

SOLUTIONS MANUAL

A spiral-bound notebook with a black cover. The text 'IMAGE COMING SOON' is printed in large, white, bold, sans-serif capital letters in the center of the cover. The spiral binding is on the left side.

**IMAGE
COMING
SOON**

CHAPTER 2—BUSINESS PROCESSES, INFORMATION, AND INFORMATION SYSTEMS

CHAPTER OBJECTIVES

1. Understand “how stuff gets here.”
2. Understand what is meant by a business process.
3. Know the components of a business process.
4. Understand what is meant by information.
5. Understand the role information plays in business processes.
6. Understand how information systems support business processes.

CHAPTER OUTLINE

- How Did This Stuff Get Here?
- What Is a Business Process?
- What Are the Components of a Business Process?
- What Is Information?
 - ♦ Characteristics of Good Information
- What Is the Role of Information in Business Processes?
- How Do Information Systems Support Business Processes?
 - ♦ What Does It Mean to Automate a Process Activity?
 - ♦ An Information System to Support Counter Sales
 - ♦ An Information System to Support Payment
 - ♦ An Information System to Support Purchasing
 - ♦ What Is Your Role?
- How Does the Knowledge in this Chapter Help Dee and You?

ANSWERS TO USING YOUR KNOWLEDGE QUESTIONS

1. *Consider the four definitions of information presented in this chapter. The problem with the first definition, “knowledge derived from data,” is that it merely substitutes one word we don’t know the meaning of (information) for a second word we don’t know the meaning of (knowledge). The problem with the second definition, “data presented in a meaningful context,” is that it is too subjective. Whose context? What makes a context meaningful? The third definition, “data processed by summing, ordering, averaging, etc.,” is too mechanical. It tells us what to do, but it doesn’t tell us what information is. The fourth definition, “a difference that makes a difference,” is vague and unhelpful.*

Also, none of these definitions helps us to quantify the amount of information we receive. What is the information content of the statement that every human being has a navel? Zero—you already know that. However, the statement that someone has just deposited \$50,000 into your checking account is chock-full of information. So, good

information has an element of surprise.

Considering all of these points, answer the following questions:

- a. *What is information made of?*

Information is made of data that has been processed in some way to be meaningful to the recipient.

- b. *If you have more information, do you weigh more? Why or why not?*

If you are carrying around a 1,000-page report that contains information, then you might say information causes you to physically weigh more. In most situations, however, having more information does not result in a weight gain. It results in a change in your brain.

- c. *If you give a copy of your transcript to a prospective employer, is that information? If you show that same transcript to your dog, is it still information? Where is the information?*

A transcript from a prospective employee is meaningful to an employer trying to fill a position. The content of the transcript (courses taken, grades earned) has value in the hiring context. A dog has no use for the content of the transcript and so it has no value to him. If the piece of paper the transcript is printed on is crumpled up, then it might have value to the dog as an item to chase or tear up (depending on the dog).

- d. *Give your own best definition of information.*

Student answers will vary. Despite its subjectivity, I still like “information is data that is meaningful within a context.” Also, look for the fact that data usually must be transformed in some way to be meaningful; and to provide value, the information must make a difference to the recipient.

- e. *Explain how you think it is possible that we have an industry called the information technology industry, but we have great difficulty defining the word information.*

We have many everyday terms that are difficult to define. We speak of the health care industry, but we typically only define “health” in the negative (the absence of disease). This is just another example of a term that is broadly understood but difficult to define precisely.

2. *The text states that information should be worth its cost. Both cost and value can be broken into tangible and intangible factors. Tangible factors can be measured directly; intangible ones arise indirectly and are difficult to measure. For example, a tangible cost is the cost of a computer monitor; an intangible cost is the lost*

productivity of a poorly trained employee.

Give five important tangible and five important intangible costs of an information system. Give five important tangible and five important intangible measures of the value of an information system. If it helps to focus your thinking, use the example of the class scheduling system at your university or some other university information system. When determining whether an information system is worth its cost, how do you think the tangible and intangible factors should be considered?

Tangible Costs:

- Cost of hardware components
- Cost of software components
- Cost of database components
- Cost of training users
- Cost of hiring users and/or developers

Intangible Costs:

- Cost of searching for information that is difficult to find
- Cost of making a decision when information arrives after the fact
- Cost of frustration when system does not work as expected
- Cost of decision errors when information is inaccurate
- Cost of employees trying to work around or avoid a problematic system

Tangible Value:

- Increased sales to new customers
- Increased sales due to more repeat customers
- Increased employee productivity
- Decreased hiring costs due to lower employee turnover
- Increased quality resulting in fewer defects in output

Intangible Value:

- Increased employee satisfaction
- Increased customer satisfaction
- Improved management decision making
- Decreased employee absenteeism
- Decreased employee turnover

To determine if an information system is worth its cost, the values of all relevant tangible costs and benefits should be estimated as accurately as possible (easier said than done, of course). In addition, the values of intangible costs and benefits can sometimes be estimated with a little effort. If the intangibles cannot be quantified, they should at least be described so that their existence is recognized and appreciated.

3. *Suppose you manage the Purchasing department for a chain of coffee shops like Europa Café. Assume that your company is in the process of developing the requirements for a new purchasing application. As you think about those requirements, you wonder how much autonomy you want your employees to have in selecting the supplier for each purchase. You can develop a system that will make the supplier selection automatically, or you can build one that allows employees to make that selection. Explain how this characteristic will impact:*

- a. *The skill level for your employees.*

A system that automatically selects the supplier for each purchase will require employees with fewer skills than would a system that allows the employees to make that selection. With an automated system, the employee simply needs to inform the system that a supplier selection must be made, the system makes the selection, and the employee sends the purchase order to the selected supplier. With a manual system, the employee must weigh the relevant selection factors and use his/her knowledge, experience, and judgment to select the supplier.

- b. *The number of employees you will need.*

Use of a system that automatically selects the supplier for each purchase will reduce the number of employees needed, since a portion of the business process has been moved to the computer side and less work is done on the human side. With a manual system, more work is performed on the human side, thereby requiring more employees.

- c. *Your criteria for hiring employees.*

A system that automatically selects the supplier for each purchase will simplify employee hiring criteria. As the procedures followed on the human side have been simplified, lower standards in terms of experience and knowledge of purchasing will be acceptable. With a manual system, employee hiring criteria will be higher and more complex, because employees with experience and a good understanding of supplier selection decisions will be needed.

- d. *Your management practices.*

When using a system that automatically selects the supplier for each purchase, management oversight will focus primarily on ensuring that the rules followed by the system are correctly established. Once established, management can rely on the system to follow these rules. With a manual system, management will need to ensure that the employees are properly trained, and then continual management oversight will be needed to monitor the employees' performance and ensure that proper supplier selection decisions are being made.

- e. *The degree of autonomy for your employees.*

A system that automatically selects the supplier for each purchase substantially reduces employee autonomy. A system that gives the employee the task of selecting the supplier for each purchase makes the employee much more autonomous and adds a considerable amount of interest and challenge to the job.

f. Your flexibility in managing your department.

Having a human perform the selection of a supplier for a purchase will keep the management of the department much more flexible. As supplier selection criteria change and evolve, it will be much easier to modify and adapt the behavior of humans in performing this task. While the computer can follow whatever decision rules it has been given quite easily, it is harder to adapt the rules it follows quickly and easily. In addition, the computer cannot recognize situations in which its rules need to be changed, whereas a human can recognize that changing environmental conditions may necessitate a change in selection criteria.

Suppose management has left you out of the requirements-definition process. Explain how you could use the knowledge you developed in answering this question to justify your need to be involved in the requirements definition.

If I (as Purchasing Department manager) am left out of the requirements definition process, I will not be able to contribute my knowledge and expertise about purchasing to this critical system development process. Without that knowledge, the development team may decide to automate this process because of factors such as cost savings, efficiency, and the consistency of this approach. Although these are important factors, my input can point out the other important issues, such as employee autonomy and management flexibility. It is important that all sides of the issue be explored before a key decision such as this is determined.

ANSWERS TO COLLABORATION EXERCISES

Collaboration Exercise 2

- 1. Based on Figure 1 in MIS in Use 2, explain the business consequences if you debit customer credit in step 1, but then in steps 2 or 3 do not return credit for orders that you cannot process.*

The business consequence will be that the customer will be billed for an order that was rejected for either insufficient inventory or unapproved special terms. In either case, this would be perceived very negatively by the customer.

- 2. Recommend a process for adjusting credit for orders that are not approved. Who, in particular, should make the adjustment, and how do they receive the data they need to*

do so?

When an order is rejected due to insufficient inventory or unapproved special terms, notification of the rejected order should flow to a person who can remove the charge to the customer for the order. In order to maintain separation of duties, this person should be someone other than the person doing the order-approval process.

3. *In Figure 1, explain why inventory must be allocated to orders in step 2. What is the business consequence if these allocations are not adjusted when special terms are not approved?*

Inventory must be allocated to the order during the check for inventory availability so that the inventory on hand is not sold to another customer. Reserving the inventory for this order reduces the quantity available to fill other orders. If the order is later rejected because the special terms are not approved, then the inventory must be released and added back to the quantity available to fill orders, so that subsequent orders are not incorrectly rejected for insufficient inventory available.

4. *Recommend a process for adjusting inventory for orders for which the special terms are not approved. Who, in particular, should make the adjustment, and how do they receive the data they need to do so?*

When an order is rejected due to unapproved special terms, notification of the rejected order should flow to a person who can release the reserved inventory for the order. In order to maintain separation of duties, this person should be someone other than the person doing the order-approval process.

5. *There are six different sequences for the three approval tasks in Figure 1. Name each and select what your team considers to be the most promising three.*

Sequence 1: check credit; check inventory; check special terms. (current sequence)

Sequence 2: check inventory; check credit; check special terms.

Sequence 3: check credit; check special terms; check inventory.

Sequence 4: check special terms; check credit; check inventory.

Sequence 5: check inventory; check special terms; check credit.

Sequence 6: check special terms; check inventory; check credit.

The most promising sequences are 4, 5, and 6.

6. *Evaluate each of the three sequences that you selected in question 5. Identify which sequence you think is best.*

Student answers will vary. Here is one rationale that is logical:

Sequence 4 (check special terms; check credit; check inventory) is most promising. Not every order includes special terms, so many orders will pass immediately to step

2. Checking special terms first does not involve any database updates that must be reversed if the order is later rejected. In addition, if the special terms cannot be met, the order could potentially be renegotiated by the salesperson and customer so that terms that can be approved are included.

Checking credit second is preferred because this issue pertains only to the customer. If insufficient credit is available, the salesperson and customer should be notified so that possibly another payment method could be arranged or the quantities ordered could be reduced.

Checking inventory last is preferred because this step reserves inventory for that customer, meaning we no longer can sell that inventory to anyone else. This step has the most significant impact on our business, since by reserving that inventory, we cannot sell it to anyone else. We do not want to risk losing a subsequent sale due to insufficient inventory when the order that is reserving the inventory has at least some likelihood of being rejected.

7. *State the criteria that you used for making your selections in questions 5 and 6.*

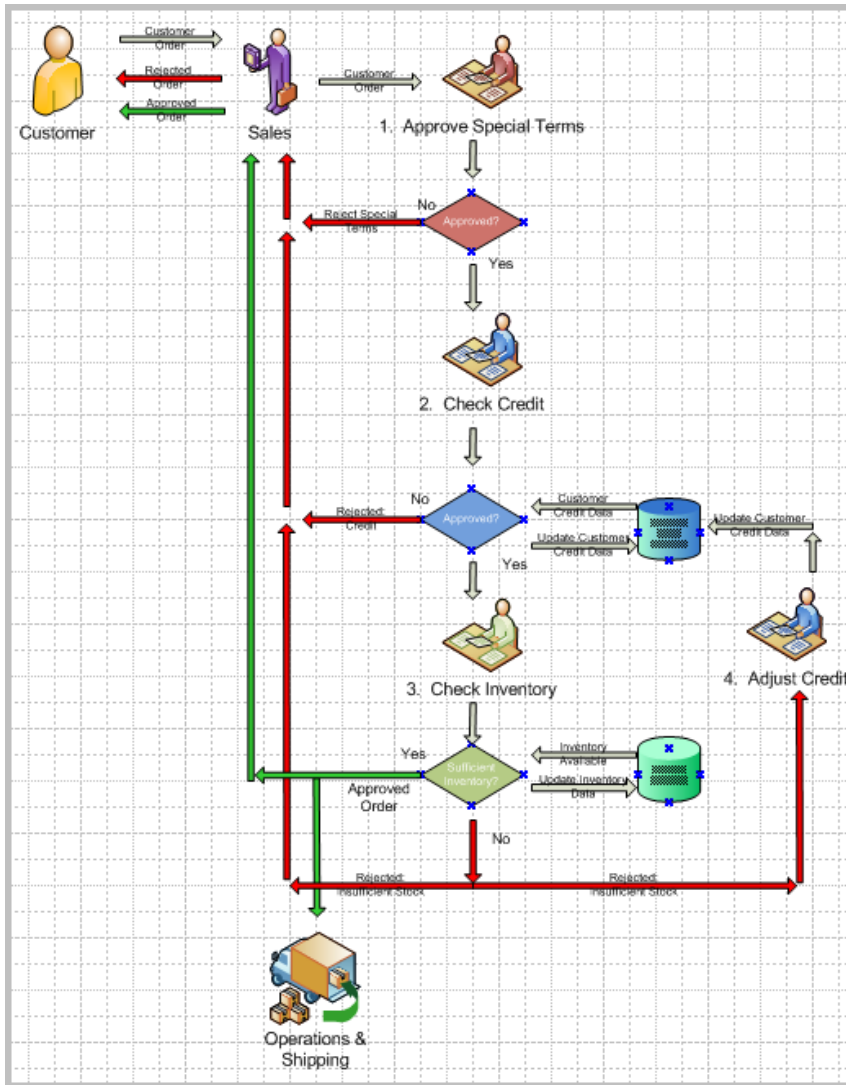
The criteria that are illustrated are (1) flexibility—by placing the processes that have the highest potential to be negotiated first; and (2) minimize the potential for losing business by waiting to reserve inventory until the order has passed all the previous screening steps.

8. *So far, we haven't considered the impact of this process on the salesperson. What information do salespeople need to maintain good relationships with their customers?*

The sales people need to know the reason for order rejection and also should be able to work with the customer on issues that are potentially negotiable. If we cannot meet the requested special terms, the salesperson needs to know what term is the problem. Then perhaps the salesperson can find other terms that are agreeable to the customer. If the customer does not have a sufficient credit line, the salesperson needs to know the amount of credit deficiency. Then, the salesperson can inform the customer of the problem and potentially work to create an order with different financing. The only issue that really is outside the salesperson's control is inventory availability. Even then, if we can inform the salesperson of the expected replenishment date, then perhaps the customer can be persuaded to wait until we can fill the order.

9. *Optional extension. Download the Visio diagram version of Figure 1 from this book's Web site, www.pearsonhigered.com/kroenke. Modify the diagram to illustrate the sequence of tasks you chose as best in your answer to question 6.*

The following diagram illustrates the changes outlined in question 6, and also incorporates a new adjustment process to modify the customer's credit availability if the order is rejected due to insufficient inventory.



ANSWERS TO CASE STUDIES

Case Study 2: The Brose Group Integrates Its Processes—One Site at a Time

1. As you will learn in Chapter 7, the three types of business process are (1) processes within a single department, (2) processes that span several departments, and (3) processes that span different organizations. In the MIS in Use 2 case, processing within a given activity, such as Approve Credit, represents processes within a single department. The process illustrated in Figure 1 in MIS in Use 2 crosses multiple departments, and the processes described for Brose are processes that span different organizations (Brose to Toyota, for example). Compare and contrast these three process types according to:
 - a. Size
 - b. Capability
 - c. Complexity of process

- d. *Need for information*
- e. *Management control*

Single-department processes will be the smallest in size; will have more limited capability; will be the least complex; will require the most narrowly-focused information; and will be the easiest for management to control. Cross-departmental processes will be the larger and will involve more varied tasks; will have more capability; will be more varied and complex; will require more diverse information; and will be somewhat more difficult for management to coordinate and control because they span departmental boundaries. Inter-organizational processes will be the largest in size; will have the most capability, but will be the most complex; will require the most diverse information; and will be the most difficult in terms of management control, because multiple organizations are involved.

2. *Brose is a German company that has a factory in Brazil that sells to customers in the United States and Japan. Business processes span all of these countries. Do you think that different cultures and different languages might pose problems for cross-organizational processes? How do you think different languages and cultures may pose difficulties for the development of new business processes?*

This type of global system is very difficult to accomplish successfully. The successful outcome of the project is a testament to the quality of the software product and the work of the implementation team, reinforced by strong top management support. The language and cultural differences would be significant hurdles in this project, but the unifying theme is buy-in and acceptance of the inherent business processes of the software.

3. *Access the SAP article cited in the Sources line on the previous page, and read the description of the use of the business-process master list. The article, which was written on behalf of SAP as part of its marketing efforts, implies that the inventory of business processes was of substantial value when implementing SAP in the various facilities.*

- a. *Explain why such an inventory might be necessary.*

Having an inventory of business processes was necessary in this case because of the diversity of the locations where the system was to be installed. The appropriate processes could be selected to meet the particular needs of each location.

- b. *In what ways do you think such an inventory would be valuable? How would it save costs? Result in faster implementations? Create better systems?*

This inventory is very valuable because it represents “best practices” for the processes; they are standardized and designed to work together; and they provide

flexibility in that the characteristics of each location help determine which processes will be implemented. This should result in faster development times and better systems.

- c. *In what ways would such an inventory be of limited value? Would knowledge of a process developed to interface with Toyota in Japan be of use when developing a process to interface with Ford in Detroit?*

The inventory of processes may be deficient when dealing with inter-organizational systems. These systems are the most likely to require a custom solution, because the systems used in one organization (such as Toyota) are likely to be very different than those used by another (such as Ford).

- d. *In what ways would the development of a business process concerning the ordering and delivery of auto components between Brose and Ford be more difficult than the development of a similar business process between two Brose facilities?*

Interorganizational systems will be the most difficult to implement. When dealing with two Brose facilities, Brose can insist on standardization between those facilities. When dealing with another organization, however, Brose cannot insist on such standardization, and some sort of custom interface will probably be required to integrate the systems.