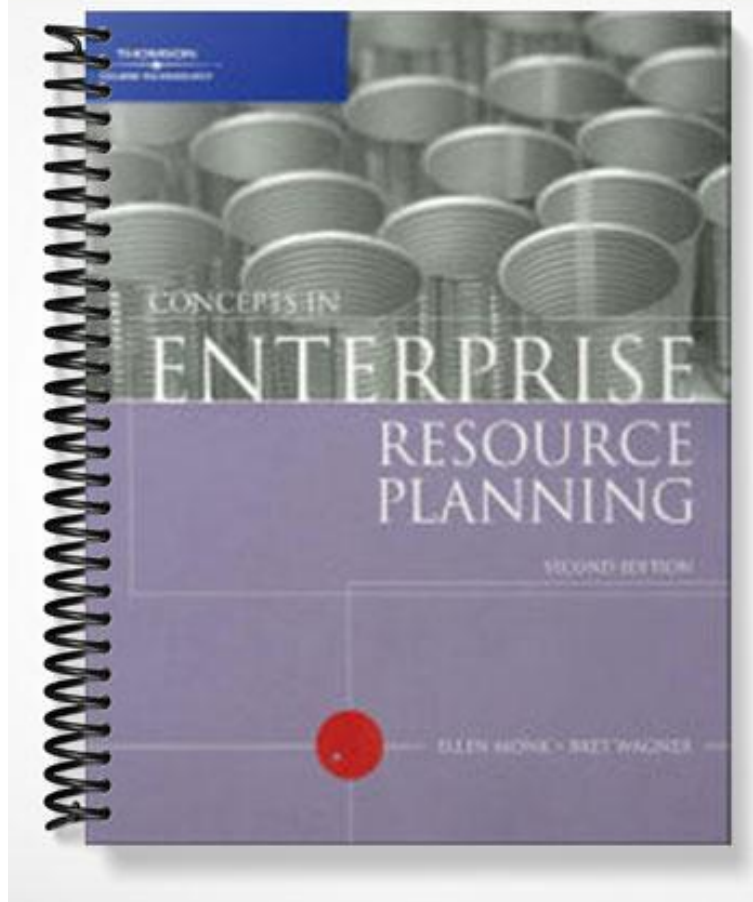


SOLUTIONS MANUAL



Chapter 2:

The Development of Enterprise Resource Planning Systems

Answers to End-of-Chapter Exercises

QUESTION 1

Sample answer

Moore's Law was coined by Intel employee, Gordon Moore, in 1965. He predicted that the number of transistors built into a computer chip would double every 18 months. Overall, this is significant because his law is still holding true today. Specifically, it's significant for the development of ERP systems because they need great computing power. Without the rapid growth of computing power, as predicted by Moore's Law, we couldn't run the large ERP systems.

Preparation and Grading guidelines

Students should be able to construct a coherent answer from the material in the section "The Evolution of Information Systems," specifically, "Computer Hardware and Software Development." It should not be necessary to talk about SAP R/3 specifically -- though if students do, no credit should be deducted as long as the discussion is accurate. The student's discussion should be graded for accuracy and clarity. The instructor should consider setting a word limit (say, 200) in order to avoid long-winded repetitions of what is in the book.

A clear understanding of why Moore's Law is important to ERP development is critical, and the technical advances that made such systems possible.

QUESTION 2Sample answerMain characteristics of an ERP system:

1. Single database
2. Consistent information
3. Management control
4. Open architecture
5. Global integration
6. Easier maintenance due to one system, not many legacy systems

Benefits of purchasing an ERP system:

Here is a sample answer to this part of the question (which might be better phrased: “Benefits of having an ERP system”).

1. Streamlined data handling. Results in higher accuracy, faster data handling internally, fewer data entry errors.
2. Better data sharing (via common database) leads to more efficient operations and resulting cost savings.
3. Having integrated information system promotes cooperation between functional areas, for example, between Marketing and Manufacturing.
4. Improved management reporting leads to better top management operational control.
5. Leads employees to thinking about corporate goals, not merely functional area goals.
6. One information system for the entire company – helps overcome effects of geographical dispersion, in companies with far-flung operations.
7. ERP system replaces old legacy systems, which now no longer must be maintained. Cost savings result. Furthermore, less home-grown software need be written in future.
8. ERP system serves as a platform for software applications that are difficult to implement without an integrated information system: CRM, SCM, Data Mining, E-commerce.

Disadvantages of implementing an ERP system:

Here is a sample answer to this part of the question:

1. High financial cost of ERP.

2. Potentially very long implementation times.
3. Need to hire consultants to help implement. Loss of control, expensive.
4. ERP systems can be somewhat configured to fit the company's needs, but the company must adopt at least some practices demanded by the ERP package.
5. A successful implementation requires great planning and management attention.
6. A successful implementation requires retraining for most if not all employees. This will be time-consuming and expensive.
7. An ERP system will not cure fundamental problems with the company's operations – it's not a panacea for fundamental problems. Managements should not go into an ERP project thinking that having the system will cure fundamental business problems.
8. Employees must be aware that errors made in one module will quickly ripple through the integrated system, and affect use of the other modules. Again, this means training and experience is required to properly adopt the system.

Preparation and Grading guidelines

There are many pros and cons discussed throughout the chapter. The answer above is a compilation of appropriate chapter passages. Students should be able to see most if not of these points.

The instructor will have to decide how many of these points will suffice for full credit. At a minimum the student's answer should show an understanding of the desirability of integrated systems.

QUESTION 3Sample answer

It's possible to have a company-wide integrated information system, without purchasing an ERP package. Some companies' legacy systems are properly integrated and well maintained, and essentially provide the functionality of a commercially available ERP. So, your first question to the owner should be designed to find out if an integrated information system exists, and if the owner is happy with the system. If so, then an ERP package need not be purchased. However, if information systems are fragmented and the owner is not happy with that, then an ERP system should be considered.

There are various ways to obtain this information.

One way would be to ask if the owner gets the right kind of information needed in a timely way to run the company properly.

Another way might be to ask the owner if the company gets as much from the company's IT investment as it should – if not, what are the shortcomings?

A more academic approach would be to ask the owner to talk about problems encountered with various classic management functions: Control, Planning, Directing, Organizing, Staffing. If there have been problems, were any of them caused by faulty information systems?

Preparation and Grading guidelines

The student should not merely list the benefits of an ERP system here. A list of the benefits does not quite answer the question. The student should show an understanding of what ERP can do for a manager – that is why this question is posed from the point of view of the owner, who is presumably involved in management. Thus, the student should talk about ERP in terms of management functions (although those functions might or might not be specified by name).

The instructor should decide if he or she wants the student to show an understanding of management functions (Control, Planning, Directing, Organizing, Staffing). Most business students will have seen these defined in a Management course, or in a basic Information Systems course. The instructor should review these concepts briefly, if the student is expected to use them explicitly in the answer to this question.

QUESTION 4

Sample answer

None provided. The answer depends on what the student discovers in his or her search. See below for resources.

Preparation and Grading guidelines

The instructor should decide how long an answer is desired. Much has been written about success stories and failed implementations.

The article “Software that can make a grown company cry” by Davenport at the *Harvard Business Review* July-August 1998 is excellent. The instructor might want to tell students to read the article for background, but then go further (i.e., not use the examples in the article).

In recent years, there have been notable ERP problems at these companies: W.L. Gore; Hersheys; UOP; and FoxMeyer. These all happened in the 1998-1999 period. Students could search business databases for articles on these situations.

The web site www.erpworld.org/erp4a.html is about ERP success stories, organized by industry. There are so many of these at this site, the instructor might want to assign specific industries to students, to avoid duplication.

Conceivably, the instructor just wants the student to move around the World Wide Web, and come up with whatever seems desirable. Such a search could start on Yahoo, of course. Here is a list of references that might be helpful:

ERP

www.iwvaluechain.com

www.cio.com/forums/erp

www.erpworld.org

www.sap.com

QUESTION 5Sample answerSAP

SAP's annual report can be found at:

<http://www.sap.com/company/investor/index.epx>

SAP's management describes the company as a "recognized leader in providing collaborative business solutions for all types of industries and for every major market."

Oracle

Oracle's financial information and their last year's annual report can be found at:

http://www.oracle.com/corporate/investor_relations/index.html

Oracle recently agreed to buy PeopleSoft and students could write about an update on that merger.

On top of the ERP business, Oracle also is a leader in the high-end database software business. Its major competition in this business appears to be the IBM Corporation (with its DB2 software).

Preparation and Grading guidelines

The organization's library may have annual reports to its shareholders on file. If so, the instructor can tell students to use these. Or, in that case, the instructor could put copies of relevant sections on reserve in the library, so that the reports themselves need not be used. The annual report will contain a letter from the company CEO to shareholders about the prior year, and about plans for the future. This letter will be in plain English and would be worth reading to answer Question 5. The annual report will also contain other descriptive material, in comprehensible prose, and the company's financial statements. The statements will be understandable to a student who has had an accounting course, although the notes to the financial statements will probably be too technical for any student and students should be warned off of them.

Companies are usually glad to send annual reports to academics. Go to the company's Web site, find the investor relations link, and use the on-line e-mail facility to ask for a copy. The student could also use the phone number to request a copy.

Companies must file an annual report with the U.S. government's Securities and Exchange Commission (SEC). This filing will have most of the material from the annual report to shareholders, but it will not have the CEO's letter. It will have much more information about competitive pressures. The SEC filings are another way to get

information for Question 5, if annual reports to shareholders are not available. The filings are available at www.sec.gov.

Another approach to this question would be to use other online information. Many sites on the Internet can give historical financial results. One good site is: www.hoovers.com.

The instructor will have to decide how much guidance to give on this question, to constrain the student's search. The business descriptions in the SEC filings for the past few years for each of the companies have been much the same, so the instructor could reduce the scope to just the most recent year. In addition, the instructor could constrain the answer to just risks facing the business, or a comparison of financial results, or whatever other factor seemed most important to the class.

QUESTION 6

Sample answer

None provided. The answer depends on what the student discovers in his or her search. See below for resources.

Preparation and Grading guidelines

The instructor should decide how long an answer is desired. Much has been written about success stories and failed implementations. Case studies are a good place to begin:

<http://www.cio.com/research/erp/case.html>

Answers to Another Look Cases

Another Look – ERP, E-Commerce, and Back-Office Systems.

QUESTION 1

Sample answer

DuPont had to revamp their systems because they were not fulfilling their customers' needs, i.e., satisfying the ability to order via e-commerce. The company couldn't do capacity planning across different plants that made the same material. They didn't have one big picture of sales. And they had to maintain 500 legacy systems.

Students can state any opinion they like for the second question as long as their argument is substantiated.

Preparation and Grading guidelines

The student can answer this based on what is in the "Another Look" and the rest of this chapter's reading.

If the student identifies the major points cited above, full credit should be given.

QUESTION 2

Sample answer

The company handled change management by the following:

1. Project team formation
2. Project sponsor
3. Global operations director

Student should realize and stress that upper level management support is critical for this project to be successful.

Students could think of different ways to handle stress and change management.

Preparation and Grading guidelines

The student can answer this based on what is in the "Another Look" and the rest of this chapter's reading.

If the student identifies the major points cited above, full credit should be given. As long as their creative portion on the second question is reasonable, they should be given full credit.

QUESTION 3

Sample answer

There are many resources for this topic. Here's a sample of one that might interest the student/instructor:

<http://www.tcnj.edu/~it/admin/library/erpMccredie.html>

Preparation and Grading guidelines

Students' answers will vary depending on the resources they use. The instructor should decide how long the answer needs to be and what references are required.

Another Look – Maximizing Value from an ERP System

QUESTION 1Sample answer

ERP systems can be considered works in progress. Companies are realizing after rushing to implement them for the Y2K problem, they have not fully reaped the benefits. The student should go through the main points and explain why this is so:

1. Integrate: All systems should be integrated. Students can relate this to the material in chapter 1.
2. Optimize: After that Y2K rush, companies need to go back and make the system better. Plus they know it better now than at implementation time.
3. Informate: Most companies use only a small amount of the vast information available in their ERP systems. As companies get to know their systems, they can develop more and more detailed and decisive reports to use in better decision making.

Preparation and Grading guidelines

The student can answer this based on what is in the "Another Look" and the rest of this chapter's reading.

If the student identifies the major points cited above, full credit should be given.

QUESTION 2Sample answer

Students can again repeat many of the same ideas from Question 1. Within each suggestion, they can think of concrete steps for the company:

1. Integrate: Make sure all the company's systems are running under the one ERP system, or make sure that they all talk to each other. No one should be handling hard data or even e-mailing files with data. All systems need to be linked and have electronic data flow.
2. Optimize: This requires looking at your business processes with a fresh mind and making sure you are doing things as optimally as possible. Best practices will help.
3. Informate: Find out if your employees and the various departments are using the full potential of information available in the ERP system. Hold demonstrations of what is available to let employees know the vast amount of information.

Preparation and Grading guidelines

The student can answer this based on what is in the "Another Look" and the rest of this chapter's reading, and even some from Chapter 1.

If the student identifies the major points cited above, full credit should be given. They can become creative in how they will implement these ideas.