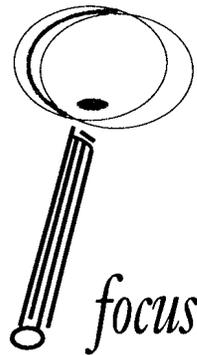


1

Introduction to Business Process Improvement



Learning Objectives

By the end of this chapter, you should be able to:

- Define a business process.
- State the objectives of business process improvement.
- Explain the characteristics of a well-defined business process.
- List the benefits of a well-managed process.
- Identify the six steps needed to improve a business process.

WHAT IS A PROCESS?

There are many definitions of a process. A practical definition and the one used in this course is a finite set of interdependent activities that receive an input and logically transform the input into an output. Schematically, a process can be depicted as shown in Exhibit 1-1.

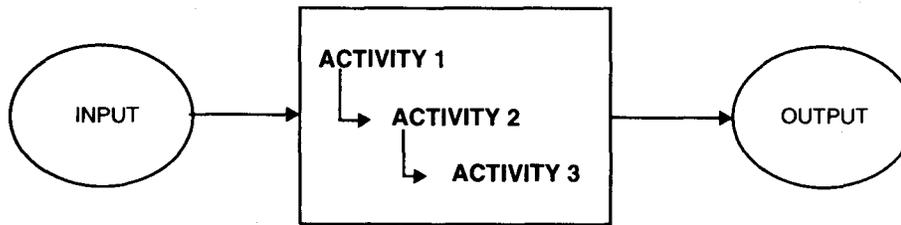
The important points to remember are as follows:

- A process has a definite starting point—the time, place, and point of input.
- The input is transformed into output via a set of interdependent activities. These activities follow a logical flow; however, they may not add equal value to the process.
- The process ends with a defined output that is the resulting sum of all the activities performed on the input.



Exhibit 1-1

Process Schematic



An example will help illustrate the point. Look at the process of ordering a meal at a restaurant. The process starts with an input to the process—the customer places an order. The process activities are as follows:

- Waiter takes the order.
- Waiter places the order with the kitchen.
- Chef prepares the order.

The process ends with the delivery of the meal, the end result of the three process activities.

WHAT IS A BUSINESS PROCESS?

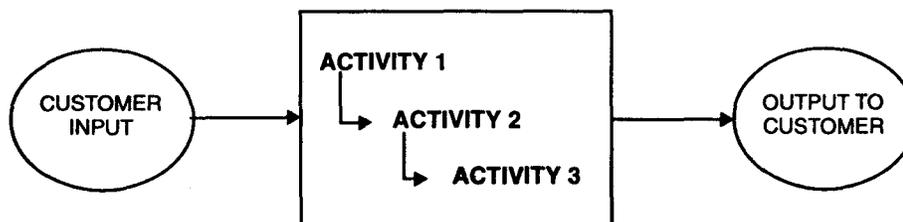
A business process can be similarly defined as a finite series of interdependent business activities that receive a customer input and logically transform the input to the output required by the customer. A business process also can be schematically drawn as shown in Exhibit 1-2. It is important to understand the components and characteristics of a business process before trying to improve one.

A business process has a definite starting point and a definite end point. These points are uniquely defined by the customer input and by the output



Exhibit 1-2

Business Process Schematic



to the customer, respectively. The process does not, however, have a scheduled starting point and end point with respect, to time. A process is not a project. A project starts and ends at predetermined points in time; a process is continuous. The end points of a process define the cycle time of a particular input transformation cycle—the time it takes the process to transform the input into the output. This transformation occurs continually with respect to time.

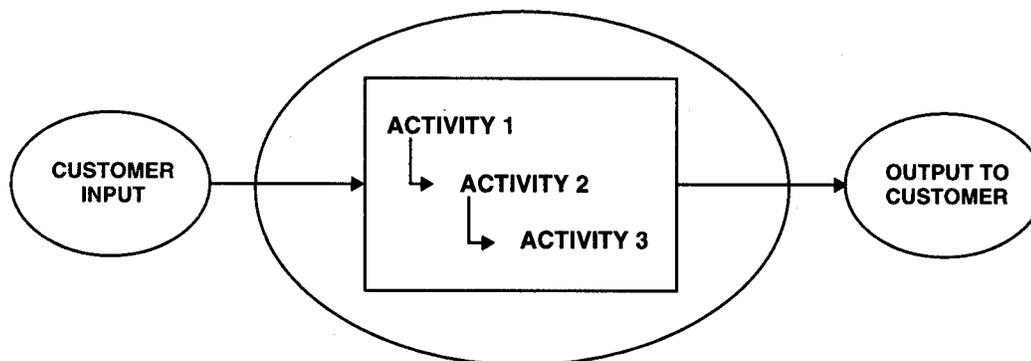
The acts of providing customer input to the start of the process and providing output to the customer at the end of the process are termed process handoffs. It is the customer handoffs that uniquely define the process; these handoffs establish the process boundary. The process consists of those finite interdependent activities that logically transform customer input into the output required by the customer. Exhibit 1-3 illustrates this concept.

It is critical to define clearly the process boundary prior to starting any process improvement effort. The process boundary encompasses those activities that define the business process to be analyzed and improved. The activities that exist within the boundary line will be analyzed and modified to improve the performance of the business process. The original set of activities may change to a completely different set of activities after the process improvement effort.

It is important to identify clearly the customer input and the desired customer output. Lack of input or output definition will result in lack of process boundary definition, making it impossible to identify those activities that transform the input into output. Again, boundary definition is an absolute prerequisite to business process improvement. The finite set of activities to be analyzed and modified must be known to improve a business process.

An example will clarify this point. Imagine that you have been asked to identify the process boundaries for a maintenance outage at a major paper

E **xhibit 1-3**
Business Process Boundary Schematic



BUSINESS PROCESS BOUNDARY

manufacturing company. The company periodically shuts down plant operations (an outage) for a specified period of time to perform maintenance on major pieces of equipment. You have been asked to draw a process schematic of this process because management is considering a process improvement effort in this area.

After thinking about what is the input and what is the output of the process, you recognize that this is not a process but rather a period of time with a predetermined starting point and a predetermined end point. The outage also has predetermined goals, such as costs and schedule. The outage period is more accurately a project rather than a process. It is difficult to identify an input, a set of interdependent activities, and an output; and there is no single major customer input to start the process. Rather, many customer inputs exist, such as a part request, an engineering request, and maintenance requests (which actually start three separate processes of purchasing, engineering, and maintenance). Thus the maintenance outage is a period of time in which many processes are at work. It, in itself, is not a process. The outage has no well-defined input and is not continuous. A well-defined process must exist prior to launching a business process improvement effort.

It is not uncommon for groups to launch into a business process improvement effort without clearly defining the process to be improved. This pitfall must be recognized and avoided at all costs.

Now consider another example. You are the director of a purchasing department and you and your boss have decided that a business process improvement effort is needed to help increase efficiency of the department. Your boss has asked you to draw a schematic of the purchasing process as a starting point in defining the boundaries of the business process improvement effort.

You call a meeting with the department supervisors and outline your plans to lead a process improvement effort of the purchasing process. You indicate that the purpose of today's meeting is to agree upon the scope of the purchasing process and to identify the process input, output, and major process activities. After brainstorming the possibilities, the team concludes the following:

- The process starts with the customer requesting an item.
- The process activities are processing the request, writing a purchase order for the requested item, and receiving the item from the vendor.
- The process output is the customer receiving the item originally requested.

This business process is well-defined. The input to the process is a customer request for an item. The process consists of those interdependent activities that logically transform the customer request into the requested item. The process ends with the customer receiving the item. Note that the three activities that define this process are high-level activities. That is, they represent a set of many, many detailed activities, and as such, these high-level activities may be termed subprocesses.

Subprocesses

A subprocess is a well-defined subset of interdependent business activities that receive a customer input and logically transform the input to an output for the customer.

Subprocesses are important because they play a major role in improving a business process. An entire business process is almost always too large to analyze as a 'whole. The entire process consists of too many activities to analyze clearly in one effort. It is convenient and necessary to segment the entire process into logical groupings, or subprocesses.

Recall the earlier example of the purchasing process and apply it to the purchase of paper office supplies. The customer requests a pad of paper by filling out an office supply request form and submits the request to the Purchasing Department. The Purchasing Department processes the request, generates a purchase order to the supplier, and receives the shipment of the paper. The three subprocesses are listed in order:

1. Process request for paper.
2. Generate purchase order.
3. Receive shipment of paper.

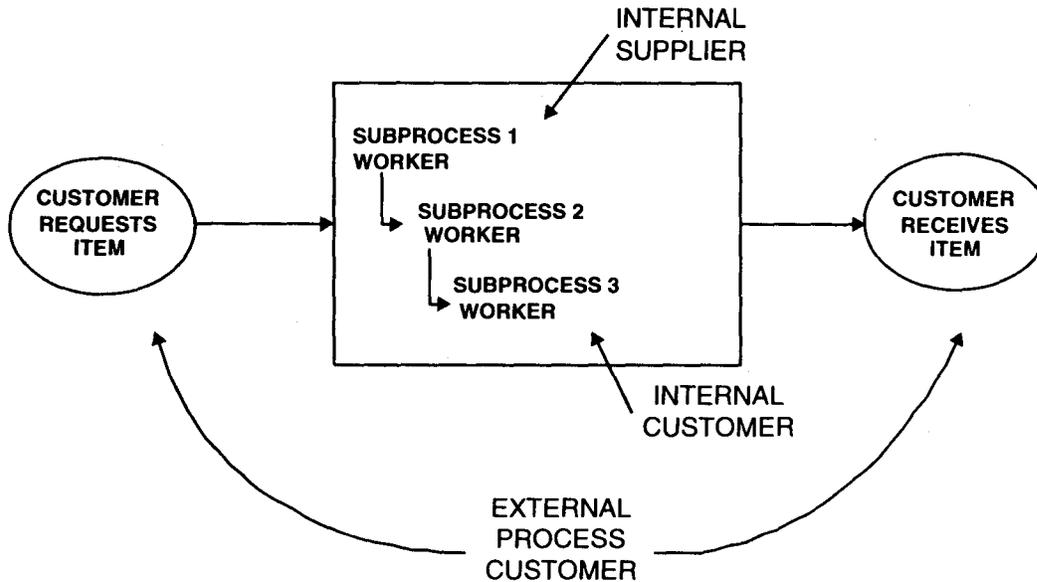
Recall that a subprocess is a subset of interdependent activities that transform the input into output. Expanding the subprocess of generating a purchase order into a set of subprocess activities would result in the following:

1. Receive request for paper.
2. Verify request is accurate.
3. Verify authorized signatures are present.
4. Gather other orders into one large order.
5. Place bids out to various vendors for price quotes.
6. Review bids for delivery dates and pricing.
7. Select vendor.
8. Place purchase order with vendor.

It is more efficient to analyze and modify each subprocess. Improving each subprocess logically will improve the entire purchasing process.

The grouping of activities into subprocesses is not arbitrary; it must be logical. The following guidelines are useful in determining how to segment a business process into a useful set of subprocesses:

- Each subprocess must contain a unique set of activities that receive a customer input and transform the input into a well-defined output, which will become the input to the next logical subprocess.
- Each subprocess must be independent relative to the other subprocesses. Activities from one subprocess must not overlap activities of preceding or succeeding subprocesses.

**Exhibit 1-4****Customer-Supplier Relationships**

A subprocess may involve internal customers and suppliers. Internal customers are those individuals working within a subprocess that receive input from the logically preceding subprocess. Likewise, internal suppliers are those individuals working within a subprocess that provide input to the next subprocess.

The external customer is the ultimate customer of the output. Customer-supplier relationships are shown in Exhibit 1-4. For example, the input to the process may be an individual requesting a pad of paper using an office supply request form. This form is handed to the Purchasing Department, at which point the office supply form is transformed into a purchase requisition by a subprocess worker. The purchase requisition is handed to a buyer to place a purchase order to a vendor for paper. The handoff to the buyer is an example of a handoff from an internal supplier to an internal customer. The internal handoffs continue until eventually the process produces a pad of paper delivered to the external customer.

WHAT IS THE OBJECTIVE OF BUSINESS PROCESS IMPROVEMENT

The objective of business process improvement is to continually improve process productivity. Process productivity is measured in terms of effectiveness, efficiency, and quality. An effective process is a process that produces

the right results consistently. It is a process that consistently delivers a red pen as ordered, and not a blue pen or pencil. An efficient process produces a red pen at minimum cost; that is, it produces a red pen with an efficient use of resources. A quality process produces a red pen that always works.

The minimum acceptable measures of productivity are defined by the external customer—that is, as customer expectations. The customer defines the acceptable cost, quality, and timeliness of the business process output. These measures are commonly referred to as process indicators, for they indicate how well the process is or is not satisfying the customer. It is the manager's job to continually monitor the process indicators and use them to improve process productivity.

It is a common misconception that if costs are decreased, then timeliness or quality must diminish. This thinking is erroneous and is not what is meant by business process improvement. This thinking is more appropriately referred to as process suboptimization. Process suboptimization represents a reallocation of business resources to optimize one indicator at the expense of others. According to this thinking, if process output were to increase with delivery kept on schedule, then errors must occur (process quality must suffer).

Process suboptimization is contrary to business process improvement. True business process improvement results in improved effectiveness, efficiency, and quality.

WHAT ARE THE CHARACTERISTICS OF A WELL-DEFINED BUSINESS PROCESS

A well-defined business process contains four components, as illustrated in Exhibit 1-5:

1. Customer input
2. Supplier input
3. Interdependent set of activities
4. Process output

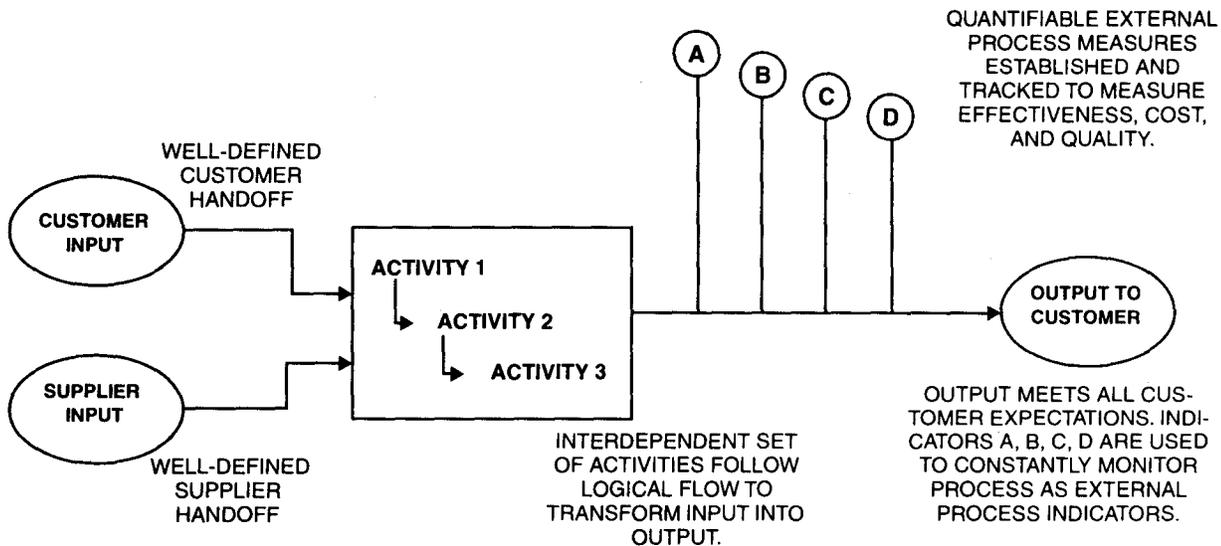
Customer Input

The primary customers are known by all people working within the process. The process input is clearly defined and documented. Process input is mutually agreed upon by both the customer and the supplier. If the process is purchasing an item, then the item request is formalized to ensure the right requesting information is handed to the supplier each and every time.

Supplier Input

Business processes are often dependent upon input from other processes or suppliers of other products. A well-defined business process has well-defined supplier relationships. Supplier input should be monitored much like the output of the process is monitored. Measures to indicate supplier timeliness,

E Exhibit 1-5 Well-defined Business Process



quality, and costs should be established and monitored. The output of the process is heavily dependent upon supplier input to the process. Therefore, it is important to establish mutually agreed upon customer and supplier expectations and to establish objective measures to indicate performance relative to those expectations.

Supplier partnerships are a good way to establish mutually agreeable expectations. Suppliers should be selected based on several factors, such as cost, quality, timeliness, safety, and so on. Cost should never be the sole factor in choosing a supplier. Once selected, the supplier and customer should enter into an agreement that establishes profit sharing based on specific, quantifiable performance indicators.

Interdependent Set of Activities

A well-defined business process consists of a set of logical, interdependent activities that transform customer input into customer output. These activities are clearly understood by all people working within the process. The process activities are documented in a procedure or formal work guideline. The set of activities that transforms input to output also has one other important characteristic; it is the minimum set of activities needed to transform process input into process output. That is, a well-defined business process is an effective and efficient process. It is a streamlined process, consisting of only value-added activities. It is, above all, productive.

Process Output

Process output and customer expectations are known. Customer expectations are quantified and made part of the external process indicators. The process performance is judged by these indicators. All processes can, and must, be measured with respect to quantifiable customer expectations. Although customer surveys are important, they are not as valuable as quantifiable external process indicators. Surveys primarily indicate attitude and behavior. Surveys rarely contain objective data with regard to process cost or quality. It is external quantifiable indicators that measure results. In the end, results are of paramount importance. The process performance relative to these indicators is published and known by workers within the process.

Target goals are set for each performance indicator and measured and monitored over a period of time. Process performance will trend either toward meeting the targets or toward not meeting the targets. The process owner must be aware of these trends and take action to correct adverse ones.

WHAT ARE THE BENEFITS OF A WELL-DEFINED BUSINESS PROCESS

A well-defined business process benefits a company in three dimensions: productivity, process, and people. Because the performance of a particular enterprise is the sum of the performance of its processes, well-defined business processes contribute to a well-managed company.

Productivity, process, and people are interdependent and synergistic. As people learn more about the process and become more proficient in the process, productivity will increase, further increasing the morale of the work force. Higher morale leads to motivated employees, which lead to higher productivity.

The Productivity Dimension

Many sources of business information estimate the inefficiency in business processes to be anywhere from 10 percent to 70 percent. This inefficiency represents a tremendous opportunity for productivity improvement. It is not uncommon to realize a 50 percent savings in labor costs shortly after a business process is analyzed and redesigned.

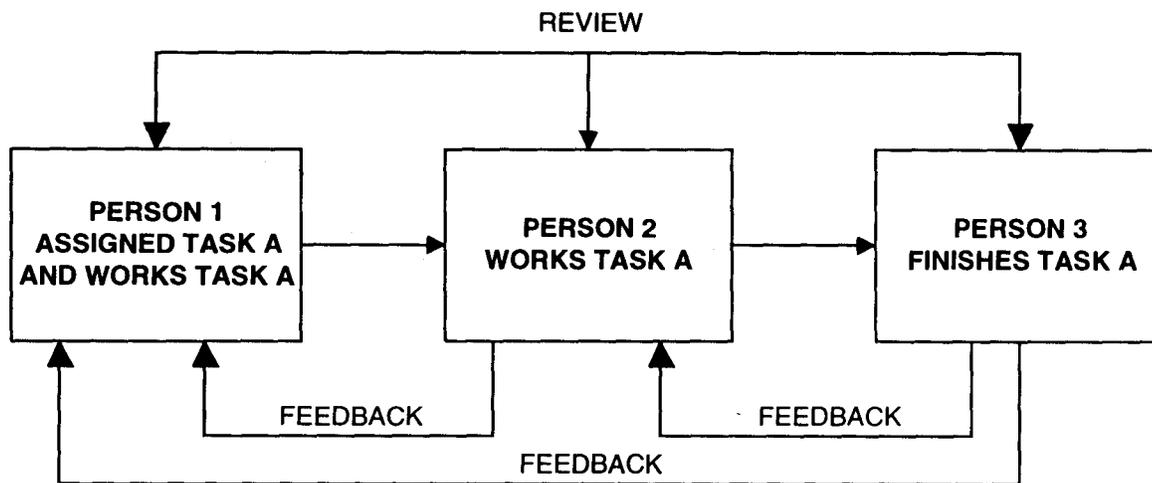
Exhibit 1-6 depicts the handoffs and the possible interactions in a theoretical process of only three workers. Assume that task A is given to person 1, who then hands off to person 2, who hands off to person 3, who finally completes task A.

Person 2 undoubtedly will have questions of person 1. Person 3, in turn, will question person 1 and person 2. A meeting among person 1, person 2, and person 3 must occur to sort out all the issues and answer all the questions that arise.

Assume now that person 3 is given the task of checking the quality of the process. Person 3 must comment on every handoff. Person 1 and person 2



Exhibit 1-6 Task A Handoffs



are now put in a role of defending the quality of their work to person 3. This conflict often escalates, requiring management resolution.

The end result is always increased process cycle time and cost with little, if any, improvement in quality. The increase in process cycle time soon requires that the customer and the process owner create administrative groups to track and prioritize work. Costs continue to spiral upward.

A well-defined process, on the other hand, produces quality output with the least expenditure of resources. The focus is to improve the process continually, thereby increasing process productivity and decreasing costs.

The Process Dimension

Process activities are clearly defined in a well-defined business process, forming the basis for consistent, error-free work. The activities people perform on a day-to-day basis are not constantly changing. Expectations are well-defined and constant. If errors do occur, the organization has the ability to analyze the work activities to find the root cause of the errors. Once the cause of errors is identified, the process can be changed to correct the errors and prevent the errors from recurring.

The People Dimension

Employee empowerment is the benefit of a well-defined business process. It must not be underestimated. Refer to Exhibit 1-6. Assume that you are trying to purchase office supplies for a company. Person 1 can fill out the order for supplies but must send the order to person 2, who translates the order into a purchase request and sends it to person 3, who checks the request and places the purchase order. No one person in this chain is empowered to simply purchase

office supplies. Each task is fragmented and specialized, resulting in no sense of accomplishment by person 1, 2, or 3. This process is needlessly complex.

A complicated process is the fault of management and is disempowering to workers. Conversely, a streamlined, well-managed process is empowering and creates a culture of ownership and continuous improvement.

A well-defined process provides more opportunities to win, to satisfy the customer. The customer is delighted and inevitably provides positive feedback to the supplier. Customer feedback is an extremely powerful motivator. Satisfying the customer becomes the focus of the work force. The end result is a productive, customer-focused team.

Process ownership is another major benefit of a well-defined business process. A well-defined business process contains those activities that everyone agrees are necessary to produce the desired output. Since all had a hand in streamlining the process (developing the process), a strong sense of ownership naturally evolves. Ownership of the process by the true process experts (the workers) leads to a continuous improvement culture.

By defining the process and customer expectations, workers have a clear vision of their role in the process and can provide valuable insight to further improvement efforts, expanding the manager's pool of resources from which to draw ideas.

WHAT ARE THE STEPS NEEDED TO IMPROVE THE BUSINESS PROCESS

Six steps are needed to improve a business process:

1. Identify the process to be improved.
2. Choose, organize, and train the team.
3. Map the process.
4. Analyze and redesign the process.
5. Implement the process redesign.
6. Continually improve the process.

Identify the Process to Be Improved

There are many processes in an organization, and it is the manager's responsibility to identify the processes needing improvement. Factors to be considered include the following:

- What are the most important business processes with respect to the mission of the company?
- Of these business processes, which process is most in need of improvement?
- What reasons logically exist to select one process over another as the best candidate for business process improvement?

These factors and others are discussed in Chapter 2.

Choose, Organize, and Train the Team

The proper choice of team members and how they are organized and trained is critical to the success of any business process improvement effort. In fact, three teams must be organized and trained to improve the business process successfully:

1. A process analysis team
2. A business process improvement implementation team
3. A process automation team

These teams are discussed in Chapter 3.

Map the Process

As stated earlier, a business process receives a customer input and, through a set of logical, interdependent activities, transforms the input into the business process output. It is the business map, or flowchart, that illustrates the activities in their logical sequence. It is the roadmap for the process.

The process map provides the starting point for the team to improve the business process. Whether the team implements incremental improvement or radical improvement (i.e., reengineers the business process), the business process map is a must. It is not possible to analyze a blank piece of paper. The process map is the starting point for all process analysis and, therefore, is essential.

Analyze and Redesign the Process

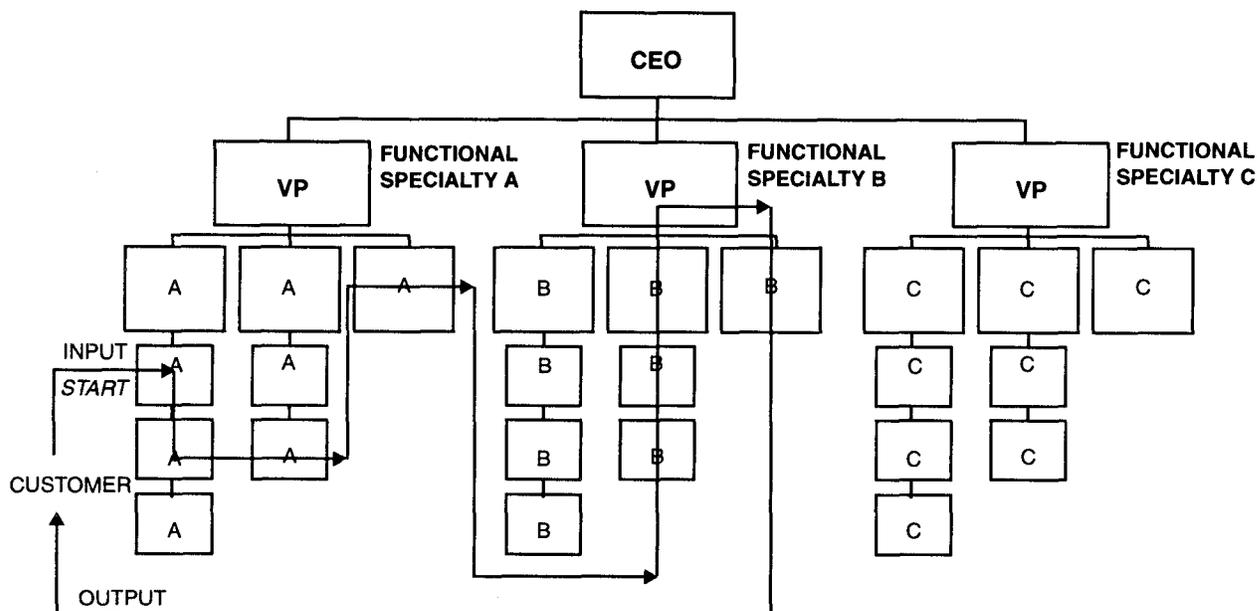
Most business processes consist of a multitude of activities performed by many individuals involving process handoffs across many organizational units, particularly if the company is organized functionally. Exhibit 1-7 depicts a business process flow within a functional organizational structure.

The process flow may traverse several different organizations at several different levels within the organization. It is the process analysis phase that categorizes and quantifies these activities and handoffs. Basically, all activities and handoffs may be categorized as value-added or non-value-added activities. It is the goal of process analysis to categorize those activities and rearrange them into an efficient process.

Business process redesign requires innovative thinking and challenging the status quo. Process redesign challenges the team to think what the process should be or, better yet, what it could be. Redesign may result in a wide range of improvements from minor process changes resulting in incremental improvement to major changes to the business process resulting in dramatic improvement.

Implement the Process Redesign

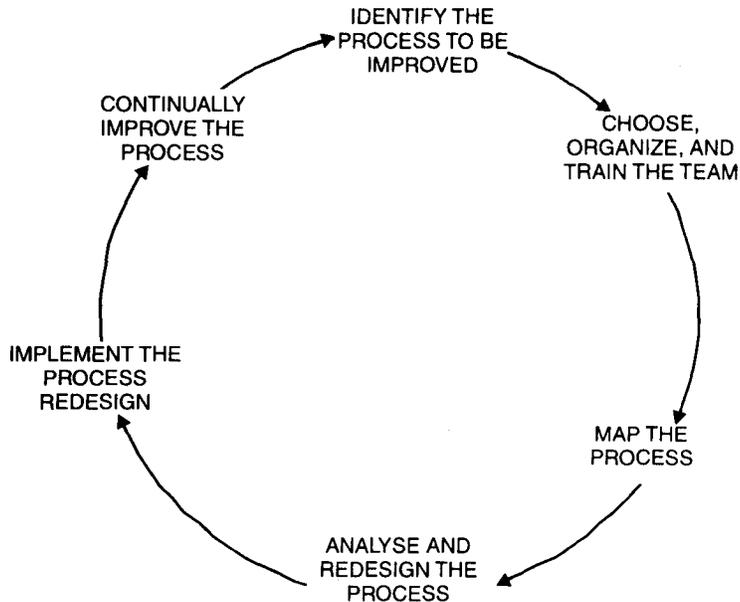
The implementation phase may prove to be the most difficult aspect of the improvement effort, primarily because at this step people must change their

**Exhibit 1-7****Process Flow in a Typical Functional Organizational Structure**

behavior. In addition to behavior changes and new job responsibilities for individuals, the corporate organizational structure may require modification. Process redesign requires changes in the roles and responsibilities of organizational units within the company. The difficulty and complexity of implementation of the redesigned business process are directly proportional to the extent of the change required. This is precisely why business process improvement performed in well-managed, incremental steps is more successful than radical changes, such as reengineering. Reengineering requires radical change which, in turn, demands complex implementation plans. The change required by reengineering often is too much for the organization to assimilate, and the reengineering effort often fails in implementation.

Continually Improve the Process

The job of business process improvement does not stop after your first improvement effort. It is the manager's responsibility to ensure that the business process under his or her control continually improves. Continuous improvement should be an integral part of business process improvement. The business process must be monitored and analyzed continually to discover any opportunities for improvement. Business process improvement is not a project; it does not end at a point in time. It is a continuous management process that differs only in the magnitude of improvements over time. It is a journey toward excellence. Exhibit 1-8 illustrates the concept of continuous business process improvement.

E**Exhibit 1-8****Steps to Improve a Business Process****SUMMARY**

Before embarking on a business process improvement effort, you must determine that an actual process exists. The process boundary must be clearly established prior to beginning a process improvement effort, and there must be an identifiable, finite set of activities that comprise the process. Once identified, the flow of work across these activities can be analyzed and simplified.

The four characteristics of a well-defined business process are clearly documented (1) customer input, (2) supplier input, (3) interdependent set of activities, and (4) process output that meets target goals and customer expectations.

The six steps needed to improve a business process are (1) identifying the process to be improved; (2) choosing, organizing, and training the team; (3) mapping the process; (4) analyzing and redesigning the process; (5) implementing the process redesign; and (6) continually improving the business process. Key benefits to business process improvement include higher productivity, streamlined procedures, and an empowered work force.



Review Questions

1. What are the three major components of a process? 1. (d)
 - (a) Input, catalyst, output
 - (b) Design, input, output
 - (c) Input, sum, output
 - (d) Input, activities, output

2. The objective of business process improvement is to: 2. (c)
 - (a) analyze the business process.
 - (b) change the organization.
 - (c) continually improve productivity.
 - (d) redefine the corporate mission.

3. Which of the following factors causes the implementation phase of process improvement to be the most difficult? 3. (c)
 - (a) It is very expensive.
 - (b) Management must approve all plans.
 - (c) People must change their behavior.
 - (d) The risk of failure is great.

4. Which of the following is characteristic of a well-managed process? 4. (c)
 - (a) Customer input is not formalized.
 - (b) Performance indicators are not quantifiable.
 - (c) Quantifiable process indicators exist.
 - (d) Process boundaries do not exist.

5. Three teams necessary for business process improvement are: 5. (b)
- (a) process analysis, facilitation, and automation teams.
 - (b) process analysis, implementation, and automation teams.
 - (c) process analysis, management, and executive teams.
 - (d) process facilitation, executive, and analysis teams.