Chapter 5

Organization in Process View

This chapter introduces the topic of business process that represents the main management approach in the course. It also introduces another important analytical skill—process analysis. The process perspective drives the study in this course because it shows better than other approaches how IS fit in organization and contribute to organizational performance, innovation, and continuous success. Business processes have already been mentioned in previous chapters. In addition, the topic of data analysis covered in chapters 3 and 4 ties into the process perspective by addressing the data used in and produced by business processes.

The chapter will address several important topics. What is business (organizational) process? What does it mean to manage an organization from the process perspective? How can we measure the performance of a business process? What is process design? Answers to these questions are necessary in understanding the roles and impacts of IS in an organization.

Organization and the Process View

What is organization? The word “organization” has to do with the ideas of instrument, tool, arrangement, and order. Most apparently, organization is a collection of people with particular expertise, which delivers a certain product (good or service). In other words, an organization is an arrangement of people with the purpose of producing something.

Taking the process perspective, the idea of arrangement applies to business processes, and these become the instrument of accomplishing the purpose of organization. Therefore, from the process perspective, organization is a set of business processes that altogether deliver a certain product. Note that people do not disappear from the picture, as they are included in business processes. The process perspective is comprehensive in other ways as well, because the concept of business process also includes notions of work, technology, and even performance.
Figure 1 represents organization as a set of processes. Each arrow represents a process, and the box stands for an organization. Of course, each process can be decomposed to more specific processes (sub-processes). The arrow length is supposed to indicate how far a process stretches in an enterprise. So for example, the management process covers the entire organization; the HR, accounting and IS processes are also lengthy. These processes run in parallel (at the same time) with those in the second row from top down. That row features core processes starting with the supply process and ending with the marketing, sales, and delivery process. The core processes are responsible for creating or for materializing economic value. For the most part core processes run in a sequence, with the parallel execution of marketing and selling/delivering.

A more traditional view of organization (e.g., the structural view) would use similar terms. What it misses is that some processes run across departments (the processes of management, accounting, HR, and IS). Also, some processes reach even outside the organization (the processes of supplying, marketing, and sales/delivery).

![Figure 1. Process view of organization]

Although it is powerful and not really new, the process perspective is not paid equal attention across programs of management education. Still, understanding organization as a set of related business processes has a long tradition in North America. A century ago, Frederick Taylor was occupied with designing work tasks as sequences of steps (procedures) in order to maximize the task efficiency. In the 1950s, William E. Demming applied statistics and process analysis to quality control in manufacturing processes. His work inspired similar approaches in Japanese manufacturing which has made visible achievements particularly in the car industry. In the 1990s, Business Process Reengineering (BPR) emerged as a management approach focused on process improvement and a radical organizational change. Today, the most popular approach internationally is Business Process Management (BPM). BPM is about paying continuous attention to process-based organizing, management, and improvement.
Study of IS benefits very much from the process perspective. Since an IS supports or makes part of a business process, the process perspective shows directly how the IS fits in an organization. In addition, companies that effectively deploy IS are able to improve their business processes and the overall organizational performance. Improving business processes with aid of IS also makes an important venue of organizational innovation.

**Business Process**

To define business process, let us first look at a general concept of process. Process is a set of activities connected from a start to an end point. Note that process is similar to the notion of procedure used often in the context of IS. Both process and procedure consist of interconnected steps leading to a certain end. For example, a procedure of formatting the title of this section includes marking the title, clicking the button for centering text, and clicking the button for boldfacing the font. However, a business process is more complex than a procedure, and it can contain many connected procedures. For example, the process of producing a business letter includes all procedures for manipulating word processing software, along with data collection and thinking needed for creating the letter.

Business (or organizational) process is a set of activities connected from a start to an end point, which creates a deliverable of a measurable value to an internal or external customer. While this definition apparently builds on the general definition of process, its last part brings up characteristics that are specific to business process. The deliverable of a business process must be measurable by a value it brings to the process customer.

Do not confuse this concept of customer with a consumer in a marketplace. Such a person can be customer of a business process, but other players in the environment also qualify for that role. Another company can be the customer of the production process. Examples are the distributor buying products for resale, and the manufacturer buying half-finished products for further production. Shareholders, tax authorities and other stakeholders residing in the environment of a company are the customers to the company’s accounting process; and so on.

What makes a business process even more distinct is that its customer can also be internal to the organization in which the process runs. For example, a production manager is customer to the inventory process that delivers parts needed for production. The transportation department is the customer of the production process. Employees make the customer of HR processes. Similarly, the user support process performed by the IS staff has all other employees for the customer. And so on. Let us look at several standard processes in organizations.

A production process in a manufacturing company consists of the scheduling, assembly and quality control activities or steps (Figure 2a). Each of the steps can be further broken down to more specific steps. So, scheduling and the other two steps in fact are sub-processes. For
example, production scheduling involves the steps of materials ordering and of work scheduling. The deliverable of the manufacturing production process is goods for market. The external customer is individual buyer or another company. The value of deliverable can be measured as some utility/price ratio, timing, and the quality of goods.

A production process in a bank consists usually of borrowing funds, lending loans, and investing (Figure 2b). Again, these steps can be thought of as sub-processes. The deliverable is financial services for bank clients as the external customer. The clients can assess the value of deliverables in terms of utility they bring about, the speed with which they are delivered, and the risk control assured.

The HR process consists of many sub-processes, such as hiring, professional development, pay, wellness, and others (Figure 2c). The customer is internal – the employees who are provided with various HR services as the deliverable of the HR process. Timing and quality are usual measures of the deliverables.

The accounting process covers an entire enterprise and consists of tracking expenses and income, managing various accounts, and other sub-processes (Figure 2d). It delivers financial reports to managers (as the internal customer) and stakeholders outside a company (as the external customer). The process can be measured on accuracy, usefulness, depth, and timeliness of reports.
In order to understand how IS fit into business processes it is important to differentiate between operational and strategic processes. What is the difference between the two? When you play a computer game, some sport, or chess, you may have a big game plan for winning. And then there are moves you make to get there. These moves may be some learned patterns of steps. By playing out such patterns you try to reach the final goal. These moves can be offensive as well as defensive, if so needed, and sometimes made just to deceive the opponent or to pass the turn. Organizations also have winning goals and game plans. These are called "strategy." In this context, managers usually talk about strategic goals and strategic plans. In contrast, the step patterns in a game resemble organizational operations. Operations run continually, use patterned activities called routines, and ideally lead to materializing strategies. Taking the process approach, we can think of operational processes and strategic processes.

**Operational processes** make most of functioning and life in organizations. That is what employees do as their regular, everyday work. These processes take most of the work, incur most of the expenses, and generate most of the revenues ("daily bread"). At a university, operational processes are administrative tasks related to booking facilities and events (courses, exams, meetings), tracking business hours and expenses, and creating and cataloguing various business documents. In a bank, typical operational processes are performed by bank tellers on the customer desk; money lending services are another standard operation, which may involve back-office staff.

Opposite to operational processes, strategic processes occur occasionally (see Table 1). They are about setting big goals and plans, and about moving toward realizing these. Developing new courses at a university and new services in a bank are strategic processes. Engaging in a new student market or a banking market are also strategic processes. While operational processes run within a shorter time, strategic processes take a much longer time.

Operational processes are for the most part defined in advance or routinized (patterned, executed repeatedly in the same way). For example, a customer order is fulfilled always in a certain standard way. An operational process may vary in some steps but this variation is predictable, and actually defined beforehand as part of process design. For example, a delivery of an ordered product can be done either by usual transportation or by express delivery, should the customer request it. Unpredictable variation in operational processes usually causes troubles. The standard design of operational processes allows for making them efficient, that is, executable with least possible time and cost. This can be achieved by training the process staff and by developing IS that fit well with a process. Since efficiency translates into monetary gains,
organizations tend to shape their processes into regular step patterns, that is, to get them routinized.

Table 1. Operational and strategic processes

<table>
<thead>
<tr>
<th>Operational processes</th>
<th>Strategic processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usual production and support activities, daily “grind”</td>
<td>Occasional activities, big decisions and changes</td>
</tr>
<tr>
<td>Short time horizon</td>
<td>Long time horizon</td>
</tr>
<tr>
<td>Routines (patterns, with little or no variation)</td>
<td>More variability</td>
</tr>
<tr>
<td>IS are embedded in operations, provide key support</td>
<td>IS support is partial (e.g., decision making as part of planning)</td>
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Strategic processes again are different because their design is hard to pin down. Their steps can vary from one process execution to another, and the variation is not easy to predict. Examples are the determination of a company’s development directions, product development, and creation of new markets. Sometimes strategic processes emerge even without big plans. During the 1970s, the large German car producer Volkswagen made a number of acquisitions and engineering innovations that eventually resulted in a major shift in their design philosophy. Consequently, the company abandoned technological solutions that for decades had been a landmark of the company. Its popular model VW Beatle, the long-time flagship product for the mass consumer market, was abandoned. Volkswagen moved to more modern car models, such as Golf and Jetta. This long, complex process by which Volkswagen’s product strategy evolved was unique and without a clear, grand plan in the background.

IS fit well with operational processes. In fact, Transaction Processing Systems and Management Information Systems are necessary in modern organizations. Purchasing, inventory management, production, accounting, sales and any other business process do rely on these systems. The systems are embedded in processes and literally carry them, so that it is hard to take a process apart from its embedded IS. It is not so with IS support to strategic processes. For example, Decisions Support Systems can help in decision making involved in parts of a strategic process, such as strategic planning. Executive management is the main beneficiary of such system support. However, no system can cover an entire strategic process.

Knowledge workers can also benefit from systems support to strategic processes of research and development (R+D). They may deploy specialized IS to support some parts of knowledge creation and product development processes. Examples are Knowledge Work Systems for creating new designs of airplanes and those for testing them via simulation. Still, as strategic processes are complex with hardly predictable variation, multiple systems are usually needed and sometimes customized systems have to be built just for a particular project. Even a bigger reason is that knowledge creation and innovation are processes that engage heavily human
mind. It is difficult to define exactly what kind of system support different people may need, or how well a Knowledge Work System will work for them.

Management in the Process View of Organization

Taking the process perspective, management is about managing operational and strategic business processes. Note that business processes can be within an organization, such as a product development process that involves departments of research and development, engineering, and marketing. But business processes also extend outside an organization. They reach out to other organizations, such as to suppliers or to business partners working on a joint project. Business processes also extend out to markets. The typical example is product servicing that extends to customers. For example, modern machinery and cars can have sensors that wirelessly signal the defects back to a servicing centre. Such a signal is the first step in a servicing process that then continues on the customer premises.

The key goals driving business process management are (a) to reach benchmark process standards and (b) to raise these standards. An example of performance standard is the total process time, also called cycle time. For example, a benchmark cycle time for processing a mortgage application is 2 hours. If a particular bank does it in 3 hours, then the goal of process management is to get down to the benchmark time of 2 hours. But there may be possibilities of doing it even faster, if appropriate technology and process change are applied. Such an effort would raise performance standards.

In management that is not focused on business processes, the performance standard can be a production quota – the number of pieces of something that is delivered in a unit of time. For example, a bank’s quota may be to process 50 mortgage applications a month. While this may be a sound goal supporting the bank’s financial plans, it neglects the speed with which an individual application is processed. If there are fewer mortgage applications, the cycle time may be stretched. If there are more than 50 applications in a month, however, these might be processed too quickly so that the work quality is compromised (e.g., checks are not fully performed, the documentation is incomplete). Process management avoids these problems by focusing on a standard cycle time and deliverables’ quality per an individual process.

Organizations improve their processes by implementing information systems with higher performance capabilities (e.g., faster processing, and more effective and/or new functionality). Such systems work faster, save labour, and deliver outputs of a higher quality. In the example of the mortgage approval process, improved IS help to reduce the cycle time, employ less analysts, aid in running the needed checks and calculations with accuracy, and deliver complete mortgage documentation. In other words, better systems do improve process design and process performance. In turn, the process performance shows up in the overall organizational performance. These relationships are the essence of BPM. They are depicted in Figure 3. Details of this model will be clarified in this and in the next chapter.
The ultimate goal of BPM is to improve the organizational performance. More efficient and effective processes directly contribute to this goal (Figure 3). The performance of an organization can be measured in financial figures (revenue, profitability, and market share), customer service level, product quality and innovativeness, responsiveness to changes in the environment, employee satisfaction, and so on. The better the process performance, the better the revenue, profits, customer service, and other measures of the performance of an organization.

How precisely do we measure the performance of some business process? The next section addresses this question.

**Process Performance Measurement**

Process performance can be measured on three bases: Customer Value, Cost, and Time. Before even starting to assess process performance, a filtering question should be asked: Does a process serve useful organizational purpose? Although the question may sound strange at first, the fact is that organizations are not always perfectly rational about their processes. There are processes that are hauled from the past although their purpose is long gone. Such processes may even perform well but they have no real purpose and just waste company resources. Examples are paper trail processes that are run out of habit in parallel with electronic processes; unnecessary check and approvals that waste management time; and the production of odd documentation “just in case we might need it.” If a process examined passes the test of purpose, then its performance can be assessed. Otherwise, a purposeless process should be removed.

*Customer value* refers to the characteristics of the process deliverable that matter to the external or internal process customer. We discussed this aspect earlier in the context of different organizational processes. For example, when the sales process delivers a filled customer order to the inventory manager, the latter is the internal customer of the sales process. The inventory process prepares parts for production process, thus having the manufacturing manager as the internal customer. The production process delivers a finished
product to the delivery department that acts as the customer of the production process. So you can see that there is a chaining of internal customers mirroring the chaining of organizational processes. Each customer expects a certain value from the process serving them. Timing, accuracy, completeness, and quality often find place on customer value lists.

Cost is another key measure of process performance. The process cost refers to the total of expenditures a process preparation and execution requires, and it is expressed in monetary figures. To get these, sum up the costs for labor, materials, overhead, IS, and technologies used. Note that there may be non-monetary (intangible) costs involved in process execution, but they are not captured in this measure.

Time is always important in measuring process performance. Managers are interested in the total time elapsing between the start and end point of a process – cycle time. That is one reason why these points must be clearly marked in a process diagram and mapped in calendar time. To calculate cycle time, sum up execution times of all the steps. For parallel steps with the same start point, take the time of the longest step instead of adding up their times.

Design of Business Process

Business processes differ with regard to design. Process design refers to aspects that make a difference between business processes. There are five such aspects: Composition, Coordination, Complexity, Flexibility, and IS properties.

Process Composition

Process composition is about the selection and arrangement of process components. It is examined by asking about process steps and how they are connected? Focus on Figure 4 that shows the most important process components. These are:

- **Activity.** It is shown as a rectangle or oval with the names of action and object written in inside (e.g., Open Order in Figure 4). This is the step that transforms data or matter. An activity can be data-based or involving a physical matter.

- **Flow of steps.** It is marked by an arrow (e.g., the arrow between activities Open Order and Fill Order). Flow shows connections between steps.

- **Decision.** It is shown as a diamond with a brief question next to it or inside of it (e.g., “Rush order?” and the adjacent diamond). Decision is a special activity of choice making. There are often just two choices, but more choices can also be involved at a decision making step.
Loop. It consists of a decision point and a set of steps springing from it and sinking back to it (e.g., decision “Payment received on due date?” plus step Send Payment Reminder). The exit condition in this loop is a “yes” answer to the decision question.

Start. It is shown as a solid circle with an arrow going out (see Figure 4). This is the point by which a process begins.

End. A bull’s eye shape with an arrow going into it. This is the point by which a process finishes. There is no component of a process after the process end.

Figure 4. Process diagram for Customer Order Fulfillment (simple form)

To check how well a process is composed, several questions can serve as a guide.

First, are the steps defined accurately? Specifically, look at activity names. These should be verbs (in Figure 4, open, fill, deliver, etc.). Activity names need to label as precisely as possible the action taken. Action is applied upon data (order, invoice, reminder) and objects (delivered items). Also check the labels describing decisions. Do they make sense?

Second, look at the flow of steps. This is sometimes called control to indicate that at a certain point in time the process execution depends on a certain step; the step “controls” the process execution. Do the steps make sense, so that they are logically ordered from the process start to
the finish? This test takes common sense, some knowledge of particular business, and some practice. As part of this step, check also if there is any loop. Does the loop make sense? Will the exit condition kick in as expected, so that the main process flow proceeds?

Third, is the process complete? Are all the steps (activities and decisions) and loops included? Check also if the start and end point are included. If either one is missing, a reader of the process diagram could assume that there is some other part of the process that is not shown.

Errors can be in any of the three rubrics above. There could be a lack of clarity in activity names (e.g., if the first step is called “Get Order” it would be unclear if an old order should be “gotten” or a new one started). If the decision is labeled just as “Order?” it would not indicate that the question is about order type. Furthermore, if there is a flow between activities Deliver Regularly and Deliver Overnight, this would defeat the decision point and activate both types of delivery each time the process runs. Another example of composition error would be if control is moved from activity Send Invoice directly to Close Order, suggesting that the company owning this process does not care about revenues.

**Process Coordination**

Process coordination refers to dependencies between process steps and to their contribution to the process deliverable. In the diagram of the Customer Order Fulfillment Process in Figure 4, one step leads directly to the next, so the steps flow in sequence. We call this *sequential* dependence or sequential coordination. The sequence of steps leads clearly to the end deliverable—a fulfilled customer order. The process is so much streamlined that the insertion of any additional step would violate coordination. For example, if the sales clerk running this process engages into checking previous orders after filling a new order, this would unnecessarily extend the process. The inserted step would not contribute to the end deliverable.

Dependence between steps can also be *parallel*. The discussed example does not have parallel coordination. An example of it would be when team members working on a term paper divide the work on literature search between themselves, and then each member does their work within the same time period (in parallel). In contrast, sequential interdependence would be if one team member does the literature search, then, in turn, another does the reading task.

**Process Complexity**

Process complexity is about the scope of a business process. The scope can be easily measured in the number of process components. One measure of complexity is the number of steps (activities and decisions). For example, the number of steps in the process in Figure 4 is 9 (7 activities plus 2 decisions).
Since a loop repeats a particular set of steps, it appears as if a process is larger than the number of components indicated. That is why loops increase process complexity more than activities and decisions and should be counted separately.

The scope of process may have a vertical dimension as well. In other words, a process step may be broken down to more specific steps. If this is the case, complexity increases. The number and the extension of sub-processes should be accounted for as another measure of process complexity. In the Customer Order Fulfillment Process shown in Figure 4, no step has sub-processes, assuming that delivery is handled by another company specialized in courier services. If delivery is an internal function of this organization, then delivery would require performing additional steps, such as materials handling, warehousing, and transportation.

Process Flexibility

Flexibility is about the extent of variation in a process. For example, there are two versions of the process in Figure 4, depending on the type of delivery. The variation lies in that one step. Therefore, to assess process flexibility, try to see if there are any alternative steps. Then determine how many versions of process are there? In our example, the answer is: 2. Flexibility of Customer Order Fulfillment Process is 2, very low.

All routine processes are rather of a low flexibility. Recall the discussion on operational processes. Employees know what needs to be done and the process is always performed in a standard way, with some limited variation. Higher flexibility would cost extra time and money. The difference would be a waste. In contrast, strategic processes invite variation in order to unfold. A flexibility reduction can in fact choke a strategic process.

At this point it helps to think of process variation as a continuum, as depicted in Figure 5. As a consequence, we can see that some processes may fall into a middle zone, because they are partly routinized and partly open to variation. These are neither strategic processes nor downright operations. These we call hybrid processes. An example is the teaching process in a corporate instruction centre or in some school. It has routine elements with regard to the deployment of teaching materials and techniques, while it can involve variation when it is interactive and open to learners’ input. Therefore, we can say that teaching is of a mid-level complexity.

![Figure 5. Process variation and flexibility](image)

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In summary, the chapter discussed organization from the process perspective, business (organizational) process, business process management (BPM), as well as the important concepts of process performance and of process design.

Questions for Review and Study

1. Define business (organizational) process, and provide an example of it.

2. How is the process customer different from the consumer?

3. Cite two examples of organizational processes with external customers.

4. What does it mean to manage an organization from the process perspective?

5. What is the key principle of managing organizations from the process perspective?

6. Name and explain each aspect of process design. Use examples real or made up.

7. Use all process symbols you learned to represent some process of your choice (e.g., your study day process, your overall study process at university, vacation planning, or some other).

8. Name and explain each aspect of process performance. Provide an example for each aspect (real or made up).

9. Name and explain each aspect of process design. Provide an example for each aspect (real or made up).