 100 countries. The success of its business units is based on predetermined key performance indicators. The company recently implemented a management reporting system to support budgeting, forecasting, legal decisions, and operational management to replace its older budgeting and reporting systems. It uses Cartesis OLAP technology to analyze 20 analytical dimensions in a flexible way over the Web. Cartesis also supports corporate planning, performance management, and financial consolidation. The system combines five years of historical data with budget information to quickly support a wide range of decision makers.

Case 2  Before installing a business intelligence product called Cognos Finance 5.1, Standard Pacific Homes had to consolidate many Excel spreadsheets to be able to provide quarterly reports and budgets to its financial decision makers. Using Cognos' tool to streamline financial processes has cut almost a week from the time it previously took to provide these reports, resulting in more time for reviewing the budget and making informed decisions. Financial data is now available real-time, so that analysis of the margins for each housing project underway at the firm can be reviewed before the end of the quarter.


Logical System Description

Once again in this chapter, we use DFDs to explain the logical features of the business reporting process. This section focuses specifically on the general ledger update and financial reporting pieces of the process, which are fairly standardized in business today due to extensive government regulation. Business reporting is frequently an ad hoc process, making it difficult to portray in a generic diagram. However, a good understanding of the general ledger update activity will give you the foundation to recognize the potential and widespread usefulness of business reporting.

Discussion and Illustration

We start with the highest-level view of the general ledger reporting process; namely, the context diagram, shown in Figure 14.5 (page 502).

Note the business event data flows from the business processes discussed in Chapters 10 through 13. If you are uncertain about the nature and timing of any of these updates, go back to the appropriate business process chapter and review them.

Logically, each business event from a feeder process can be posted directly, individually, and immediately to the general ledger. As a practical matter, physical implementations vary. For example, the flows from the feeder processes could comprise summaries of a number of business events posted periodically at the end of a day, week, or month. For example, the RC process may collect data related to sales and send it to the general ledger. The resulting summarized entry to the general ledger would include postings to sales and accounts receivable.
Figure 14.5 Business Reporting—Context Diagram

- **Purchase to Pay process**: GL payable update, GL cash disbursements update, GL inventory received update.
- **Marketing and Sales process**: GL inventory sale update, Standard costs update, Cost of finished goods update, Cost variances update.
- **Integrated Production Planning processes**: Finalized budget.
- **Controller**: GL payable update, GL cash disbursements update, GL inventory received update, various external parties.

In an enterprise system, these business event data are recorded separately for each sale within the module designed for that business process (e.g., sales). In some enterprise system implementations, these business event data could be batched during sales processing and then used to update the general ledger database at one point. However, the enterprise system maintains data for each individual business event in the underlying business process database, which, for sales, corresponds to the Order-to-Cash process. At this point, however, let’s continue to concentrate on the logical connections of the individual feeder processes with the general ledger.

Figure 14.6 (page 504) shows the general ledger/business reporting process level 0 DFD. Let’s take a moment to talk about bubble 1.0, “Validate business event updates.” What might be involved here? Here are some examples:

- We would want to check business event updates to make sure that they come from the correct feeder process. Do you agree that this check addresses the information system goal of ensuring event data input validity?

- We also want to make sure that no business event updates have been overlooked (recall the discussion of input completeness in each business process chapter).

Bubbles 4.0, 5.0, and 6.0 are also worth examining more carefully in this figure.

- For general distribution, the business reports in bubble 4.0 and related information are often posted to the entity’s Web site. Frequently, at this stage, the financial statements are reformatted to take advantage of embedded links that can be placed into the Web page. For instance, some companies provide hot links in the financial statements directly to the financial statement notes to make it easier for users to tie the notes with specific financial statement accounts.

- Process 5.0, “Record budget,” provides one example of how the business reporting process can fuel reporting systems that rely on information that has been aggregated in the system—in this case, providing information related to both budgeted and actual results.

- Process 6.0, like some that you encountered in previous chapters, is triggered by a temporal event (i.e., the data flow into the process from the general ledger master data), rather than by a data flow from another process or from an external entity. Specifically, at an appropriate time, the condition of the general ledger accounts indicates that the accounts should be closed before repeating the accounting cycle for the next accounting period.

The General Ledger Master Data

The general ledger master data contain summarized information of all company event data. The main inputs to the general ledger consist of totals, extracted by event type, from the business event data captured in the various feeder processes discussed earlier.

One piece of data on each general ledger entry is a code that identifies the source of the entry and provides a beginning point of reference for developing a proper audit trail. The code gives the auditor a means of tracing back to the individual business events that have been aggregated into the general ledger balances. Note that in addition to storing the entries of the current period (both monthly and yearly activity are usually maintained in general ledger systems), beginning-of-period and year-to-date balances also are available.
Figure 14.6  General Ledger/Business Reporting Process

NOTES:
③ Feeder systems include those from business process Chapters 10–13 plus the treasurer.
④ Business event updates include those discussed in the other business processes chapters plus investing events and financing event updates from the treasurer.
⑤ Budget data are recorded either at the end of a period (for the start of the next period) or at the start of the next period. The bubble numbers would be changed to reflect that timing.
In an enterprise system, the user can select any beginning and ending date to accumulate information for a period of time of interest, because the source business event data are maintained. Thus, if a manager wants to examine sales over a two-week period or a three-month period or any other period, the information can be aggregated through a query to provide the manager the precise information of interest.

Limitations of the General Ledger Approach

Recall in Chapter 3 the discussion regarding the limitations of traditional file processing approaches and the emerging focus on event-driven systems. The discussion focused on the limitations that come from having disjointed files for financial and nonfinancial information. The traditional general ledger approach has been a primary suspect as the source of many of these problems.

While other business event information may be captured in separate systems operated by other departments, such as marketing, any such nonfinancial information becomes separated from the financial information. Once the end-of-period closings are completed for the general ledger, the detailed business event-level data are eventually purged from the general ledger system—the interest being only in maintaining correct current balances for each account. It is at this point that, even if there were a link between financial and nonfinancial information in the business event data, the relationships are lost as soon as the periodic closings are completed and the financial data discarded. From that point on, information for decision making is limited to only that information captured in the account files. If you decide you want more detailed information than these accounts provide, historical business events usually cannot be reconstructed.

You will recall that in Chapter 3 we noted the evolution toward database-driven systems—and in particular, event-driven systems. This discussion explains why the rapidly expanding information needs of management created conflict with traditional general ledger structures. The move toward enterprise systems accelerated because of the frustration of managers who needed access to integrated financial and nonfinancial data.

Technology-Enabled Initiatives in Business Reporting

We begin with three topics related to enterprise systems. The first is simply a brief look at the financial reporting module in an enterprise system, while the second and third topics relate to contemporary extensions of enterprise systems to accommodate recent business reporting interests—i.e., balanced scorecard and business intelligence (as discussed in Chapter 5). The fourth topic is also related in some ways to enterprise systems (i.e., major vendors are currently working to build in the functionality), but it is more specifically focused on business reporting via the Internet and the standardization of this reporting for all entities.

Enterprise System Financial Module Capability

Although we discussed earlier in this chapter the integration of business reporting in enterprise systems (as well as integration of information from other business process activities), conceptually this integration may still be a bit foggy. For purposes of clarification, let’s take a closer look at integration within several modules.
Figure 14.7 shows the entry level screen for JDEdwards OneWorld enterprise software. We have exploded the menu options for the financial section to show you the wide range of options that are available in the software just for the financial module. Note that the software interface looks like a very typical Microsoft Windows-based application. Indeed, the "JDEdwards OneWorld Explorer" interface screen works very similarly to Microsoft’s “Windows Explorer.” Pointing and clicking with the mouse on higher-level options drills down to lower level menu options.

Note on the left hand side that the “Financials” option is highlighted. Directly above the “Financials” option, you see another option at the same level. The “Foundation Systems” option allows the user to set security options, change the way in which information flows through the system, and many other such systems' management- and maintenance-related activities. Other options that fall off the bottom of the screen include “Human Resources and Payroll” (which relates to business process activities discussed in Chapter 13), “Distribution/Logistics” (activities in Chapters 10, 11, and 13), and “Manufacturing” (activities in Chapter 13). These options are shown in more detail in Figures 14.8, 14.9, and 14.10.

With the “Financials” option highlighted on the left side of the screen, note on the right side of the screen that all of the first-level menu options for the financials...
In your own words, how do enterprise system financial modules facilitate the business reporting process?

These options include information processing capabilities related to all of the business processes we have discussed in this text. Note also that these options clearly go beyond just general ledger activities to include a variety of other information processing and business reporting issues such as cost accounting, billing options, and expense reimbursements. If you think back to the situation at FW Murphy in the opening vignette, it becomes apparent how this functionality would help FW Murphy better monitor their cost processes.

Back on the left side of the screen, see that all of the menu options for accounts receivable have been exploded out and are visible. The main processing activities take place in the sub-menus of daily and periodic processing. However, there are also options for configuring the processing of accounts receivable. You may see that the last few menu options in the accounts receivable area include set-ups for European community countries for value-added tax issues (“EC VAT Processing”) and Italian tax-related issues (“Italian IVA Processing”). These options facilitate the operations of multinational corporations. Most large multinational corporations have instituted enterprise systems, in part because of the ease by which cross-border and multi-currency issues can be facilitated within the systems. While we have not exploded the further menus for the other areas beyond accounts receivable, you can see on the left side of Figure 14.7 that the sub-menu options for “Daily Processing,” “Periodic Processing,” “Advanced and Technical Operations,” and “System Set-up,” are consistent for all of the areas (i.e., Accounts Payable, General Accounting, etc.)

Figures 14.8, 14.9, and 14.10 show the equivalent detailed reporting options provided to support several other business processes. Take some time to check over the options provided, to see how completely the functionality covers the types of operational business event processing and reporting within each area. Figure 14.8 (page 508) depicts the menu for the distribution and logistics functions offered by JD Edwards. Traditional inventory and procurement processes are augmented by e-commerce capabilities. Business event transactions as well as reporting are supported by the menu items on this initial screen. In Figure 14.9 (page 509), payroll and human resource management activities are listed along with the many reports needed by the government, unions, and internal management. Manufacturing activities are provided by the menu choices in Figure 14.10 (page 510), in which manufacturing processes are tracked, forecasts are generated, and planning is supported.

This multitude of options should give you some feel for the complexity and magnitude of enterprise systems. For security reasons, as well as ease of use, you limit access to menu items to only those needed by a given user to perform his or her responsibilities. You may want to allow a given user to have different privilege levels for different information—i.e., view access, write access, entry access, and/or change access. All of these choices must be carefully specified in the user’s profile to set up the system limitations for that specific user. Normally, this profile is set up with the user’s ID automatically initiated at log-on.

**Balanced Scorecard**

The balanced scorecard is a methodology for assessing an organization’s business performance via four components:

(1) **Financial.** The financial aspect focuses on more traditional measures of business performance related to how shareholders view the organization’s performance.
Internal business processes. The internal business processes relate to the organization’s ability to identify its core competencies and to assess how well it performs in these identified areas of competency.

Customers. The customer component focuses on identifying how customers perceive an organization.

Innovation and improvement activities. Innovation and improvement activities are monitored to assess how the organization is continuing to improve and how it is creating additional value.

The concept of balanced scorecard has been around for several years, but it has been only within the last few years that enterprise system vendors have focused on integrating this functionality and in turn making assessment a reasonable possibility. Fundamental to incorporating effective balanced scorecard assessment is the aggregation of varied data in a data warehouse (discussed in Chapter 3) that can then be analyzed using powerful analytical tools—i.e., business intelligence tools as discussed in the next section. Because an enterprise system provides the ability to
aggregate the necessary data in its underlying database, linking this data with other data to create the data warehouse is a logical and efficient way to provide balanced scorecard capabilities. In the past two years, all of the major enterprise system vendors have announced new product integration to provide the balanced scorecard functionality. Consider how data captured in the various business processes could be used to support assessment in each of the four areas underlying the balanced scorecard.

Business Intelligence

Fundamental to providing balanced scorecard functionality is the development of business intelligence functionality within enterprise systems. Business intelligence, as presented in Chapter 5, is the integration of statistical and analytical tools with decision support technologies to facilitate complex analyses of data warehouses by managers and decision makers. In short, the ideal business intelligence solution within an enterprise system should provide the right tools, the right interface, and
access to the right kind of data for effective business decision making.\(^1\) Some examples of successful applications of business intelligence are found in Technology Application 14.2.

In addition to the prespecified reports outlined by Figures 14.8 through 14.10, JD Edwards supports a generic business intelligence tool to permit the user easy access to ad hoc reporting and analysis. Figure 14.11 (page 512) shows how this functionality is divided into several sections. The report writer permits the user to produce ad hoc reports. Predefined user-specified reports are available through the Executive Information System section, and the OnLine Analytical Applications area supports more complex analysis. Finally, the user can analyze trend data through the historical database comprising the Data Warehouse.

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Business Intelligence Systems for Aiding the Strategic Planner

Many of the reporting options discussed so far center around ensuring the effective and efficient operations of a company’s business processes. The information system supporting the BR process can play an important role in the development of a company’s strategic plan in addition to monitoring ongoing operations to measure attainment of the plan. This section discusses the upfront and ongoing assistance that the strategic planner obtains from the information system.

During the strategic planning process, data from the entity-wide database or data warehouse can be compared to data about the competition to determine an organization’s relative strengths and weaknesses. For example, these data might include sales trends, gross margin on sales, age of capital assets, skills of existing personnel, and so on. These data can be presented in reports from the existing IS applications, such as sales/marketing, human resources management, fixed assets, finance and inventory, or via the OLAP models incorporated in the BI system. Recall from Chapter 5 that data from the environment can also be incorporated into the BI system output. Strategic planners can combine environmental data with those obtained internally to assess the organization’s competitive position.

Review Question
How is business intelligence used to support strategic planning?

In addition to assisting in the planning phase, the IS can be used to follow up by reporting certain key performance indicators that illustrate the status of processes and critical success factors. For example, the number of customers along with the level of sales and number of customer complaints for each should indicate the status of an organization’s sales network. Other key performance indicators might be the number of new products, the cost to manufacture the products, and their selling price. If the data warehouse is developed in light of the strategic plan, many of the data for the key performance indicators should be readily available. Clearly, business intelligence tools are invaluable for companies like FW Murphy (discussed at the beginning of the chapter) as they work to manage relationships with key customers like Caterpillar.
Review Question
Why is XBRL so important to efficient Web-based business reporting?

Perhaps the most exciting technology-driven advancement to hit business reporting in its history is that of XBRL. **eXtensible Business Reporting Language (XBRL)** is an XML-based language consisting of a set of tags that are used for business reporting to provide a single, underlying format that can be read by XML-equipped software packages and can be searched by XML-enabled Web browsers. Recall from Chapter 4 that XML (eXtensible Markup Language) is a generic Web-based programming standard that interprets a set of user-defined tags to determine the context of information on a Web site and to provide a key to the tags that can be applied by Web users to search a given site easily. XBRL is a specialized business-reporting taxonomy that is based on XML, where the tags are predefined for users so each have a common understanding of the tag’s meaning. In this case, XBRL provides uniformity for users of financial statements and other business reporting information. Such uniformity simplifies delivery of information via the Web, enhances the searchability of information, and enables easy uploading, downloading, and comparison of the information within other software packages for mandated reporting, analysis, and so forth.²

**XBRL** has been developed by an international consortium of accounting bodies, software vendors, providers of information, and information-intensive industry representatives in a united effort towards uniformity of business reporting information. Participants in the consortium include many of the international professional accounting bodies, the Big Four professional service firms, Microsoft, IBM, Oracle, SAP, Fidelity, Moody’s, and many business intelligence software vendors.

The intent is that with a unified format, enterprise system vendors (and other BR software vendors) can add functionality that will automatically generate **XBRL**-based reports as well as any other business report. This feature eases the cost and complexity of delivering business information via the Web. Thus, accessibility of information increases for external users of business reports, the information is easier to decipher and analyze, and the information can easily be downloaded for use by other software packages such as spreadsheets, database packages, or data analysis packages. In Technology Excerpt 14.1 we present an article that describes how you can generate your own **XBRL** statements now if you wish. This article should give you some sense of how XBRL works and how it can facilitate the reporting, reading, and analysis of business information.

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² We should note that there are not, as yet, universal data definitions, making it difficult to compare XBRL-tagged data between organizations.
Run XBRL Right Now

If your accounting software doesn’t include XBRL—and few, if any, products have it now—it doesn’t mean you can’t start applying the feature immediately.

I’ve created a method that gives you the opportunity to try XBRL now. Once you understand the process, you can use it with your own accounting software until XBRL is added eventually to your system.

Many software vendors are working to incorporate XBRL. For example, SAP will include ready-to-use XBRL templates for reporting, financial consolidation, modeling, simulation and planning, and budgeting. FRx Software, financial accounting/reporting software that works with some 50 accounting packages, will incorporate the function later this year. And 11 major accounting software vendors are members of the XBRL working group—a further indication of the industry’s interest in XBRL.

Do It Now

To see how XBRL works, go to www.xbrl.org/demos/demos.htm. You can download the demo or run it off the Web site. You will need Microsoft Access 2000. The demo shows you how to publish your general ledger trial balance in XBRL. Here’s a summary of the steps:

**Step 1.** Get a copy of your chart of accounts. Note that although this demo (see Exhibit 1, below) was prepared at the account level, you can present information in more detail, such as the type of transaction (invoice, payment, credit, debit entries to accounts receivable), or at a more summarized level, such as a financial statement line item.

Although it’s possible to enter this chart of accounts manually, it’s better to copy one of your own and use it in the demo.

**Step 2.** Get a copy of the appropriate XBRL taxonomy (template), which in this case is on the XBRL Web site. Note that this demo already includes the commercial and industrial taxonomy within the Access database table.

**Step 3.** Create a database table and map (assign or cross-reference) each general ledger account to the appropriate XBRL taxonomy element. If no available XBRL tag...
(technically called an element) meets your need, simply type in your own. It’s the ability to customize that makes the program extensible—capable of being extended to your individual needs. Again, the demo Access application provides this functionality, as you see in Exhibit 2 and Exhibit 3.

This demo Access application provides the functionality to select one of your accounts and then assign an XBRL element to it.

This demo chart of accounts, which is in the Access database, contains XBRL elements assigned to each account line.
Step 4. Summarize your trial balance by the general ledger account for the period you wish. This provides you with an account number and a total by account for a given period, as shown in Exhibit 4.

This is the trial balance summarized by account for the period you select.

Step 5. Apply the map to the trial balance. What the map says, in effect, is: “When I use this general ledger account, replace it with this XBRL element.” Note Exhibit 2, which shows the map, and Exhibit 5, which shows the result of the mapping. Also note that the general ledger account is assigned to the “id” attribute (as shown in Exhibit 2). This is done only in the demo to help you see what is going on; it isn’t required.

This is the segment of the general ledger chart of accounts and the XBRL element plus all the other information needed to create a valid XBRL instance document.
Exhibit 6 shows the XML file called an XBRL instance document.

And finally, in less than 25 lines of code, the database query generates a file that is XML-compliant with the XBRL specification. This XML file is called an XBRL instance document.

That’s all there is to it. Once the XBRL function is added to your software, these steps will occur automatically.

But the fact that your accounting software isn’t XBRL-compliant yet should not dissuade you from manually doing the job in the interim. It’s going to take a little knowledge about databases or, if you’re more comfortable in Excel, it can be done with that application, too.

Although this demonstration shows how to transform general ledger trial balance information into XBRL, the concept applies to literally any data—trial balance, other accounting system data, and even nonaccounting system data.

Some things to note:

• If the available taxonomies don’t work for you, you can easily modify a taxonomy or create your own.

• The data in the XBRL document you created are accessible from any of the most popular office productivity tools: Excel, Access, Word, or PowerPoint. XBRL still will work accurately if someone adds additional information to the document without your knowledge. It’s as if someone added a row of data to an Excel spreadsheet: It does not affect your spreadsheet.

Conclusions

The good news is that the integration that makes enterprise systems so vital for organizations has the embedded side benefit of supporting automatic updates through the feeder processes that combine to make the electronic inputs work. There is very little need for human-generated inputs to the general ledger or other BR components.

But what about system outputs? We’ve come a long way from the days where mandated financial reports were the only “business reporting” application emitting from the IS function. Now, decision makers have access to a wide range of information generated within the organization as well as external data found over the Internet. Will we ever see the day when business reporting will do away with paper reports and use only “electronic reports?” The answer is an emphatic “Yes!” The advent of XBRL is one clear indicator that major changes are on the way. Some companies are already there; recall the paperless company described in Technology Application 5.6 (page 163).

REVIEW QUESTIONS

RQ14-1 What, in your own words, is business reporting?
RQ14-2 What are the primary functions the business reporting process performs?
RQ14-3 What are the fundamental responsibilities of the budgeting department?
RQ14-4 In your own words, what is a performance report?
RQ14-5 What major logical processes does the business reporting process perform?
RQ14-6 In your own words, how do enterprise system financial modules facilitate the business reporting process?
RQ14-7 How is business intelligence used to support strategic planning?
RQ14-8 Why is XBRL so important to efficient Web-based business reporting?

DISCUSSION QUESTIONS

DQ14-1 Do companies still need a general ledger if they have an enterprise system? Why or why not?
DQ14-2 “Published financial reports are useless as an investing tool because they are so out of date.” Do you agree? Why or why not?
DQ14-3  “I don’t need to study accounting because computers do all the debits and credits automatically these days.” Do you agree? Why or why not?

DQ14-4  With the advent of the Internet, business intelligence, data warehouses, and other technologies, the strategic planner has access to far more data than any one person can effectively analyze. What are the costs and benefits of all this access?

DQ14-5  How do you measure your success in college (i.e., your university performance measurement factors)? Design your personal balanced scorecard that covers academic, personal, and professional progress.

DQ14-6  In your own words, how do E-S distribution/logistics modules facilitate the business reporting process?

DQ14-7  In your own words, how do business intelligence systems facilitate the business reporting process?

DQ14-8  In your own words, how do enterprise systems facilitate balance scorecard and business intelligence?

P14-1  Search for “Balanced Scorecard” software on the Web using your favorite search engine (e.g., Altavista, Yahoo!, Lycos, google). Try a demo if you can find one. What are the four dimensions of the balanced scorecard and how might it help in a strategic planning process? How would it help in monitoring day-to-day operations?

P14-2  Refer to the level 0 data flow diagram shown in Figure 14.6 (page 504). Draw a lower-level DFD for process 4.0 shown in Figure 14.6. Make sure that each lower-level DFD is balanced with its parent.

P14-3  Visit the XBRL Web site at www.xbrl.org. Discuss how XBRL reports could be used to (a) communicate with the investment community, (b) apply for a loan, (c) file with the SEC or other governmental reporting agency, (d) report to a corporate parent, and (e) communicate with a business partner.

P14-4  Search for business intelligence software on the Web using your favorite search engine (e.g., Altavista, Yahoo!, Lycos, google). Try a demo if you can find one. Who are the intended users of this software? How could it be useful for running a college or university?

P14-5  Take a set of financial statement information that you have available or can find in the library and implement the process discussed in Technology Excerpt 14.1 (page 514).