Concepts in Enterprise Resource Planning

Chapter 5
Accounting in ERP Systems
Chapter Objectives

• Describe the differences between financial and managerial accounting.

• Identify and describe problems associated with accounting and financial reporting in un-integrated information systems.

• Describe how ERP systems can help solve accounting and financial reporting problems in an un-integrated system.

• Explain accounting and management-reporting benefits that accrue from having an ERP system.
Introduction

• Accounting is a functional area that is tightly integrated with other functional areas like:
  • Marketing and Sales
  • Supply Chain Management
• Accounting activities are necessary for decision making
Types of Accounting

• Firms require three types of accounting activities
  • Financial Accounting
    • Documents all transactions that have an impact on the firm
    • Uses this transaction data to make external reports for various agencies
  • Managerial Accounting
    • Determine costs and profitability of a company’s activities
    • Managerial Information is used for planning and to control a company’s day-to-day activities
  • Tax Accounting is a specialized field that used Financial Accounting information
Financial Accounting

• Common Financial Accounting statements include:
  • Balance Sheet
    • Shows account balances at a particular point in time
    • Gives a good picture of the overall financial health of a company
  • Income Statement
    • Shows sales, cost of sales and overall profit for a period of time (quarter, year)
## Figure 5.1 Fitter Snacker sample balance sheet

<table>
<thead>
<tr>
<th></th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>$5,003</td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>$4,715</td>
</tr>
<tr>
<td>Inventories</td>
<td>$9,025</td>
</tr>
<tr>
<td>Plant and equipment</td>
<td>$6,231</td>
</tr>
<tr>
<td>Land</td>
<td>$1,142</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td><strong>$26,116</strong></td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
<td></td>
</tr>
<tr>
<td>Accounts payable</td>
<td>$6,400</td>
</tr>
<tr>
<td>Notes payable</td>
<td>$10,000</td>
</tr>
<tr>
<td><strong>Total liabilities</strong></td>
<td><strong>$16,400</strong></td>
</tr>
<tr>
<td><strong>Stockholders' Equity</strong></td>
<td></td>
</tr>
<tr>
<td>Contributed capital</td>
<td>$2,000</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>$7,716</td>
</tr>
<tr>
<td><strong>Total stockholders' equity</strong></td>
<td><strong>$9,716</strong></td>
</tr>
<tr>
<td><strong>Total liabilities and stockholders' equity</strong></td>
<td><strong>$26,116</strong></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>Revenues</strong></td>
<td></td>
</tr>
<tr>
<td>Sales revenue</td>
<td>$36,002</td>
</tr>
<tr>
<td>Total revenues</td>
<td>$36,002</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
</tr>
<tr>
<td>Cost of goods sold expense</td>
<td>$25,691</td>
</tr>
<tr>
<td>Selling, general, and administrative expense</td>
<td>$4,251</td>
</tr>
<tr>
<td>Research and development expense</td>
<td>$962</td>
</tr>
<tr>
<td>Interest expense</td>
<td>$521</td>
</tr>
<tr>
<td>Total expenses</td>
<td>$31,425</td>
</tr>
<tr>
<td>Pretax income</td>
<td>$4,577</td>
</tr>
<tr>
<td>Income tax expense</td>
<td>$1,144</td>
</tr>
<tr>
<td>Net income</td>
<td>$3,433</td>
</tr>
</tbody>
</table>

**Figure 5.2** Fitter Snacker sample income statement
ERP for Accounting Information

• Early information systems gathered data primarily for their own functional area (sales, production, payroll, etc.)
• Data sharing with accounting did not occur in “real time”
• Accountants and functional area clerks frequently had to do significant research to gather the data needed for reports
• ERP systems, with centralized databases, avoid these problems
  • Materials Management module sees a goods receipt as an increase in inventory
  • Accounting module sees goods receipt as an increase in the value of inventory
    • A single data entry transaction provides the data for both
General Ledger

• A company’s accounts are kept in the general ledger
• In SAP R/3, input to the general ledger occurs simultaneously with the business transaction in the functional module
  • Sales and Distribution (SD)
    • Sales to customers create accounts receivable entries (indicate that a customer owes money for the good received)
  • Materials Management (MM)
    • Purchase orders create accounts payable entries (indicate that the company has an obligation to pay for goods that will be received)
  • Human Resources (HR)
    • Payroll processing creates expense entries
General Ledger

• Financial Accounting (FI)
  • Manages the accounts receivable and accounts payable items created in SD and MM
  • Module where general ledger accounts are closed at the end of a fiscal period (quarter or year)

• Controlling (CO)
  • Tracks the costs associated with producing products
  • To make a profit, it is critical for the company to have an accurate picture of its product costs to make correct decision about product pricing and promotions as well as capital investments

• Asset Management (AM)
  • Manage fixed-asset purchases (plant, machinery, etc.) and associated depreciation
Operational Decision Making Problem: Credit Management

- A company with an un-integrated information system can have accounting data that is out-of-date or inaccurate
- Out-of-date or inaccurate data can lead to bad operational decisions
- Fitter Snacker has this problem with credit management
- Companies routinely sell to customers on credit
- Making the correct credit management decision requires accurate and timely sales and payment data
Operational Decision Making Problem: Credit Management

• At Fitter Snacker:
  • The sales clerk uses a weekly printout of all customer balances and credit limit to see if credit should be granted for a new order
  • Sales data are transmitted to accounting 3 times per week
    • Both sales and accounting work off data that is not real-time and may be more than a week old
      • Customer orders that would bring them over the credit limit may be accepted
      • Customers may be denied credit because recent payments are not available to the sales clerk
Credit Management in SAP R/3

- SAP R/3 allows for a number of configuration options to determine how the system responds to an order that would cause a customer to exceed its credit limit
  - The system may block the sales order
  - The system may prevent the sales order from being saved
  - The system may issue warning messages to the sales order clerk
- Credit is a sensitive issue, so the system response must be configured to match a company’s procedures
  - Typically, sales orders are blocked, with no warning given to the sales order clerk
    - A credit specialist would regularly review blocked orders and take corrective action
Dynamic credit check

Only orders for the next two months are considered

Reaction C: warning message is issued when order is saved

Figure 5.3 Credit management configuration
Figure 5.4 Credit management for Health Express
Options to release, reject or forward blocked sales orders

**Figure 5.5** Blocked sales order

- Figure 5.5 shows the transaction where blocked sales orders are listed
- Most companies have an employee who is responsible for reviewing blocked sales orders (perhaps every two hours) and taking corrective action.
Product Profitability Analysis

- Accounting data is used to determine the profitability of a company and its products
  - Inaccurate and/or incomplete data can lead to a flawed analysis
- The three main causes of data problems are:
  - Inconsistent record keeping
  - Inaccurate inventory costing
  - Problems consolidating data from subsidiaries
Inconsistent Record Keeping

• At Fitter Snacker:
  • Each of FS’s marketing divisions maintains its own records and keeps track of sales data differently.
    • Analyzing sales data by region (northeast, southeast, and so on) or division usually must be done by hand
  • Production data is maintained with paper records
    • Data must be typed into a spreadsheet from paper records before it can be analyzed
      • Manual entry leads to errors
  • With an ERP system, however, this sort of effort would be minimized or eliminated because both divisions would have recorded and stored their data in the same way.
  • If the company’s process was changed to fit the best practices of the software when the system was installed, the managers of each division would have agreed on the way data were stored and collected as part of the system’s configuration.
Inaccurate Inventory-Costing Systems

• Correctly calculating inventory costs is an important and challenging task in any manufacturing company.
• A manufactured item’s cost has three elements:
  • Cost of raw materials used in the item
  • Labor used specifically to produce the product (direct labor)
  • Overhead: all other costs
    • Factory utilities
    • General factory labor (e.g. security)
    • Manager’s salaries
    • Storage
    • Insurance
Direct and Indirect Costs

- Materials and labor are called direct costs
  - Direct costs are relatively easy to tie to the production of specific products
- Overhead is an indirect cost
  - Indirect costs are difficulty to associate with a specific product
    - e.g. the relationship between the cost of heating and lighting and a specific batch of NRG-A bars
- To determine the cost of a manufactured product, indirect costs must be allocated to products
Direct and Indirect Costs

- Allocating indirect costs
  - One method is to use total machine hours
    - Total overhead cost divided by the total machine production time (hours) available for a period to get an overhead rate per machine hour
  - Example:
    - Overhead costs per month: $152,500
    - Production line capacity: 50 cases/hour
    - 160 hours/month
    
    \[
    \frac{152,000 \text{ / mo.}}{160 \text{ hour/mo.}} = \frac{950 \text{ / hour}}{50 \text{ case/hour}} = \frac{19 \text{ / case}}{}
    \]
Direct and Indirect Costs

- Allocating indirect costs
  - Another method is to use direct labor hours
    - The assumption with this method is that overhead costs are incurred so workers can do their jobs

- For Fitter Snacker, the snack bar bake line is the fundamental production process as well as capacity constraint, so allocating indirect costs using machine hours (snack bar bake line hours) would make sense
Standard Costs

- Costs are typically recorded using standard costs, which are based on historical cost data.

- At the end of an accounting period, adjustments to accounts must be made as actual costs will differ from estimates made using standard costs.
  - Balance sheet: cost of inventory held will need to be adjusted.
  - Income statement: cost of goods sold will have to be adjusted.
Standard Costs

• For example, FS might determine that each NRG-A bar should cost $0.75 to make that is, the cost of raw materials, labor, and overhead should equal $0.75
  • During a month FS might make 1 million NRG-A bars
  • Using the standard cost, it would increase its balance sheet inventory by $750,000 (1,000,000*0.75)
  • Also, assume that the company sells 800,000 bars in the month
  • In the income statement, the cost of the sales would be shown as $600,000 (800,000*0.75)
  • Also, the inventory account would be reduced by $600,000, because the company no longer has the units to sell.
Activity-Based Costing (ABC)

- In ABC, records are kept on overhead costs and the activities associated with overhead cost generation.
- Profitability of particular products is more accurately determined.

- ABC is often used when:
  - Competition is stiff
  - Overhead costs are high
  - Products are diverse
- Not all overhead costs can be linked to activities.
Activity-Based Costing (ABC)

- ABC requires more bookkeeping than traditional cost-accounting approaches
  - because a company must do ABC in addition to traditional costing, and
  - because ABC requires keeping track of instances of activities, not just the costs.

- ABC is often used for strategic purposes in parallel with standard cost accounting
Companies with Subsidiaries

- Companies with subsidiaries/branches must prepare financial statements for each subsidiary, plus be able to provide a consolidated statement for the entire company (big picture of overall operations and profitability)
- Different currencies and transactions between subsidiary companies can make the consolidation task challenging
- Currency translation is challenging because exchange rates fluctuate daily
- Intercompany transactions must be handled properly
  - Sales from one subsidiary to another within a company do not result in a profit or loss, because no money has entered or left the consolidated company
Example: Microsoft

• Microsoft must consolidate financial information from 130 subsidiaries
• Prior to installing SAP R/3, each subsidiary did accounting in its own system, then transmitted the files to another system, where manipulation of the data was required
  • Subsidiaries used different systems, with different field sizes, types of characters, account structures, etc.
  • Consolidation took over a week
• With SAP R/3, Microsoft can look directly at financial activity at any subsidiary around the world
Management Reporting with ERP Systems

- Reporting accounting information is often challenging
- Without an ERP system, obtaining the information needed for a report is frequently a monumental task
- With ERP, the information is in a single system, however:
  - The system configuration must be set to gather the correct “raw data”
  - The appropriate reports are needed, which may require custom coding (e.g. ABAP)
Document Flow for Customer Service

• In SAP R/3, Document Flow is a tool that finds, organizes and displays a summary of all documents related to a sales order.

• Sales orders can be very complicated, with:
  • multiple products
  • multiple shipments
  • multiple invoices
  • multiple payments

• Being able to find all related documents easily is important in providing efficient customer service.

• Because ERP systems use a database, the database can be queried to provide a wide range of reports and analyses.
The term “drill down” refers to the capability of viewing summary information and then being able to look at details behind the summary. For example, the user can double-click the order number (142) and see the details of the order.

**Figure 5.6** Document flow of a transaction in SAP R/3
Document Flow for Customer Service

- The linked events shown in Figure 5.6 progress as follows:
  1. When the order was placed, sales order document 142 was created.
  2. The system recorded the Delivery, which is the transfer of the order’s requirements to the Materials Management module. It is denoted by document 8000001.
  3. The picking request, which is the document that tells warehouse personnel which items make up the order, was created on Dec. 28, 2004, and given document number 20041228.
  4. The goods were removed from inventory or the same day, an event recorded by document number 4900000101.
  5. After the goods were issued, an invoice was generated so that the customer would be billed. The invoice was given document number 90000001.
  6. At the same time, the accounting entries for the sale were generated. The posting document number is 41000221.
Archiving

- In SAP R/3, there are limited situations where data can just be deleted.
- If data could just be deleted, an unscrupulous employee could:
  - Create a fictitious vendor
  - Post an bogus invoice from the vendor
  - Make payment to a Swiss bank account
  - Delete all records of the transactions so the fraud won’t be detected
- In SAP R/3, most data must be archived (recorded to media for permanent storage) before it can be removed from the system, so auditors can reconstruct the company’s financial position at any point in time.
Data on a company’s materials cannot be deleted directly, but must be archived for deletion.

**Figure 5.7** Transaction options for material master data
SAP R/3 maintains detailed records on all changes made to material master data.

Each time that material master is changed, the Change Record tracks the change that was made, who made the change, and when the change was made.

**Figure 5.8** Change record for material master
User Authorizations

• A fundamental tool to avoid fraud is separation of duties and user authorizations
  • To complete critical business processes, more than one employee must participate so that a single employee cannot commit a fraud
  • User authorizations ensure that employees can only perform those transactions required for their job
  • SAP R/3’s Profile Generator provides a simple method for creating user authorizations based on the functions (transactions) a user should be allowed to perform
  • Pre-defined roles make developing authorizations easier
Figure 5.9 Role for material management master data
Tolerance Groups

- Another way to ensure that employees do not exceed their authority (and to minimize the risk from fraud and abuse) is to set limits on the size of a transaction that an employee can process.
- Tolerance groups are predefined limits on an employee’s ability to post a transaction.
- Tolerance limits can be set on items like:
  - Line items in a document
  - Total document amount
  - Payment difference
  - Discounts
- For example, suppose a customer has been invoiced for $1,005 but accidentally sends in a check for $1,000 to pay the invoice.
  - The cost of requesting and processing a second payment for the $5.00 would cost both parties more than $5.00
  - In this case it is better to accept the $1,000 check as payment in full and account for the difference as a variance. (see Figure 5.10)
No group specified, so this is the default tolerance

The default only allows posting of documents for $1,000 or less

Payments can differ by $10 or 1%

**Figure 5.10** Default tolerance group
Financial Transparency

• An advantage of an ERP system is the ability to “drill down” from a report to the source documents (transactions) that created it
• “Drill down” capability makes it easier for auditors to verify the integrity of reports and financial statements
• By double-clicking on an item in a report in SAP R/3, the user will be taken to the document(s) that created the item
Double-clicking on the 8,810.00 debit will provide details on the transactions that make up the item.

Figure 5.11 G/L (general ledger) account balance for raw material consumption
Figure 5.12 Documents that make up G/L Account Balance for Raw Material Consumption

Selecting the 10.00 item and clicking on the details icon will provide more information on the item.
Figure 5.13 Details on $10.00 line item in G/L account for raw material consumption
Financial Transparency

• With a few mouse clicks, an auditor can move from a summary statement of a general ledger account to find out all of the details.

• With a properly configured and managed ERP system, there are direct links between the company’s financial statements and the individual transactions that make up the statement.

• So the fraud and abuse can be detected more easily.
Summary

- Companies need accounting systems to record transactions and generate financial statements. The accounting system should let the user summarize data in meaningful ways. The data can then be used to assist managers in their day-to-day work and in long-range planning.

- With un-integrated information systems, accounting data might not be current, and this can cause problems when trying to make operational decisions, such as granting credit. Data can also be inaccurate because of weaknesses in un-integrated systems, and this problem can have an effect on decision-making and therefore on profitability.
Summary

• Closing the books at the end of an accounting period can be difficult with an un-integrated IS, but it is relatively easy with an integrated IS. Closing the books means zeroing out the temporary accounts.

• Using an integrated IS and a common database to record accounting data has important inventory cost-accounting benefits. More precise record keeping is possible, and this can lead to more accurate product cost calculations. These, in turn, can help managers decide which products are profitable and which are not.

• The use of an integrated system and a common database to record accounting data has important management-reporting benefits. The user has built-in drill-down and query tools available as a result.