

Decision Making, Power and Politics

8

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Key Terms

- | | |
|----------------------------|---------------------------------------|
| bounded rationality | organizational decision making |
| Carnegie model | organizational politics |
| coalition | power |
| incremental decision model | programmed decisions |
| intuitive decision making | rational model of decision making |
| nonprogrammed decisions | satisficing |
| organizational conflict | unstructured model of decision making |

This book has emphasized the importance of strategically managing organizations, whether they are operating in the for-profit sector or the not-for-profit sector. The challenge of competitive forces, discussed in chapter 2 on strategy, is reaching a zenith. This fact particularly impacts the first topic of this chapter, which is decision making. Because competition for resources and customers has reached the hypercompetitive level, decisions by organizations must be made quickly and accurately.

8-1 Decision Making in Organizations

Why do organizations make decisions? Primarily, decisions are required because organizations represent the merger of people, systems, and technology. Such a complicated conflagration inevitably leads to problems that beg solving or creates opportunities that need courses of action. Hence, **organizational decision making** is the process of identifying problems or opportunities and finding solutions or courses of action that further the goals of the organization.

When firms are small, such as those usually found in the *existence* stage of the organizational life cycle, all important decisions and most minor decisions are made by one person or a small group of people. However, as organizations add capacity to produce, employees, and markets, the need for decision making increases exponentially. Modern organizations are pushing this decision making responsibility to the lowest possible levels to increase speed and efficiency. This concept, known as empowerment, puts the responsibility for solving a problem or acting on an opportunity in the hands of those closest to the situation.¹

As technology continues to permeate our organizations, markets and competition become global, and productivity increases accelerate, the time available for mulling over important matters in the decision making process shrinks. Fortunately, most decisions faced by organizations are somewhat routine. Decisions made on a routine, repetitive basis addressed by company policy and procedures are known as **programmed decisions**.

Nonprogrammed decisions involve nonroutine, out of the ordinary situations and are generally not covered by existing policy or procedure. An example of a nonprogrammed decision would be a competitive situation where an organization is faced with a serious threat from a substitute product. Think about the difficulty faced by steel producers when automobile manufacturers began to utilize plastic on a widespread basis in their new cars. This is an example of a strategic threat from the external environment that resulted in a loss of revenue. That is a serious enough issue. However, this substitution led to the utilization of plastic into other products, replacing glass, steel, and even paper.

organizational decision making

the process of identifying problems or opportunities and finding solutions or courses of action that further the goals of the organization

programmed decisions

decisions made on a routine, repetitive basis that are addressed by company policy and procedures

nonprogrammed decisions

decisions that involve nonroutine, out-of-the ordinary situations and are generally not covered by existing policy or procedure

8-1a The Rational Decision Making Model

Regardless of whether decisions are *programmed* or *nonprogrammed*, everyone has a process that they follow when confronted with the need for a decision. As organization theory has evolved over the years, a clear need has been recognized by researchers and practitioners alike for a model for decision makers to adopt. Too many organizational managers were making decisions based only on past experience, or expediency, or whatever might make them look good to their superiors.

Allowing organizational decision-makers to “fly by the seat of their pants” works against the goals and objectives set by most firms. To overcome this problem, a rational or classical model of decision making has been developed. The **rational model** is a decision making process that relies on a step-by-step systematic approach to solving a problem. This model has been portrayed as anywhere from a three-step² to a six-step³ to an eight-step⁴ process. Figure 8.1 depicts a version of the rational model based on a strategic management

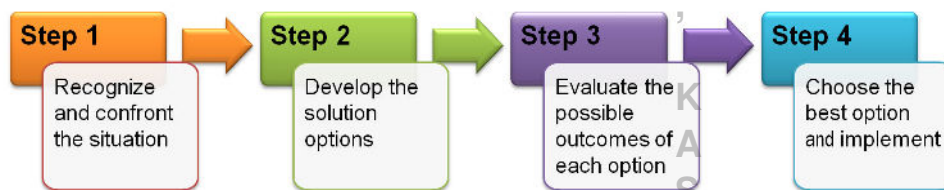


Figure 8.1 The Rational Decision Making Model

Each step in Figure 8.1 will be explained using a practical example from the Coca Cola Company headquartered in Atlanta, Georgia. During the early 1980's Coke began losing market share in supermarkets to Pepsi. Although newly-introduced Diet Coke had recently become the No. 1 diet soft drink, Coke executives were concerned with their competitive position in relation to Pepsi's. To make matters worse, Pepsi had been running taste test advertisements on television for several years where blindfolded consumers picked Pepsi over Coke based on taste.

Robert Goizeuta, chairman of Coca Cola, initiated a secret project to tinker with Coke's formula, developed in 1886 by Georgia pharmacist John Pemberton, believing that the sweeter taste of Pepsi was leading to Coke's loss of market share. By 1984 the company was ready to try the new formula in consumer trials in over 30 cities in America. With the aid of a market research firm, Coke conducted its own taste tests, with close to 40,000 people choosing New Coke over the old classic by 55 to 45 %. The also chose it over Pepsi.

The introduction of New Coke, and the withdrawal of Old Coke, came in April of 1985. To Coke's surprise, the outcry over the new formula and the pulling of the old Coke was met with outrage. Less than 90 days later, the old formula was re-

rational model of decision-making

a decision making process that relies on a step-by-step systematic approach to solving a problem



introduced to the market as Coca-Cola Classic. Coke's stock price went up over \$5 in one week after bringing back the old formula.⁵ This example is not an illustration of a successful initial decision, as Coke's decision to introduce New Coke could only be described as a failure. However, it very clearly demonstrates how difficult important strategic decisions can be, and it reveals one firm's ability to recognize when it had made a mistake.

Step 1

Recognize
and confront
the situation

Step 1: Recognize and confront the situation – do not sit on a situation that is a potential problem or opportunity for your organization hoping that it will take care of itself. Coca-Cola executives became concerned with a drop in market share in the early 1980's as Pepsi began outselling Coke in supermarkets. The company decided the problem was the taste of their product, in that Pepsi was sweeter than Coke.

Step 2

Develop the
solution
options

Step 2: Develop the solution options – strategic managers base decision-making options on their compatibility with the organization's strategy to accomplish its goals and objectives. Anything else is counterproductive. Coca-Cola owned the most recognizable brand in the world. To protect its market share and its name, Coke looked at introducing new products (like Diet Coke), changing advertising strategies (conducting its own taste tests), or actually altering the formula of its main product (introducing New Coke).

Step 3

Evaluate the
possible
outcomes of
each option

Step 3: Evaluate the possible outcomes of each option – Sometimes a possible solution to a situation sounds very good until it is evaluated based on the possible outcomes. As they evaluated each option, Coke executives knew they already had six brands on the shelves of stores, they believed their marketing campaign was already one of the best in the world, and they were concerned that tinkering with their tried and true formula was risky.

Step 4

Choose the
best option
and implement

Step 4: Choose the best option and implement – Once the best option is identified based on an evaluation of possible outcomes, implement the option. After analyzing this situation for some time, CEO Robert Goizueta, with support from Robert Woodruff, the 95 year-old former chairman of Coca-Cola, put the wheels in motion for the introduction of New Coke.

The example of decision making at Coca-Cola by its top management team demonstrates that even a rational, objective, research-based decision can be wrong. In the end, after spending over \$4 million to taste test its new formula, Coca-Cola failed in its introduction of New Coke. Some say an intangible, e.g., the consumer's emotional tie to the brand, was to blame for New Coke's failure.⁶ Yet, Coca-Cola survived and prospered under Goizueta's leadership as its stock price increased 3800% during his tenure. Since his death in October of 1997, however, Coca-Cola has struggled to find the right leader at the right time.⁷

Critics are quick to point out that the rational model has several flaws. For example, managers do not have complete, perfect information most of the time. They do not know all possible alternatives, and they do not understand nor can they predict all possible outcomes of those alternatives. Decision makers also have limited mental capability, something that is not recognized by this model. The rational model is a *prescriptive* model in that it lays out a process for how decisions *should* be made. A second model will be discussed below that is more *descriptive*, demonstrating how decisions actually *are* made in organizations.

8-1b The Carnegie Model

A second model of decision making is the administrative model, or the **Carnegie Model**. Developed by organizational researchers James March and Herbert Simon from Carnegie-Mellon University, this model tries to explain how organizational decision makers actually make decisions. The result is a realistic snapshot of the limitations decision makers bring to the process, particularly in light of the tremendous number of variables involved in decision making in today's organizations.

The Carnegie model reflects a descriptive decision-making process in organizations where coalitions determine a final choice based on incomplete information, social and psychological processes, limited abilities of decision makers, and the need to find quick, satisficing solutions.⁸ The Carnegie Model is a good example of what happens to a behavioral theory in management when it is actually studied in practice. Rarely does one single top manager make all of the important decisions in an organization without input and buy-in from many other key managers. Although an organization may have clearly defined goals, conflict as to how to obtain those goals or whether they are actually the proper goals often develops. In these situations, coalitions can form within the organization between employees, managers, and/or shareholders to push forward a solution.⁹ In contrast, the *rational* model of decision making tends to assume no conflict exists in organizations and that organizational goals are all commonly shared by immediate stakeholders.

Mintzberg categorizes the possible reasons for coalitions in an organization and identifies the actual groups, both external and internal, that might result. He defines a **coalition** as “a group of people who band together to win some issue.”¹⁰ Below is a list of these possible coalitions.

External Coalitions:

Owners

- those who have legal control of the organization

Associates

- Suppliers and buyers of organizational resources and products/services

Employee Associations

- Unions and professional associations

Publics

- this term refers to general groups such as families and opinion leaders, special interests groups, and government

Directors

- board members

Carnegie model

reflects a descriptive decision-making process in organizations where coalitions determine a final choice based on incomplete information, social and psychological processes, limited abilities of decision makers, and the need to find quick, satisficing solutions

coalition

a group of people who band together to win some issue

Internal Coalitions:

Top Management Team

- also referred to by some as the dominant coalition

Operators

- describes the workers who actually produce the firm's product or service

Line Managers

- all managers from the CEO down to first-line supervisors;

Analysts of the Technostructure

- systems planning and control personnel;

Support Staff

- specialists who work on matters of law, public relations, etc.

Ideology Supporters

- those who share a set of beliefs that distinguish the organization from others.¹¹

This list emphasizes the fact that coalitions are powerful, yet fundamental forces to be reckoned with in any organization. The vast number of special interests, causes, needs, and other considerations that can be conjured up by this list confirms the practical approach to decision making that coalition building represents. This is not to say that coalitions are only concerned with self-interest, but it does make one aware of the importance of coalition building in managing an organization.

A second major difference between the rational model and the Carnegie model has to do with choosing the optimal solution in the decision-making process. March and Simon have described that, in many cases, solutions to problems are arrived at through a process of **satisficing**. The concept of satisficing is choosing a course of action that is the most acceptable to the greatest number of people involved or affected. In a perfect world, this would not be the case. Decision makers would always choose whatever solution was best for the organization. Remember, organizations are groups of people who must work together to accomplish anything. Unfortunately, optimal solutions are not always going to be supported by organizational stakeholders.

Another factor involved in decision making that the rational model overlooks is the sheer limitations of human decision makers based on their **bounded rationality**. Although organizational decision makers are usually well-versed in their industry, trained in their jobs, and networked to opportunities and threats in the external environment, they are also limited by their own cognitive ability. So, bounded rationality refers to the limitations of the mind that restrict the ability of decision makers to solve problems or take advantage of opportunities. Operating within this limited framework, decision makers can make a quick list of alternatives based on

satisficing

choosing a course of action that is the most acceptable to the greatest number of people involved or affected

bounded rationality

refers to the limitations of the mind that restrict the ability of decision makers to solve problems or take advantage of opportunities

past experience and personal knowledge of the situation at hand, prioritize them based on importance, and move on with a solution. Are all relevant alternatives likely to be included? The answer is probably not. However, the need not to spend too long deliberating a situation, the tendency to satisfice, and the personal preferences of the primary decision maker usually overrule any inclination to try to be exhaustive in identifying alternatives.



Input and buy-in from key managers aid and strengthen the decision making process.

8-1c Incremental Decision Making

A different model of decision making is the **incremental decision model**. The name incremental is quite descriptive, as managers make decisions that are only slightly different than the ones made by their predecessors or the ones they themselves made in the past.¹² The idea behind the incremental model is that managers are only “muddling through” as they are confronted with important decision-making opportunities. Many managers practice this decision making style because the chance for failure is reduced when you only incrementally change what has been happening for a long time. Although new courses of action may eventually develop when the incremental model is practiced, they take a long time to come about due to the small step-by-small step process.

8-1d The Unstructured Model

While the Carnegie model emphasizes the need to recognize social and psychological processes, the unstructured model, based on the observance of actual decision makers in operating organizations, focuses more on the actual steps taken by decision makers. The **unstructured model of decision making**, developed by Henry Mintzberg, sometimes referred to as the Father of Strategic Management, describes decision making in uncertain environments as a sequence of activities that require smaller decisions throughout the process.¹³

incremental decision model

managers make decisions that are only slightly different than the ones made by their predecessors or the ones they themselves made in the past

unstructured model of decision making

describes decision making in uncertain environments as a structured sequence of activities that require smaller decisions throughout the process

Mintzberg and his colleagues studied twenty-five organizational decisions as a process from beginning to end. They outlined three major phases common to the firms studied: the *identification phase*, the *development phase*, and the *selection phase*. The identification stage involved *recognizing* the problem or opportunity and gathering more information, or *diagnosing*. The development phase was focused on *searching* for alternatives or *designing* a solution that was customized to fit the situation. In the selection phase a judgment is made, followed by *analysis*, *bargaining*, and eventual *authorization*. In their research, Mintzberg and his co-authors noted that sometimes major barriers would be bumped into, requiring decision makers to go back and repeat steps they had already taken.

What is important to remember in any decision model is the fact that most critical decisions are made over a period of time. And, as we have emphasized in this book, the environment for most businesses changes over time, sometimes drastically. Mintzberg's model is realistic in that regard, particularly when an organization is operating in an uncertain internal or external environment, since it accounts for barriers that can arise.

8-1e Intuition in Decision Making

A somewhat recent school of thought in the decision making literature looks at the importance of intuition. Using intuition, or practicing **intuitive decision making**, involves relying on judgment and feel for a situation based on past experience.¹⁴ Intuition is invaluable because it represents an informed gut reaction to a problem or opportunity, it allows decisions to be made faster as the reaction intuitively is fairly immediate, and it relies on information that has been burned into the subconscious over a long period of time.¹⁵

Intuition plays an important role in the decision making of Meg Whitman, president and CEO of eBay who is featured in our Best Practices box in this chapter. Whitman must make decisions on critical business issues like expansion, acquisitions, personnel and so forth. However, she has other decisions to make that involve social and cultural issues that can become quite complicated. For example, eBay will let you sell Lizzie Borden's ax, but you can't sell Jeffrey Dahmer's refrigerator.¹⁶ Whitman finds that she must monitor chat rooms and customer e-mails almost daily to stay in touch with where her online market is going. Some items she has banned from sale on eBay include firearms, tobacco, alcohol, and Nazi items. Some of these decisions have been controversial since free market advocates can make an argument for selling anything legal as long as there is a market willing to purchase the product. Whitman has had to rely on her own intuition and gut feeling to try to do what is socially responsible without severely damaging her firm's ability to prosper.

intuitive decision making

involves relying on judgment and feelings for a situation based on experience

Best Practices

Meg Whitman, eBay

According to Fortune magazine, the most powerful woman in business for the year 2004 was Meg Whitman, president and CEO of eBay. Carly Fiorina of Hewlett-Packard had been named number one for six years in a row prior to 2004. Why did Meg Whitman move up from second in 2003 to first? Part of the reason was that eBay was arguably the hottest company in the world in 2004. But perhaps even more important was the fact that Meg Whitman was the most respected woman manager in the world. And, one reason for that awesome reputation is her ability to manage a fast-growing business garnering world wide attention without going on a power trip.

Whitman amassed a tremendous base of power by trying not to act powerfully. She has grown eBay from \$5.7 million in revenue to just over \$3 billion in about seven years. This makes eBay the fastest growing company in history, faster than FedEx, Microsoft, Cisco, Oracle, or even Wal-Mart for its first eight years of existence. Whitman takes no responsibility for the unprecedented success of eBay, choosing instead to constantly heap praise on her employees and loyal customers. Yet fellow executives at eBay are quick to remark that no one could have kept everything on course at the company except Meg.

The key to Whitman's tremendous tenure at eBay is rooted in her approach to power. She was quoted as saying: "Ask anyone about me, and they would never think of power." Instead, Whitman would point to her unconventional power, a more subtle kind of power that continues to garner her a legion of admirers. Her credibility is key. Whitman does what she says she will do. She is also a counterintuitive strategist, a rare ability in today's uncertain environment. In a very unpowerful way, Whitman practices the art of enabling others to go out and accomplish great things for eBay. Yet, in the end, this art of enabling has made Meg Whitman the most powerful woman in business.

8-2 Power in Organizations

Power is an elusive concept to grasp and formulate a formal definition for because it tends to be associated with authority, control, influence and other similar kinds of things. Yet, power is also one of those organizational characteristics that most people know when they see it. For example, Salancik and Pfeffer,¹⁷ researching strategic-contingency theory, asked ten managers in an insurance company to rank twenty-one people in the organization based on their influence. Only one person hesitated, asking "What do you mean by influence?" When he was told 'power' he immediately joined the other nine in compiling what turned out to be very similar lists.

Mintzberg wrote about power being 'in and around organizations' due to the growing body of literature on power between firms, as well as, within firms.¹⁸ This discussion of power will focus on power as it relates to the internal workings of an organization. **Power** is one's ability to achieve desired outcomes by exerting influence over others. Sometimes this influence is exerted in the form of orders or instructions to be carried out,¹⁹ while other times it is subtly understood. A.G. Lafley of Proctor & Gamble was recently quoted as saying, "The measure of a powerful person is that their circle of influence is greater than their circle of control."²⁰

Position Power

When young, up-and-coming executives are given their first official titled jobs, at least some position (or legitimate) power comes into play. Being named to a particular spot on the organization chart automatically puts a person higher on the pecking order than some others. May who fall into that “others” category are more experienced in the industry and know more about the company than the newly-titled up-and-comer.

As you prepare for your first titled position in an organization, think about how you will manage your new-found position power. Meg Whitman, CEO and president of eBay (See Best Practices), agrees with this statement made by Rajiv Dutta, eBay’s CFO: “To have power, you must be willing not to have any of it.” This is difficult for new executives to grasp since obtaining and exercising power is something they think they’re working for in the first place.

Exercising position power requires a deft hand for a young executive. You should not abdicate your power just because there are others in your workgroup who know much more about the business than you know. Conversely, you don’t ignore the valuable contributions these coworkers can make. Just like the green second lieutenant who comes to rely on his seasoned first sergeant, learn how to manage the knowledgeable folks you work with while continuing, where appropriate, to interject your own fresh thoughts that are not colored by years of doing the same old thing in the same old way.

Top management teams are looking for new managers who understand the core competencies of the firm, yet bring fresh new ideas to the table. They are not looking for new managers who want to be respected so badly that they impose their ideas on others, even when they are bad for the organization. Remember, in any organization, managers are respected for doing what they say they will and for advancing the goals and objectives of the firm, or, in other words, being credible and having integrity.

8-2a Individual Sources of Power

Power originates from several sources. These sources are covered in most organizational behavior courses at the collegiate level, but they are worth mentioning again here. Some of these power sources are based on a person’s position in an organization, and some are based on person’s individual characteristics or personality. Most of these power sources, legitimate, coercive, reward, expert, referent, and charismatic, were identified and described by French and Raven.²¹

The first source of formal power is *legitimate* power. Legitimate power is obtained by virtue of the position one holds in an organization. It is sometimes referred to as position power. Having a title or being designated a manager usually allows a person a certain amount of power based solely on the position. A second type of formal power is known as *coercive* power. Coercion means you have the ability to force someone to act in a certain way based on a fear of negative consequences if that action isn’t taken. For example, one may be demoted or even fired for not following orders or doing as one was told. See the Career Points section for a practical perspective on position power.

A somewhat more pleasant type of formal power is *reward* power, just the opposite of coercive

power. Managers who have the ability to reward performance will usually get the results they need based on subordinates desire to achieve the rewards. These rewards can be either financial, such as salary increases or bonuses, or they can be nonfinancial, including options such as better working conditions, a nicer office, more time off, plum assignments, or promotions.

Individual sources of power include the notion of being an expert. *Expert* power refers to one's knowledge or skill that is greater than that of others in the workgroup. This expertise about something specific to the needs of the organization brings a degree of respect and dependence from coworkers. For example, a technician from the IT department at your company would be better suited to help you with a pc problem than your coworker in the marketing department. Eventually, if the pc's at your firm break down or lock up regularly, the computer technician may become one of the most powerful people in the organization. An example of this involved maintenance engineers at French tobacco-processing plants studied by researcher Michael Crozier. Crozier discovered that these maintenance engineers, although low on the organizational chart, were actually some of the most powerful people in the corporation due to the machinery frequently breaking down. Without the machinery operating properly, there was no production. These engineers exploited this situation by refusing to show operators how to make minor repairs, insisting that all repair work be done by the engineering maintenance department.²²

The last personal source of power is known as referent power. *Referent* power is based on someone having admirable personality traits, so much so that others allow that person to exercise power over them because they want to please him. Referent power is a very strong kind of influence. We see its personification in advertising where sports heroes or music personalities are contracted to sell and promote products because companies understand that many people look up to these celebrities and want to be like them. Politicians will even solicit the assistance of rock and roll stars to campaign on their behalf, persuading fans to vote for the endorsed candidate.

Referent power can be taken to another level if someone possesses charisma. *Charismatic* power is a person's gift of being able to influence others by transforming their attitudes and beliefs, even in the face of contradicting information. A charismatic person may become a leader without a formal leadership position. This sometimes happens when a person does something heroic, like the FedEx employee that could not open a drop box. Instead of just moving on to the next one, he physically lifted the box and put it in his truck to be opened at the hub so that none of the documents or packages would be late.

8-2b Departmental Sources of Power

We began the discussion on power with a reference to Pfeffer and Salancik's work on strategic contingency theory. The concept of environmental uncertainty is relevant to the idea of strategic contingencies for, over a period of time, what is strategically critical to the organization may change. The department or division that controls the critical resources or performs whatever task is most relevant will receive the most power. Pfeffer and Salancik identified five situations where a department can exert tremendous influence.²³

Table 8-1 Departmental Contingencies that Produce Power

- | | |
|-----------------------|---------------------------|
| • Dependency | • Non-substitutability |
| • Financial Resources | • Coping with Uncertainty |
| • Centrality | |

Dependency refers to a department needing an output from another department in order to successfully do its work. An example might be that the flight scheduling department cannot complete its schedule without a status report on each pilot from personnel. This makes flight scheduling dependent on personnel.

Financial Resources are more prized everyday in organizations, and the departments that generate them are usually very powerful. Many times this role is played by the sales department. When times are good and above-average returns are generated, other departments may make extra demands for more funds. In a university, the college, school, or department where enrollment is growing very fast will demand more resources to keep up with demand but also because it has amassed a certain amount of power based on its growth.

Nonsubstitutability is a source of power when the role played by a particular department cannot be performed by any other. Due to the knowledge of people in the department, their expertise due to education or training, substitutes are rare or nonexistent.

Coping with Uncertainty is a strong base of power in today's hypercompetitive environment. Emery and Trist described a situation they labeled *turbulent fields* where competition was so fierce that the organization believed the ground was actually moving under them.²⁴ A department can diffuse that uncertainty with accurate predictions, or *obtaining prior information*. For example a new product could be developed that was designed take advantage of environmental changes. Or power can be garnered through *prevention*, somehow stopping the organization from committing an error. The third uncertainty coping method is *absorption*, moving in after a bad situation has developed and diffusing the overall effect on the organization.

8-3 Politics in Organizations

This chapter has discussed decision making and power because they are closely related in any organization. Those with power have influence, and those with influence tend to be involved in decision making. There is a third force that must be added to these first two if power and decision making are to be fully understood, and that force is politics.

To some people who work in organizations on a daily basis, politics is literally a dirty word. They view politically astute managers or staff members as scheming, conniving, and self-serving. Yet, while some people do abuse the political process in organizations, politics is essential to progress. This is especially true for larger organizations.

Jeffrey Pfeffer has provided a good working definition of politics in organizations. According to Pfeffer, **organizational politics** are, "activities taken within

organizational politics

activities taken within organizations to acquire, develop, and use power and other resources to obtain one's preferred outcomes in a situation in which there is uncertainty or disagreement about choices



organizations to acquire, develop, and use power and other resources to obtain one's preferred outcomes in a situation in which there is uncertainty or disagreement about choices."²⁵ This definition reveals several interesting points about politics in today's modern organizations.

First, politics are directly related to power. Pfeffer says political activities are specifically undertaken to acquire, develop, and use power. Second, politics is about obtaining preferred outcomes, which requires overcoming obstacles and differences of opinion among organizational members as to the best course of action. Third, political activities are particularly conspicuous in situations where there is uncertainty. Earlier we discussed environmental uncertainty's effect on decision making and how

organizational departments that can predict future events tend to wield much power. This definition of politics in organizations further explains that many times uncertainty and disagreement of choices lead to a situation where coalition building is usually required for a solution to be determined or a decision to be made.

So, politics in organizations is not always a negative thing. Yes, some political activity is self-serving and perhaps even subversive. Remember, organizations are composed of people, so society's problems and ills will probably be mirrored in our organizations. However, most organizational goals would never be met if it weren't for the political astuteness of key organizational leaders and power brokers. Some disputes are so great and some environments are so uncertain, without political behavior very little would be accomplished. Imagine a decision process, for example, where an organization is trying to decide which foreign country in which to pursue expansion. There are so many countries with so many diverse populations and standards of living, the choices are overwhelming. Some type of political coalition would have to be developed to push for one particular country over another to get the process moving.

Politics is a difficult behavior to define because, like power, it is one of those things that we know it when we see it. And, it is directly related to power, since it is the use of power to get something done. Most people dislike negative, self-serving politics and the people who practice such activity, but we need political activity whenever our organizations are faced with uncertainty and disagreement.

8-4 Conflict in Organizations

Organizational conflict occurs when two groups clash over competing goals. To understand why disagreement surfaces in organizations we need to take a look at the sources of conflict. Borrowing from the work of Louis Pondy, the sources of conflict in organizations include interdependence, differences in goals and priorities, bureaucratic factors, incompatible performance criteria, and competition for resources.²⁶

Interdependence is a term that describes how some subunits of the organization seek autonomy and pursue its own agenda of goals and objectives. This phenomenon occurs most often when the organization has diversified over a period of time. The need for interdependence identified by upper management to accomplish organizational goals can come into conflict with the desire for autonomy by subunits.

Differences in goals and priorities develop among subunits because each is engaged in a different pursuit, some with close ties to the external environment and some shielded by the internal core of the organization. A customer service center in direct contact with end users on a daily basis might have different priorities than an internal engineering department that is charged with lowering production and process costs. An example at the university level would be professors desiring reduced class sizes and teaching loads to facilitate the pursuit of academic research while the upper-level administrators sought larger class sizes and heavier teaching loads to reduce costs.



Bureaucratic factors can become a source of conflict in very large organizations due to the status afforded different groups according to their importance. In a firm such as General Electric, known as a proven training ground for top managers, a human resources vice president would have a difficult time of rising to the position of CEO or president. Staff jobs in human resources are considered important, but staff functions are not considered as relevant for training top managers as line positions, such as division head or director of operations.

Incompatible performance criteria are a source of conflict between subunits because they may be evaluated in different ways, leading to incongruent performance outcomes. Subunits that are dependent on each other indirectly may develop become at odds. For example, if engineering is working to lower production costs but sales is hearing from customers that they want products with more features, conflict is likely to occur. In order to increase sales and keep customers from seeking other vendors, sales may need research and development to design new features to enhance its products. Engineering will then find itself working to redesign the manufacturing process to include the new features, probably adding costs in the long run. Performance in the sales department goes up, while cost containment programs by engineering are lost.

Competition for scarce resources is a ready source of conflict in most every organization operating in our modern global environment. Depending on how an organization is structured this conflict can have several sources. If the structure is functional, as described in chapter 5, marketing will compete with finance or research and development for scarce resources. If the structure is divisional, large operating divisions will find themselves lobbying the home office for resources. Resources are critical because organizations cannot grow without investment, and, unfortunately there are never enough resources to meet everyone's expectations. When General Motors decided to form the Saturn automobile division in the mid-1980s, they knew significant financial resources would be necessary to design and build a new, world-class car. The eventual price tag was approximately \$5 billion. Other divisions at General Motors suffered during this period, particularly Chevrolet. Chevrolet went from selling one-fifth of all cars in America in 1970 to 12.1% in 1992. Much of this lost market share was attributed to lack of new designs for its cars and continued erosion to Japanese car makers.²⁷

Not all conflict is bad for organizations. Most organizational researchers would agree that some conflict is quite constructive, as differences of opinion are gotten out in the open and each side in a dispute is made aware of the other's position. In chapter 11 we will examine how organizational learning, a critical component of competitiveness in the future, is facilitated by conflict.

Summary

Organizational decision making is the process of identifying problems or opportunities and finding solutions or courses of action that further the goals of the organization. Decisions made on a routine, repetitive basis addressed by company policy and procedures are known as programmed decisions. Nonprogrammed decisions involve nonroutine, out of the ordinary situations and are generally not covered by existing policy or procedure.

The rational model is a decision making process that relies on a step-by-step systematic approach to solving a problem. The Carnegie model reflects a descriptive decision-making process in organizations where coalitions determine a final choice based on incomplete information, social and psychological processes, limited abilities of decision makers, and the need to find quick, satisficing solutions. The concept of satisficing is choosing a course of action that is the most acceptable to the greatest number of people involved or affected. Another factor involved in decision making that the rational model overlooks is the sheer limitations of human decision makers based on their bounded rationality. Bounded rationality refers to the limitations of the mind that restrict the ability of decision-makers to solve problems or take advantage of opportunities.

A different model of decision making is the incremental decision model. The idea behind the incremental model is that managers are only “muddling through” as they are confronted with important decision-making opportunities, improving on former decisions incrementally. The unstructured model of decision making describes decision making in uncertain environments as a structured sequence of activities that require smaller decisions throughout the process. Using intuition, or practicing intuitive decision making, involves relying on judgment and feel for a situation based on past experience.

Power is one’s ability to achieve desired outcomes by exerting influence over others. Power is derived from a legitimate position, the ability to be coercive, the ability to reward, being an expert, appealing to others’ desire for referent affiliation, and/or a strong charismatic personality. The department or division that controls the critical resources or performs whatever task is most relevant will receive the most power.

Organizational politics comprise activities taken within organizations to acquire, develop, and use power and other resources to obtain preferred outcomes in a situation in which there is uncertainty or disagreement about choices. Organizational conflict occurs when two groups clash over competing goals.

Review Questions and Exercises

1. Rational decision making appears to be the optimal process for solving problems. Discuss.
2. Compare and contrast the rational model with the Carnegie model. In your opinion, which is better?
3. Explain the term satisficing.
4. Someone referred to power as a golden rule. What is meant by the statement, “He who has the gold, makes the rules.”

5. Why is intuition important in decision making?
6. Is organizational politics good or bad? Defend your answer.

Glossary

- **Bounded rationality** refers to the limitations of the mind that restrict the ability of decision makers to solve problems or take advantage of opportunities.
- **Carnegie Model** reflects a descriptive decision-making process in organizations where coalitions determine a final choice based on incomplete information, social and psychological processes, limited abilities of decision makers, and the need to find quick, satisficing solutions.
- **Coalition** a group of people who band together to win some issue.
- **Incremental decision model** managers make decisions that are only slightly different than the ones made by their predecessors or the ones they themselves made in the past.
- **Intuitive decision making** involves relying on judgment and feel for a situation based on experience.
- **Nonprogrammed decisions** decisions that involve nonroutine, out of the ordinary situations and are generally not covered by existing policy or procedure.
- **Organizational conflict** occurs when two groups clash over competing goals.
- **Organizational decision making** the process of identifying problems or opportunities and finding solutions or courses of action that further the goals of the organization.
- **Organizational politics** activities taken within organizations to acquire, develop, and use power and other resources to obtain one's preferred outcomes in a situation in which there is uncertainty or disagreement about choices.
- **Power** one's ability to achieve desired outcomes by exerting influence over others.
- **Programmed decisions** decisions made on a routine, repetitive basis that are addressed by company policy and procedures.
- **Rational model of decision making** a decision making process that relies on a step-by-step systematic approach to solving a problem.
- **Satisficing** choosing a course of action that is the most acceptable to the greatest number of people involved or affected
- **Unstructured model of decision making** describes decision making in uncertain environments as a structured sequence of activities that require smaller decisions throughout the process.

(Endnotes)

1. J. Conger, & R. Kanungo, 1988. The empowerment process: Integrating theory and practice, *Academy of Management Review*, 13, 471-481.
2. G. Jones, 2004. *Organization Theory*.
3. S. Robbins 2003. *Organizational Behavior*, 10th edition. Upper Saddle River, NJ: Pearson, pg. 132.
4. R. Daft, 2004. *Organization Theory and Design*, 8th edition. Mason, OH: South-Western, pg. 449.
5. J. Fierman, 1985. How Coke decided a new taste was it, *Fortune*, May 27, pg. 80; A. Fisher, 1985. Coke's brand-loyalty lesson. *Fortune*, August 5, pg. 44-46.
6. Fisher, 1985.
7. B. Morris, 2004. The real story, *Fortune*, 149(11), pg. 84-98.
8. J. March, & H. Simon, 1958. *Organizations*, New York, NY: Wiley; H. Simon, 1960. *The New Science of Management Decision*, New York, NY: Harper and Row.
9. W. Stevenson, J. Pearce, & L. Porter, 1985. The concept of 'coalition' in organization theory and research, *Academy of Management Review*, 10(2), 256-268; R. Cyert & J. March, 1963. *A Behavioral Theory of the Firm*, Englewood-Cliffs, NJ: Prentice-Hall.
10. H. Mintzberg, 1983. *Power In and Around Organizations*, Englewood-Cliffs, NJ: Prentice-Hall, pg. 27.
11. H. Mintzberg, 1983.
12. C. Lindbloom, 1959. The science of muddling through, *Public Administration Review*, 19, 79-88.
13. H. Mintzberg, D. Raisinghani, & A. Theoret, 1976. The structure of unstructured decision making, *Administrative Science Quarterly*, 21, 246-275.
14. O. Behling, & N. Eckel, 1991. Making sense out of intuition, *Academy of Management Executive*, February, 46-54.
15. L. Burke, & M. Miller, 1999. Taking the mystery out of intuitive decision making, *Academy of Management Executive*, November, 91-99; A. Hayashi, 2001. When to trust your gut, *Harvard Business Review*, February, 59-65.
16. P. Sellers, 2004. eBay's secret, *Fortune*, 150(8), 161-178.
17. G. Salancik, & J. Pfeffer, 1977. Who gets power—and how they hold on to it: A strategic-contingency model of power, *Organizational Dynamics*, Winter, 3-21.
18. H. Mintzberg, 1983.
19. R. Dahl, 1957. The concept of power, *Behavioral Science*, 2, 201-215.
20. P. Sellers, 2004, pg. 162.
21. J. French, & B. Raven, 1959. The bases of social power, in D. Cartwright (ed.), *Studies in Social Power: Origins and Recent Developments*, Ann Arbor, MI: University of Michigan, Institute for Social Research, pg. 150-167.
22. P. Sellers, 2004, pg. 161.
23. G. Salancik & J. Pfeffer, 1977.
24. F. Emery, & E. Trist, 1965. The causal texture of organizational environments, *Human Relations*, 18, 21-32.
25. J. Pfeffer, 1981. *Power in Organizations*, Boston, MA: Pitman, pg. 7.
26. L. Pondy, 1967. Organizational conflict: Concepts and models, *Administrative Science Quarterly*, 2, 296-320.
27. K. Kerwin, 1992. Meanwhile, Chevy is sulking in the garage, *Business Week*, August 17, 90-91.

Innovation and Organizational Change

9

Chapter Outline:

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What is Innovation?
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Key Terms

action research	innovative process	planned change	reengineering
cooptation	intrapreneurship	process-oriented innovation	revolutionary change
evolutionary change	invention	product-oriented innovation	reward system
incremental innovation	learning organization	radical innovation	systematic innovation
innovation	organizational change	reactive change	venture teams

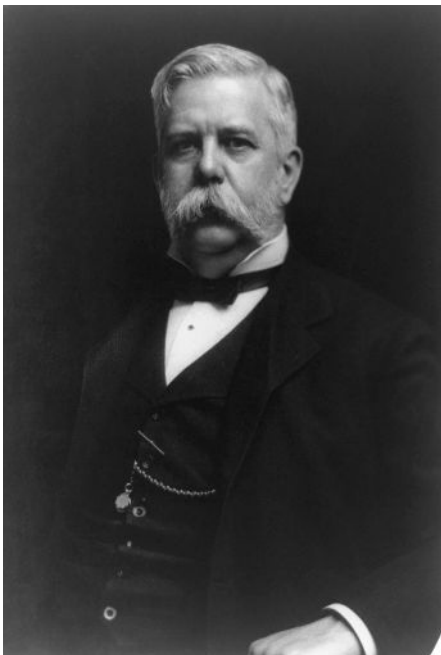
Entrepreneurial activity, both within existing organizations and in the creation of new ones, has become vital in today's competitive environments of for- and not-for-profits. Entrepreneurs create new markets, new customers, and new consumer demand. The instrument used to implement entrepreneurship is innovation.¹

9-1 What is Innovation?

Joseph Schumpeter, the German economist, heralded the work of the entrepreneur. He describes the entrepreneur's ability to transform an innovation into a viable business as "creative destruction," a process whereby current methods of production are rendered obsolete.² Consider the example of the personal computer, a product that has rendered the typewriter unnecessary. And, how soon will pay telephones become obsolete due to the proliferation of cellular phones? However, just as important as the ability of the entrepreneur to enact creative destruction is the instrument of innovation.

Innovation can be defined as the transformation of creative ideas and concepts into products or services that meet the needs of customers.³ The process of innovation represents a managed-change effort by an organization that will be discussed later in the chapter. Schumpeter distinguished between the types of changes that organizations experience, including *invention*, *innovation*, and *imitation*.⁴ **Invention** involves the creation of a new product or process. When an organization utilizes an invention to create a product or service for a customer it becomes an **innovation**. And, the adoption of an innovation by a similar firm is known as imitation.⁵

As an example, consider Thomas Edison, the famous inventor of the late nineteenth and early twentieth centuries. Edison worked tirelessly to invent the incandescent light bulb. He then transformed this invention into a true innovation when, in 1882, he flipped the switch and produced light at his Pearl Street station in New York City.⁶ Not long afterward, George Westinghouse imitated Edison's innovation by building very similar electrical systems utilizing alternating current instead of Edison's choice of direct current.



*George Westinghouse
(1846 - 1914)*

*Source: Library of Congress, Prints and
Photographs Division, LC-B2-1049-12*

innovation

the transformation of creative ideas and concepts into products or services that meet the needs of customers

invention

involves the creation of a new product or process

The accelerated nature of competition in today's global business environment has made innovation a critical organizational activity. Other types of organizational change have also moved to the forefront, including re-structuring and reengineering, as firms attempt to become more efficient and effective in their operations. Yet it is innovation, the managed effort of organizations to get new products and services to market, that separates competitors earning above-average returns from those earning less.

9-2 Types of Innovation

Most innovations can be categorized in one of two ways. An innovation is either **product-oriented** or **process-oriented**.⁷ Creating new products or services and bringing them to market creating new consumer demand is **product-oriented** innovation. This creation of a new product or service that replaces an existing one is also referred to as **radical innovation**. Product-oriented innovation also applies to **incremental innovation**, the improvement of existing products or services to enhance their marketability.⁸ **Process-oriented** innovation involves the improvement of existing production processes or other organizational processes such as management, organizational reporting structures, or information processing systems. Process-oriented innovations can also be radical, such as the creation of an entirely new production process, or incremental.

Product-oriented innovations abound in today's society, as individuals and companies move into a wireless age of communication with cellular telephones that serve a wide variety of applications. Process-oriented innovations are less obvious to the public but not less novel as organizations find creative solutions to combat waste and slack in the manufacture and delivery of goods and services to remain competitive.

9-3 Sources for Innovative Opportunity

There is a common perception that innovation is the result of an entrepreneur having a magical moment where a bright idea ignites a creative impulse to go to work. In actuality, the process of innovation is usually a one-step-at-a-time plodding that eventually results in the creation of something new and improved out of existing knowledge. In fact, the key to organizations becoming more innovative is to practice **systematic innovation**. Organizations should support the search for changes in the environment and identify how those changes can be systematically analyzed as to their future innovative potential.

Two environments provide the backdrop for this purposeful search for change by organizations. Within these two environments, Peter Drucker has identified seven sources to monitor for potential innovative opportunities. The first environment is the firm and the industry in which it operates. This environment is home to four of the seven sources:

product-oriented innovation

creating new products or services and bringing them to market creating new consumer demand

radical innovation

creation of a new product or service that replaces an existing one

incremental innovation

the improvement of existing products or services to enhance their marketability

process-oriented innovation

the improvement of existing production processes or other organizational processes such as management, organizational reporting structures, or information processing systems

systematic innovation

the search for changes in the environment and the identification of how those changes can be systematically analyzed as to their future innovative potential

- *The unexpected*—an event that has not been anticipated, such as the unexpected success or the unexpected failure
- *The incongruity*—is something not quite as it is assumed to be or ought to be
- *Innovation based on process need*—the result of a problem within the organization that must be solved
- *Changes in industry structure or market structure*—are usually a surprise to everyone in the industry

The second environment that provides sources of innovative opportunity is the general environment, a macroenvironment that is outside the scope of the firm and its industry. The remaining three sources are:

- *Demographics*—changes in population sizes, age distributions, and so forth
- *Changes in perception, mood, and meaning*—sociocultural changes within populations
- *New knowledge*—the discovery of something new, either through science or society⁹

To provide a clearer understanding of Drucker's work, examples are included below of each source of innovation. These examples were cited by Drucker in his work on innovation and entrepreneurship.

- *The unexpected* – The computer was developed for the purpose of furthering science and facilitating the work of scientist. Early on, however, businesses began to demand the use of computers for such functions as payroll and accounts receivable. This was clearly not what the inventors of the computer had in mind.
- *The incongruity* – An incongruity is a discrepancy between what is and what ought to be. Large steel mills seemed to only do well during times of war. When there was a need for incremental capacity expansion, the expansion was so expensive it only allowed for short-term profits. The answer was the concept of the mini-mill, a way to provide additional capacity to meet existing demand in an affordable manner.
- *Process need* – Early telephone service in America was manual, processed by operators. Around 1909 it was projected that population growth would require the Bell company to employ every woman in America between the ages of seventeen and sixty as an operator by 1930. Within two years of realizing this limitation of manual calling, the Bell engineers had designed the automated dialing system.
- *Changes in industry or market structure* – In the 1960s, when the automobile industry went global, a struggling small car company named Volvo decided to become a world car company. It advertised its cars as sensible, sturdy and safe transportation that was a better value than other more or less expensive models.
- *Demographics* – Improvements in public health in the Latin American region of the world led to a growth in populations, due in large part to a drop in the infant mortality rate. What followed was a tremendous growth in the urbanization of the region. Former Sears' chairman, Robert E. Wood, after reading about this population explosion in the early 1950s, visited the region, studied the competition, and designed an entry strategy to take advantage of this opportunity.
- *Changes in perception* – Sometime during the early 1950s, Americans began to refer to themselves as being part of a "middle class" rather than a "working class." William Benton, owner of Encyclopedia Britannica, discovered that middle class standing was achieved, in part, by attaining a high school education. In response he enlisted the help of high school teachers to sell his product to parents of students. If you wanted your child to do well in school, and achieve a middle class standing, you needed encyclopedias in your home.

- *New knowledge* – Lee de Forest, an American, invented the audion tube in 1906. This invention was the key to developing the radio. Although new knowledge many times precedes its actual application by thirty or more years, the radio was introduced to the public in the early 1920s. Its introduction, ahead of its time, was a result of the need during World War I for a wireless transmission instrument.

Successful innovation by organizations is the result of exploiting these seven sources of innovative opportunity from the general and industry/firm environments. Viewed from this perspective, innovation is not a technical term. Rather, it is an economic or social concept representing the process of transforming creative ideas into something that satisfies customers' needs.

9-4 The Innovation Process—A Life Cycle Approach

Each **innovative process** refers to how innovations are nurtured and facilitated from the early development stage to an eventual decline. This is known as a life cycle approach. The concept of life cycle has been borrowed from the biological sciences, where organisms are born, grow, mature, and eventually die.¹⁰ Management researchers have utilized this model to study organizations, products, and the changing priorities of top managers as organizations change.¹¹

The innovative process of organizations consists of six stages of life:

1. *Development* – The organization takes a creative idea, evaluates its potential, and modifies it
2. *Application* – From this modified, creative idea a new product or service is produced
3. *Launch* – The new product or service is made available to the marketplace
4. *Growth* – The launch of the new product or service is successful, and demand for it grows
5. *Maturity* – Demand levels off, as other organizations imitate the product or service
6. *Decline* – Demand declines as new substitute products or services are embraced by the market.¹²

In today's hypercompetitive business environment, life cycles of innovations are becoming shorter and shorter. Organizations can no longer rely on a new product or service providing them with long-term profits. This is why innovation needs to be systematized through an organizational culture that promotes and rewards innovative behavior.

innovative process

a life cycle approach concerned with how innovations are facilitated from development to decline

9-5 Promoting Innovation

Organizational culture is the shared values and patterns of belief that are accepted and practiced by members of a particular organization. Culture can play a large role in developing positive or negative attitudes about innovation among organizational members. If an organization values innovative activity and behavior, that behavior will be pursued by its associates. If, however, an organization promotes a bureaucratic culture with strict adherence to standardized policies and procedures, innovation can be hindered.

Organizations that promote innovation through their unique cultures include 3 M, Johnson & Johnson, Apple Computer, and Merck. As a result, these organizations lead their industries in new and innovative product and service activity. They promote innovation by communicating a sense to their associates that innovation is valued and rewarded. Risk taking is not punished or discouraged in these organizations, giving employees an assurance that reaching for something new and creative is not a contrary activity.

When large organizations promote innovative activity, they are said to be supporting **intrapreneurship**. Intrapreneurship, also known as corporate entrepreneurship, is the term used to denote entrepreneurial activity within a corporate structure. Individual organizational members “buy in” to the cultural bent toward innovation by pursuing entrepreneurial ventures within the confines and for the benefit of their large organization.

A company’s **reward system** is an overt mechanism of recognition and compensation to promote intrapreneurship, or innovation within the firm. Employees engage in actions that are encouraged and rewarded, and they tend to avoid actions that are discouraged or punished. An important aspect of a reward system for innovation is the provision of an actual financial or nonfinancial incentive for innovative behavior. The reward serves to reinforce the promotion of innovative idea generation within the organization.

One non-financial method of promoting innovation is the concept of skunk works described by Peters and Waterman in their classic work, *In Search of Excellence*.¹³ Excellent companies separate small teams of associates, sometimes called **venture teams**, into secluded or isolated quarters, away from the corporate office, where creative thinking and experimentation can be converted into innovative products or services. Other organizations promote innovation through creative departments,¹⁴ such as research and development.



intrapreneurship

entrepreneurial activity within a corporate structure

reward system

an overt mechanism of recognition and compensation to promote intrapreneurship or innovation within the firm

venture teams

where companies separate small teams of associates into secluded or isolated quarters where creative thinking and experimentation can be converted into innovative products or services

Best Practices

GM and Saturn

During the 1970's, General Motors faced tremendous competition from smaller, more fuel-efficient Japanese automobiles. Fueled by the gasoline crisis earlier in the decade, Toyota, Honda, and Nissan had stolen significant market share from American automobile makers, particularly GM.

To combat this threat, GM's CEO Roger Smith felt he had to develop an innovative group of designers who could pursue the process of new-car building without the baggage traditionally present at the firm. To accomplish this, Smith created a venture team to develop and bring to market the Saturn model. Saturn was to be built in Tennessee, far from the rust-belt Midwest, the traditional home of GM factories and unions. This seclusion enabled team members to work outside the normal confines of a very bureaucratic organization, creating a freedom to pursue something new. The Saturn automobile, cited for its quality and dependability, was a worthy challenge to the Japanese imports.

Firms must be careful not to encourage only successful innovative efforts. New product and service creation is a difficult undertaking, requiring much trial and error learning. Due to the hyper-competitive environment in which most firms exist, ideas that seemed sound and marketable in the early stages may not be viable by the time they reach application.

9-6 Reasons For Not Innovating

Some organizations never seem to introduce anything new or innovative, relying instead on the imitation and duplication of others' successes. These organizations fail to innovate due to lack of resources, failure to recognize opportunities, or a built-in resistance to change.¹⁵

- 1) *Lack of Resources* – to be successful at innovation, an organization must be able to devote financial resources to the process. Likewise, individual and collective talent must be available within the organization to pursue innovative progress. These resources, people and money, are limited in every organization. Some firms do not generate enough profit to have the excess capital needed to fund the innovation process. No organization can finance the pursuit of all the creative ideas or innovative concepts that its employees might pursue. Discriminating decision makers must choose only those that promise the greatest potential for success.
- 2) *Failure to Recognize Opportunities* – Firms that are unskilled in the art of recognizing potentially profitable innovations lag behind others in the introduction of new products and services. Capital may be invested unwisely in projects that are mere continuations of, or minor improvements to, existing products and services, lacking innovative qualities from the beginning.
- 3) *Resistance to Change* – Some organizations simply do not promote change. They have a built-in resistance to trying anything new that completely stifles innovation. Old, tried-and-true methods that worked in the past are considered to be intractable. And, some

firms choose not to change because the operational strategy they have employed is working satisfactorily, producing profits and maintaining market share. The only problem with this approach is that most firms are trying to improve their products and/or services to their customers in an effort to grow their market share. When firms choose to not change, they tend to eventually get left behind by the competition.

9-7 Organizational Change

When firms innovate, organizational change is inevitable. The development of new production techniques, the creation of new products, or the implementation of new organizational structures are all innovations that demand organizational change. **Organizational change** is the adoption by an organization of any new idea, behavior, or substantive modification.¹⁶

9-7a Forces for Change

Firms constantly impact and are impacted by the general and industry environments. Change in these external environments is many times the force for change within the organization. External forces that can have dramatic effects on organizations include influences from sectors of the general environment, such as technology, political-legal, sociocultural, demographic, economic, and global.¹⁷ Examples include widespread economic depression, aging populations, and societal changes in values. External forces are also found in the industry environment that includes the labor supply, competitors, customers, suppliers, regulators, and partners. These organizational stakeholders are in a position to affect change in a much more direct manner.

Internal forces for change exist within the organization's internal environment. These influences can come from owners, employees, shareholders, or directors, someone or some group with a serious stake in the organization's future. Many times the internal force for change is in response to an external environmental influence. For example, changes in technology, specifically the development of the personal computer and the Internet, have allowed some workers to perform their jobs at home, working individually on their own time. This has caused organizational change as employers grapple with managing the business through e-mail rather than face-to-face communication.

9-7b Types of Change

Just as with innovation, organizational change can be either radical or incremental. **Evolutionary change** involves a series of small progressive steps that do not change the organization's general equilibrium.¹⁸ **Revolutionary change** tends to alter or transform the entire organization. Two other types of change include planned and reactive.

organizational change

the adoption by an organization of any new idea, behavior, or substantive modification

evolutionary change

involves a series of small progressive steps that do not change the organization's general equilibrium

revolutionary change

alters or transforms the entire organization

planned change

a response that is deliberately thought out and implemented in anticipation of future opportunities and threats

Career Point

Organizational Change

Some people are deathly afraid of change. Others welcome change and embrace it. When organizations experience change, individual members are threatened because it takes them out of their comfort zone. And, in some cases, change costs them their jobs. In particular, corporate entities of large size tend to undergo regular structural changes, commonly referred to as re-orgs. Reorganizations can cause people to be moved from one position, department, or even division to another, sometimes involving relocation.

If changes in your life tend to cause you great discomfort, look for a career in an organization that experiences only gradual change. Older, larger, and more bureaucratic organizations tend to maintain a similar operational style for decades at a time. Also, firms that are dependent on extensive technology change slowly due to extremely large economies of scale that are expensive to replace.

Many people are very opposed to changes in location. If you do not want to leave a certain geographic area, try to find a position with a firm that only has local operations. Large multinational organizations have global needs that require a global workforce.

Remember, however, no matter what organization employs you, change is a natural occurrence, driven many times by changes in the environment. When change is announced, find out everything you can about it. The more you understand the change and the need for it, the easier it will be for you to accept and even promote the

Evolutionary Change

Organizations regularly undergo evolutionary change. It occurs over time, usually within the confines of the existing structure, strategy, and decision-making processes. This type of change sometimes affects only parts of the organization and many times involves changes in technology or information systems implementations. The limited reach of incremental or evolutionary change makes it simple to manage, as the existing framework of the organization is unaffected.

Revolutionary Change

Differing greatly from the slower-moving evolutionary change, revolutionary change tends to alter an organization's essential core beliefs and structure.¹⁹ For example, organizations that once lacked inertia and took years just to move slightly in one direction or the other can be transformed through revolutionary change, becoming nimble, responsive, and customer-driven. Bill Ford, in a planned and organized manner, is trying to radically change the Ford Motor Company from a firm used to evolutionary change to one that accepts and understands the need for revolutionary change. Managing revolutionary periods of change is difficult at best. The change is so drastic that it usually catches everyone off-guard and meets stiff resistance, particularly from long-term employees.

Planned Change

Planned change is a response that is deliberately thought out and implemented in anticipation of future opportunities and threats. Planned change can be facilitated through the efforts of a change agent, a person from within or from outside of the organization who marshals the resources and leads the other organizational members through the change process.²⁰ Sam Palmisano's recent initiative in the area of business on demand for IBM is an example of a planned, organization-wide integration of resources to provide a superior service to its customers.

Managing Planned Organizational Change

Planned change can be enacted in four general areas of an organization. They are:

- *Technology*—changes in the production process;
- *Products and Services*—involves output changes;
- *Structure and Systems*—focuses on administrative changes;
- *People*—changes in peoples' values, attitudes, and beliefs.²¹ Organizations that value their members choose not to release at will those who can contribute to its overall success, even if there needs to be some change in their attitudes or beliefs.

Figure 9-1 reflects the four types of change that can provide a strategic advantage if properly implemented.

Organizational change is always viewed as difficult and time consuming. The need for change in an ever-changing business environment, however, is impossible to ignore. The strategic importance of successfully implementing changes in technology, products and services, structure and systems, or people are discussed below.

The first area of planned change, technology, encompasses a wide array of organizational alterations. Technology changes are usually implemented to improve efficiency or effectiveness. Examples include information systems improvements, machinery and equipment replacements, and the sequence of activities required to deliver products and services to market. Successful technology changes can increase the speed at which customer service is delivered, lower production costs such as substituting robotics on the automobile assembly line for human labor, and raise the overall information level of the organization as more people have access to more information through technological innovations.

Changes in products or services are primarily undertaken to increase market share. These changes can be new products or services, alterations to existing products or services, or both. Nowhere is this more prevalent than at 3 M where 30% of revenues each year must come from new products developed within the last four years.²² This new-product pipeline provides 3 M with great public relations' stories and customer loyalty.

Changes in structure and systems refer to how firms are administered. Each organization has a distinct structure that determines reporting relationships,

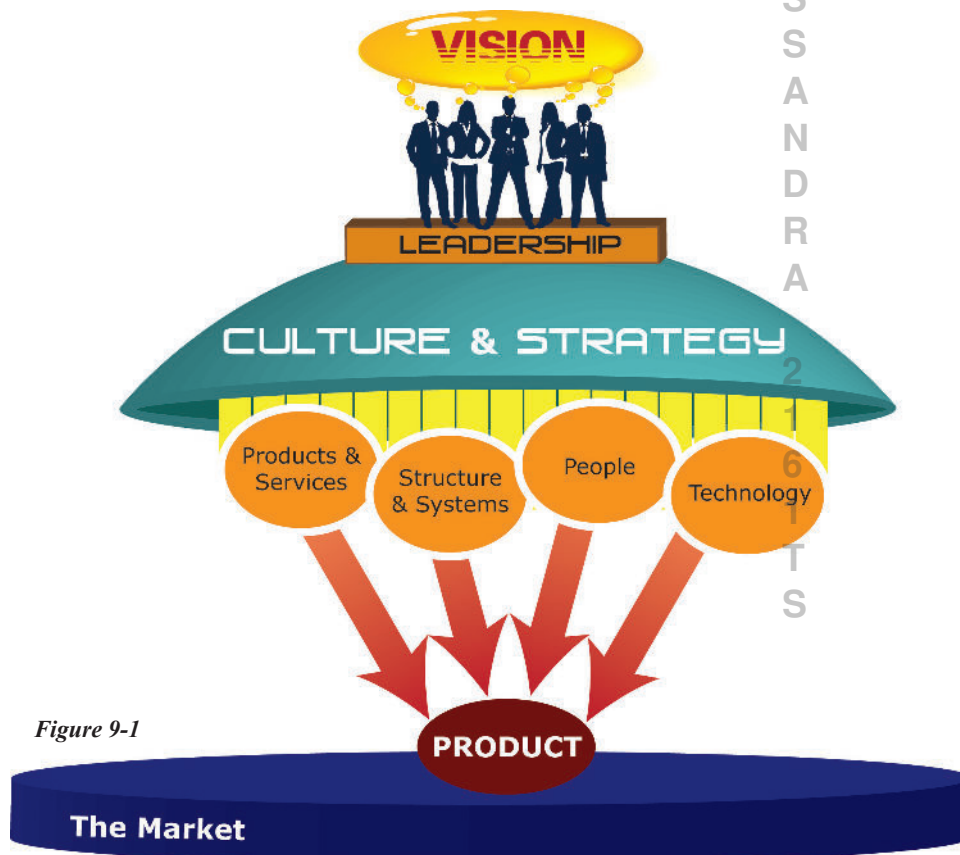


Figure 9-1

division of work, and primary responsibilities. Organizational strategy and how it is implemented would also fall under this heading. Indeed, structural changes are many times needed to support a new strategy. Too many times firms want to reorganize to improve performance, when it actually is the strategic direction that's the problem. To avoid this common mistake, organizations should perform an internal audit, commonly referred to as a SWOT analysis. This audit details the firm's strengths and weaknesses and matches those with its environmental opportunities and threats.

Finally, changes in the people of organizations may be the most difficult to implement, but, if successful, they can make a bigger difference in the organization than any of the other three. The peoples' beliefs and values are established from the beginning of an organization's existence by the founder(s). As more people are added to the staff over a period of time, each is indoctrinated with the underlying values and beliefs the company promotes. The phrase "That's not how we do things around here" has been spoken at businesses for centuries. However, today's business environment rewards those firms that strive for constant innovation and improvement. And, innovation and improvement have to have a supportive and rewarded corporate culture if they are to flourish.

As forces for change put pressure on the organization, managers can simply react to each situation as it arises. **Reactive change** is usually piecemeal and in direct response to a specific opportunity or threat from the external environment. Strategically, reactive change is a clear indication that an organization has lost its way, choosing to maintain a certain status quo, reacting to environmental conditions only when they appear to directly challenge the organization's existence. When organizational managers realize they are in a reactive mode it is usually the result of political infighting and power struggles that exist at the expense of the overall health of the firm. A return to a strategic management approach to the business that focuses on establishing goals and objectives and a process for their accomplishment, based on the mission of the organization, is the best way out of the reactive mode.

9-7c The Change Process

Because organizational culture is established from the beginning of a firm's existence, change is usually difficult to enact. Kurt Lewin has proposed a simple model for change agents to adopt in attempting organizational change. Lewin suggests that organizational change is a three-step process.²³ Step one involves *unfreezing* current behavior to reduce resistance to change. This requires making a strong case for the need for change and its importance to the long-term success of the organization. The second step is *moving*, implementing the change itself. And, third, to ensure the change becomes part of the organizational landscape, a new *refreezing* process is necessary. New behavior that supports the change must be reinforced and rewarded.

Rossabeth Moss Kanter contends that Lewin's model is actually much too simple for the modern complex organization. According to Kanter, Lewin's model provides managers with a straightforward manner of approaching a very complex task, and

reactive change

usually piecemeal and in direct response to a specific opportunity or threat from the external environment

that is why the model has survived for well over a half century.²⁴ Kanter's "Big Three" model of change involves understanding an organization's movement, the forms change can take, and the action roles necessary for the change process. She contends that organizations are never really *frozen* as depicted by Lewin's ice cube example. Rather, organizations are very fluid, moving through developmental stages that overlap.

Another way to enact change is through **action research**. Action research relies on initial organization research, followed by actions that are evaluated and serve as the basis for future change. This model usually involves planned change experts in organization development who work closely with organization managers, assisting in the implementation of an on-site intervention.²⁵ Some organizational change is very difficult to accomplish, and involving action research professionals from outside the organization greatly facilitates the needed change process.

9-7d Resistance to Change

It is very difficult for managers to enact change in an organization if they do not understand why employees are so resistant to change. The primary reasons for resistance to change are uncertainty, lack of understanding and trust, differing perceptions, self-interest, and feelings of loss.²⁶ Uncertainty refers to the fear of the unknown experienced by a firm's employees when confronted with the need for change. They are concerned that they cannot perform under new rules or policies, they may not be predisposed to change as far as their personality is concerned, or they may believe the change will lead to a loss of jobs.

Some workplaces have developed a lack of trust toward management. This translates to a resistance to any kind of change due to years of mistrust between management and labor. Or they may simply not understand the need for change due to its being poorly articulated by management. Some resistance is a lack of agreement as to the true nature of a problem, or, put another way, a differing perception as to what really is the need for change. This is especially prone to occur if one manager, or a small handful of managers, makes a decision to enact change without input from other sources.

The self-interest of managers, and sometimes employees, is another barrier to change in any organization. Power and status that take years to acquire can be lost in one, sweeping reorganization.²⁷ Managers protect their 'turf' by finding excuses as to why a particular change is not going to work, even though it might actually be very good for the organization. When old

Managers who are tasked with an internal change project must overcome employees' resistance to change due to uncertainty and self-interest

action research

a model that usually involves planned change experts in organization development who work closely with organization managers, assisting in the implementation of an on-site intervention



methods are held to be too sacred, organizational employees may find themselves incapable of the change required to meet new external challenges.

Similar to this is the notion of sense of loss. Employees develop strong social alliances over time, and many organizational changes directly impact those alliances. People are asked to move from one city to another, one division to another, or one continent to another, breaking up long-standing social networks. Employees effectively become removed from their comfort zone and at-work friends.

9-7e Overcoming Resistance to Change

Empirical research has demonstrated that participation may be the most effective mechanism for overcoming resistance to change. As people are invited to actively assist in implementing an organizational change, they tend to take ownership of the change to ensure its success. This is especially true when external leaders are included directly in organizations, such as a local banker becoming a member of the board of directors. This process, known as **cooptation**, fosters better cooperation between the firm and its external environment as the banker becomes psychologically vested in the success of the firm once he joins the board of directors. Communication is another important requisite to successful change efforts, as people need information about the specific need for change if they are to be persuaded to help with its implementation. Another potential change approach is that of facilitation. If employees are having trouble adjusting, facilitation is the best approach, but it can be expensive and time-consuming.

For organizations facing stiff resistance, three other approaches are available, all with negative drawbacks. The first is negotiation where management agrees to give something up to accomplish the needed change. Negotiation can set a negative precedent, leading others to try the same tactic when change is needed again. A second approach is manipulation, used only if other tactics will not work. Manipulation can create a feeling in employees of being used by management. And, third, is coercion, a speedy tactic designed to overcome any kind of resistance. Coercion can leave employees angry with management, leading to future problems.²⁸

9-7f Reengineering

One of the most difficult organizational change processes being undertaken today is business process **reengineering**. Made popular by the book, *Reengineering the Corporation* by Michael Hammer and James Champy, reengineering is defined as “a radical redesign of business processes in a cross-functional manner to achieve major gains in cost, service, or time.”²⁹ Similar to zero-based budgeting, the concept involves redesigning your organization’s processes as if they could be done over completely from the beginning. Or, put another way, if the organization had a blank sheet of paper and began designing its production and service processes, what would they look like?

Reengineering is somewhat threatening to employees. Processes and steps in the

cooptation

a process where leaders from the environment become active in the organization; for example, a banker might become a member of the firm’s board of directors

reengineering

a radical redesign of business processes in a cross-functional manner to achieve major gains in cost, service, or time

value chain that have been part of the organization for decades come under close scrutiny. Jobs can be eliminated when it is discovered that value is no longer being added by a particular function or process. Reengineering has been found to be most effective in large organizations, particularly those with needs in the area of new-product development and customer service. Mature organizations that tend to operate as bureaucracies find ways to reduce overhead costs and eliminate duplication of process through reengineering efforts. At Motorola, cellular telephone production time was reduced from 14 hours to 2 through a reengineering project. Reengineering is too costly, time consuming, and threatening to employees, however, to be undertaken for simple refinements or quality improvements.

9-7g The Learning Organization

The final organizational change process is the movement to become a learning organization. Made popular by Peter Senge, the concept of a **learning organization** refers to an organization continually and proactively creating, acquiring, and enacting knowledge. Then, on the basis of this new knowledge, the organization changes to something different.³⁰ The learning organization will be discussed in detail in Chapter 11.

Summary

Most management researchers contend that organizations must innovate if they are to successfully compete in the current global business arena. Innovation is the transformation of creative ideas into products or services that fulfill customers' needs. Systematic innovation is possible through the establishment of an organizational culture that encourages and rewards innovative behavior without punishing failed attempts. Creative departments or venture teams can be vehicles by which organizations promote innovation.

To facilitate innovation, many organizations face the need for change. Resistance to change is stiff due to a variety of reasons, such as uncertainty, lack of understanding and trust, differing perceptions, self-interest, and feelings of loss.

Review Questions & Exercises

1. Discuss the difference between invention and innovation.
2. Innovations are either process-oriented or product-oriented. Which would be more important in a service business? Why?
3. Provide an example of, and explain how, a change in demographics can be perceived as a source of innovation for an organization.
4. Why do you think the life cycle of innovations has become shorter than it was 40 or 50 years ago?
5. Explain the difference between evolutionary and revolutionary change.
6. Why are organizational members so resistant to change?

Glossary

- **Action Research** a model that usually involves planned change experts in organization development who work closely with organization managers, assisting in the implementation of an on-site intervention
- **Cooptation** a process where leaders from the environment become active in the organization. For example, a banker might become a member of the firm's board of directors
- **Evolutionary change** Involves a series of small progressive steps that do not change the organization's general equilibrium
- **Incremental innovation** The improvement of existing products or services to enhance their marketability
- **Innovation** The transformation of creative ideas and concepts into products or services that meet the needs of customers
- **Innovative process** How innovations are facilitated from development to decline, a life cycle approach
- **Intrapreneurship** Entrepreneurial activity within a corporate structure
- **Invention** Involves the creation of a new product or process
- **Learning organization** Refers to an organization continually and proactively creating, acquiring, and enacting knowledge
- **Organizational change** The adoption by an organization of any new idea, behavior, or substantive modification
- **Planned change** A response that is deliberately thought out and implemented in anticipation of future opportunities and threats
- **Product-oriented innovation** Creating new products or services and bringing them to market creating new consumer demand.
- **Process-oriented innovation** The improvement of existing production processes or other organizational processes such as management, organizational reporting structures, or information processing systems
- **Revolutionary change** Alters or transforms the entire organization
- **Radical innovation** Creation of a new product or service that replaces an existing one.
- **Reactive change** is usually piecemeal and in direct response to a specific opportunity or threat from the external environment
- **Reengineering** A radical redesign of business processes in a cross-functional manner to achieve

major gains in cost, service, or time

- **Reward system** An overt mechanism of recognition and compensation to promote intrapreneurship, or innovation within the firm
- **Systematic innovation** The search for changes in the environment and identify how those changes can be systematically analyzed as to their future innovative potential
- **Venture teams** Where companies separate small teams of associates into secluded or isolated quarters where creative thinking and experimentation can be converted into innovative products or services

(Endnotes)

1. P. Drucker, 1985. *Innovation and Entrepreneurship*, New York, NY: Harper & Row.
2. J. Schumpeter, 1934. *The Theory of Economic Development*, Cambridge, MA: Harvard University Press.
3. Van de Ven, 1986. Central problems in the management of innovation, *Management Science*, 32, 590-607.
4. J. Schumpeter, 1934.
5. P. Sharma & J. L. Chrisman, 1999. Toward a reconciliation of the definitional issues in the field of corporate entrepreneurship, *Entrepreneurship Theory & Practice*, 23 (3), 11-27.
6. B. McCormick, 2001. *At Work With Thomas Edison*, Canada: Entrepreneur Press.
7. E. B. Roberts, 2002. *Innovation: Driving Product, Process, and Market Change*. San Francisco, CA: Josey-Bass.
8. E. B. Roberts, 1988. Managing invention and innovation, *Research Technology Management*, January-February, 1-19.
9. P. Drucker, 1985.
10. D. Lester & J.A. Parnell, 1999. A strategic interpretation of organization life cycle, *Journal of Applied Management and Entrepreneurship*, 5 (1), 14-32.
11. N. Churchill & V. Lewis, 1983. The five stages of small business growth, *Harvard Business Review*, 61, May-June, 30-50.
12. L. B. Mohr, 1969. Determinants of innovation in organizations, *American Political Science Review*, 111-126; G. A. Steiner, 1965. *The Creative Organization*. Chicago, IL: University of Chicago Press; J. E. Ettlie, 1980. Adequacy of stage models for decisions on adoption of innovation, *Psychological Reports*, 28-36.
13. T. J. Peters and R.H. Waterman, *In Search of Excellence* (New York: Harper & Row Publishers 1982)
14. H. Mintzberg, 1979. *The Structuring of Organizations*, Englewood-Cliffs, NJ: Prentice-Hall.
15. R. Griffin, 1999. *Management*, 6th ed. Boston, MA: Houghton-Mifflin Company.
16. J.L. Pierce & A.L. Delbecq, 1997. Organizational structure, individual attitudes, and innovation, *Academy of Management Review*, 2, 27-37.
17. T. J. Dean, R. L. Brown, & C. E. Bamford, 1998. Differences in large and small firm responses to environmental context: Strategic implications from a comparative analysis of business formations, *Strategic Management Journal*, 19, 709-728.

18. D. Miller, 1982. Evolution and revolution: A quantum view of structural change in organizations. *Journal of Management Studies*, 19, 111-151. D. Miller & P. Friesen, 1980. Momentum and revolution in organization adaptation. *Academy of Management Journal*, 23, 591-614.
19. A. D. Meyer, J. B. Goes, & G. R. Brooks, 1992. Organizations in disequilibrium: Environmental jolts and industry revolutions, in G. Huber and W.H. Glick, eds., *Organizational Change and Redesign*, New York, NY: Oxford University Press, 66-111; and M.L. Tushman, W.H. Newman, & E. Romanelli, 1986. Convergence and upheaval: Managing the unsteady pace of organizational evolution *California Management Review*, 29(1), 29-44.
20. R. McLennan, 1989. *Managing Organizational Change*, Englewood Cliffs, NJ: Prentice-Hall.
21. J. E. McCann, 1991. Design principles for an innovating company, *Academy of Management Executive*, 5, May, 76-93.
22. L. D. DiSimone, 1995. How can big companies keep the entrepreneurial spirit alive?, *Harvard Business Review*, November-December, 184-185.
23. K. Lewin, 1947. Frontiers in group dynamics: Concept, method, and reality in social science. *Human Relations*, June, 5-41.
24. R.M. Kanter, B.A. Stein, & T.D. Jick, 1992. *The Challenge of Organizational Change*. New York, NY: the Free Press.
25. T.G. Cummings, & C.G. Worley, 1993. *Organization Development and Change*, 5th ed. St. Paul, MN: West Publishing Company/
26. A.S. Judson, 1991. *Changing Behavior in Organizations: Minimizing Resistance to Change*. Cambridge, MA: Blackwell, Inc.
27. H. Mintzberg, 1983. *Power In and Around Organizations*. Englewood-Cliffs, NJ: Prentice-Hall, Inc.
28. J. P. Kotter, & L. A. Schlessinger, 1979. Choosing strategies for change. *Harvard Business Review*, March-April, 106-114.
29. T. A. Stewart, 1993. Reengineering: The hot new management tool, *Fortune*, August 23, 41-48.
30. P. M. Senge, 1990. *The Fifth Discipline*, New York, NY: Doubleday.

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Organizational Technology

10

Chapter Outline:

10-1
Introduction to Technology

10-2
Computer-Integrated
Manufacturing

10-3
Manufacturing Technology
and Technical Complexity

10-4
Management, Structure,
and the Technological
Imperative

10-5
Departmental Technology
and Charles Perrow

10-6
The Interdependence
of Work

10-7
People and Technology
in Harmony

Summary

Review Questions

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Endnotes



Key Terms

computer-integrated manufacturing
continuous process production
craft technologies
engineering technologies
intensive technology
job design
job enlargement
job enrichment
joint optimization
job rotation

large-batch technology
long-linked technology
mass customization
mechanistic structure
mediating technology
nonroutine technologies
organic structure
pooled interdependence
routine technologies
sequential interdependence

slack
small-batch and unit production
sociotechnical systems approach
task analyzability
task interdependence
task variety
technical complexity
technological imperative
technology

10-1 Introduction to Technology

New employees coming into today's modern workplace are faced with a myriad of challenges that demand specific skills and abilities. In 1991, the United States Secretary of Labor issued a report known as the Secretary's Commission on Achieving Necessary Skills (SCANS) that outlined the basic skills required to be successful in the technologically challenging organizations of the future.

Today we are seeing those organizations in full bloom throughout developed countries. Gone are the smelly, hot, hazardous factories of the past. Modern factories are clean, highly technical, and, in many cases, even air conditioned. Safety is a priority, and automatic, computer-managed production lines are the norm. The skills and abilities articulated in the SCANS report (See Career Points later in the chapter) over fifteen years ago are minimum requirements in the current organizational work environment. The backbreaking manual labor force of the past has been replaced by thinking, communicating, problem-solving individuals who understand computers as well as they do the products they make.

Modern production facilities, like the Porter-Cable plant in Jackson, Tennessee, that produces electric tools through the use of computer-integrated manufacturing techniques, thrive on technology. **Technology** is a term that describes the ways that organizations find to do something. It may include the use of machinery and equipment, production materials, computers, or practically any skills and techniques necessary to take inputs and transform them into outputs. In chapter 1 we presented the Business System model in Figure 1 that demonstrates the transformation process. None of the three steps, inputs, transformation, or outputs, would be possible without technology.

As has been expressed in this book before, competitive pressures are at an all-time high in almost all business sectors. This pressure forces organizations to utilize technology in many new and creative ways. For example, inputs of raw material or information could be processed routinely on its way to the production or conversion processes. However, in order to reduce costs, reduce or eliminate **slack** (either time, e.g. a lull in activity, and/or slack resources, having excess on hand for surprise circumstances), and to increase the speed at which products are produced, technology has come to play an important role in the acquisition of inputs. Therefore, several departments become involved with acquiring inputs in an effort to manage the external environment of suppliers and providers so that the organization can remain competitive. Most of the technology issues discussed in this chapter will refer to the manufacturing environment.

10-2 Computer-Integrated Manufacturing

Television has come to play a prominent role in our business culture due to the popularity of utilizing television as a medium for advertising. Recent advertisements have focused on the advantages some companies offer their customers through the process of **mass customization**. The companies advertising the benefits of mass customization, such as IBM, Dell, and Levi's, are offering their customers a

technology

the ways that organizations find to do something. It may include the use of machinery and equipment, production materials, computers, or skills and techniques necessary to take inputs and transform them into outputs

slack

a lull in activity; or, in the case of slack resources, having excess on hand for surprise circumstances

mass customization

a customized product from a mass production operation

Career Point

The SCANS Report

The SCANS report – The SCANS report suggested the skills and abilities people would need when they went to work right after high school. The report resulted in a set of skills and competencies that the commission believed each young person needed to be successful at work. In the last decade or so we have discovered that many employers are also concerned that their new hires from colleges and universities lack some of these necessary skills.

What is important to you as an individual who is pursuing some kind of collegiate degree program is that these skills are *in addition* to your college education. And, while you may recognize certain skills that you believe you have developed or improved over the course of your college years, you will also find several that you feel need much improvement if you are to meet the minimum standards suggested by the SCANS report.

The exhibit included below briefly outlines the competencies and foundation skills recommended in the SCANS report.

These skills and competencies are articulated in much more depth in the report for those of you who are interested. While you may be put off by the fact that

this report was directed at high school graduates, go over the recommendations carefully and you will probably find one or two areas where you could stand some improvement.

Many universities in America are reevaluating their core curriculums, even in colleges of business, to ensure that these recommendations from SCANS are not being overlooked. In particular, skills such as creative thinking, reasoning, and problem solving, or what is commonly referred to today as critical thinking skills, and communication skills such as listening and speaking are receiving serious attention. The number one complaint of employers regarding new hires is a lack of communication skills, both written and oral.

Success in today's high-performance economy depends on the development of the SCANS skills and competencies. The technology issues discussed in this chapter illustrate the importance of computers, machinery, systems, and people all working in an integrative manner to accomplish organizational goals. And, with the increased level of international business, outsourcing of certain functions, and diversity in the workplace, the SCANS recommendations from 1991 have become the mandate for today.

WORKPLACE KNOW-HOW

Workplace competencies: — Effective workers can productively use:

- *Resources* — They know how to allocate time, money, materials, space, and staff.
- *Interpersonal skills* — They can work on teams, teach others, serve customers, lead, negotiate, and work well with people from culturally diverse backgrounds.
- *Information* — They can acquire and evaluate data, organize and maintain files, interpret and communicate, and use computers to process information.
- *Systems* — They can understand social, organizational, and technological systems; they can monitor and correct performance; and they can design or improve systems.
- *Technology* — They can select equipment and tools, apply technology to specific tasks, and maintain and troubleshoot equipment.

Foundation skills: — Competent workers in the high-performance workplace need:

- *Basic Skills* — reading, writing, arithmetic and mathematics, speaking and listening.
- *Thinking Skills* — the ability to learn, to reason, to think creatively, to make decisions, and to solve problems.
- *Personal Qualities*—individual responsibility, self-esteem and self-management, sociability, and integrity.

customized product from a mass production operation. The benefit to the customer is obvious, as one commercial relates when a woman is allowed to design her new car in terms of features, color, interior, and so forth, on the Internet. The plus for the business supplying the product is that advanced technology is enabling firms to pursue mass customization at low, mass production costs.¹ In particular, the competitive position of the firm is enhanced as it is able to address individual customer needs without sacrificing economies of scale.

Computer-integrated manufacturing, also referred to as advanced manufacturing technology or flexible manufacturing systems, is the new technology that has made mass customization possible. The system of **computer-integrated manufacturing** is an integrative process where each step of production is coordinated, including design, machinery, robotics, and engineering.² Through the use of computer-coordinated production techniques, firms are able to customize products for individual customers without completely reconfiguring production lines. As the IBM commercial states, “It’s an on-demand world.”

The primary technologies driving computer-integrated manufacturing are computer-aided design (CAD), computer-aided manufacturing (CAM), computer-aided materials management (CAMP), Just-in-time (JIT) inventory systems, and integrated information networks throughout the organization. *Computer-aided design* utilizes computers in designing and engineering new products and parts, improving design flexibility and creativity and simplifying product design.³ *Computer-aided manufacturing* focuses on the transformation process, as inputs are converted to outputs through the use of production machinery controlled and integrated by computers. *Computer-aided materials management* controls the flow of inputs to the transformation process, while assisting in production scheduling and controlling inventory. *Just-in-time inventory systems* regulate the inflow of raw materials when they are needed for customer orders and production needs, as opposed to providing slack resources. Finally, the integration of manufacturing processes and techniques is made possible by the introduction of *integrated information networks* that connect all information reservoirs of the organization. The Career Points section of this chapter outlines several skills and abilities needed by workers in this computer-integrated age of manufacturing.

10-3 Manufacturing Technology and Technical Complexity

The conversion of crude oil into gasoline, cotton into shirts, and components into computers involves technology. However, each example utilizes starkly different kinds of technology, and each example also has very different levels of complexity. Sociologist Joan Woodward has provided organizational theorists with the most comprehensive study of the technical complexity of manufacturing firms and how each production process differs.

Woodward studied firms in England during the 1950’s to see how they were organized and managed.⁴ She and her team of researchers went on-site to over 100 companies collecting data and observing manufacturing operations. The result of this extensive research project is the foundation for understanding manufacturing and its reliance on technology. In terms of structure, Woodward

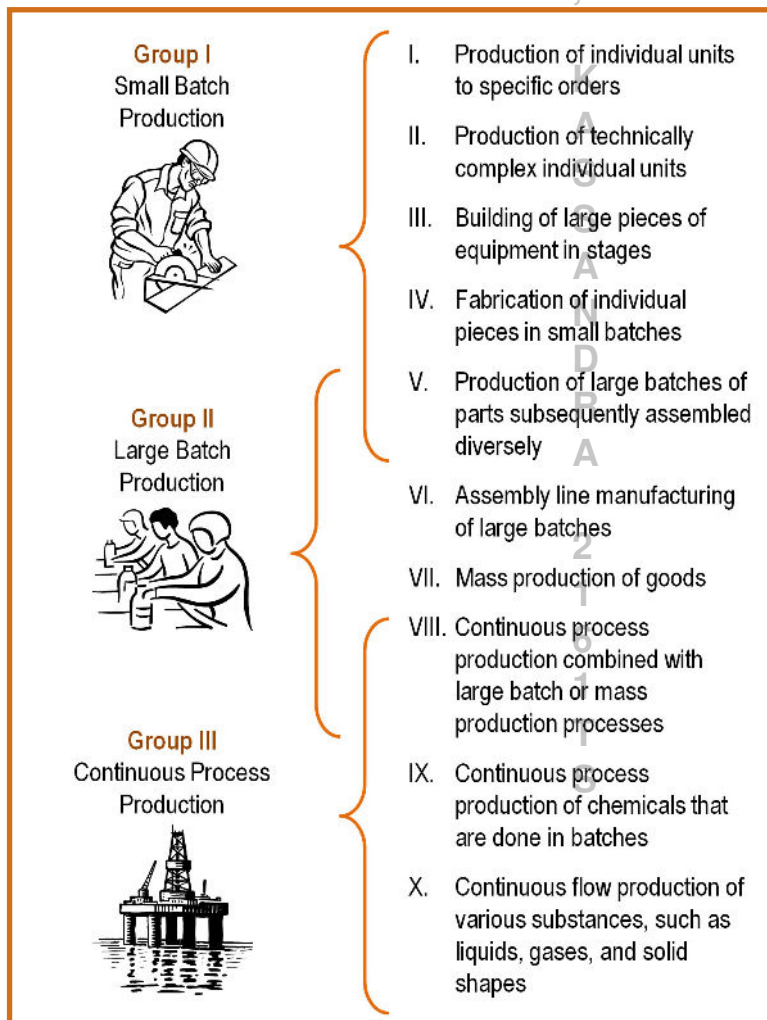
computer-integrated manufacturing

an integrative process where each step of production is coordinated, including design, machinery, robotics, and engineering

noted that the **technical complexity** of a production process, or how mechanistic or programmed it is, is the factor that distinguishes one type of process from another. Transformation processes that thrive on individual skills and abilities are low in technical complexity. Transformation processes that produce standardized outputs through programmable automation are high in technical complexity.

An example of a process low in technical complexity would be the making of a Rolls Royce luxury automobile. Much of the finished product is built by hand, as craftsmen install fine wood trims, ensure doors open and close almost effortlessly, and construct sumptuous leather interiors. While this work is not technically complex as defined by Woodward, building a Rolls Royce automobile is a complex process, requiring extensive skill and coordination. The process does, however, lack automation. Conversely, at the high end of technical complexity would be the Dupont plant in Memphis, Tennessee that is fully automated, depending primarily on a process flow that is managed and facilitated by machines.

According to Woodward's classification of the firms she studied there are ten categories or levels of technical complexity. These ten levels are detailed in Figure 10.1, as are the three simpler technology groups that are still used today to identify types of production technology.⁵



technical complexity

the measure of how mechanistic or programmed a production process is

Figure 10-1

Woodward's Classification

Source: Adapted from J. Woodward, *Management and Technology* (London: Her Majesty's Stationery Office, 1958):11.

Small-batch and unit production: The first technology group, **small-batch and unit production**, is characterized by skilled individuals who make products to order. Although machinery and computers are becoming more common at all levels of technical complexity, the expertise of the small-batch producers is still more important than technology. This puts the small-batch group low on the scale of technical complexity.

Consider the craftsman who builds custom cabinetry for individual clients for their kitchens. Each area of need in the kitchen is addressed in terms of the clients' needs and the space available. The cabinets are then designed to meet both. This is especially important in small kitchens where space is at a premium. Custom cabinet makers can build in special features that may be hidden at first glance but pull out or recess or extend or do whatever is necessary to make a small space functional for the client.

Large-batch and mass production: Most people think of factories in terms of mass production. Woodward's second category of technology is best characterized by the large automotive manufacturing plant, such as the Toyota plant in Georgetown, Kentucky. The goal of **large-batch technology** is to increase the use of machinery and technical complexity to ensure standardization of production. The long assembly lines move cars and trucks through a series of assembly steps, many performed by robotic technology. After exiting the factory, these automobiles are delivered into inventory and sold through dealers.

Mass production, or producing products in large-batch, eventually leads to lower costs by manufacturers. Lowering production costs is critical in mature industries, such as the automobile industry, because firms are constantly competing on price. By lowering their costs of production, firms can pass on savings to consumers. In recent years we have seen automobile manufacturers lean heavily on suppliers to lower their production costs so that those savings can be passed on to the auto manufacturers.

Continuous process production: The example mentioned earlier of the Dupont Chemical plant is a typical continuous process production operation. **Continuous process production**, the highest form of technical complexity, automates or mechanizes a firm's production process completely. Due to the continuous nature of production and the highly mechanized character of continuous process, any malfunction or breakdown has the potential to totally shut down the operation.

The benefits of continuous process production, however, are highly desired by businesses. Production is normally a smoothly flowing process, where human error is reduced to a bare minimum and outputs, such as chemicals at the Dupont plant, are consistent. Most organizations utilizing this type of production, however, experience expensive maintenance costs. Any cutting of corners regarding upkeep and maintenance can be potentially hazardous, such as the tragedy at the Union Carbide pesticide plant in Bhopal, India, where over 3,800 people died and over 100,000 were injured in December of 1984.⁶

small-batch and unit production

characterized by skilled individuals who make products to order

large-batch technology

increased use of machinery and technical complexity to ensure standardization of production

continuous process production

production the highest form of technical complexity; it automates or mechanizes a firm's production process completely

10-4 Management, Structure, & The Technological Imperative

Do managers manage organizations differently based on their technology? According to Woodward's research, there are definitely differences in some areas. Prior organizational management theories had espoused a "one best way" to manage. After Woodward's study, researchers began to understand that there were many ways to manage organizations, and some worked better in certain circumstances than others. For example, managers of small-batch firms had a span of control of 23, indicating that employees in those types of firms needed wide latitude to best serve their constituencies. Mass production managers' span was 48, demonstrating the standardized nature of the work. Continuous-process firms, however, were found to have a span of control of 15 as the need for closer supervision of skilled employees utilizing sophisticated technology.⁷

Structure issues were also documented by Woodward. Small-batch organizations tended to be flatter with their structures, having the fewest layers or levels of hierarchy. The work performed in small-batch is individualized and highly skilled, making production performance difficult to program. Structures are relatively flat because the technical experts need to be close to the customers and responsive to change. Mass production organizations had somewhat more hierarchical structures that encompassed wide spans of control. Mass production tasks are much more programmable than small-batch, as the process is more mechanized and predictable. And, continuous-process organizations were the tallest, but their spans of control were more narrow. The technical complexity of the continuous-process organization requires close supervision to avoid breakdowns or, in the case of Bhopal, disasters.

Two types of organization systems have been posited as a response to environmental uncertainty that involve amount of formal structure and control over employees.⁸ Small-batch organizations require great flexibility for immediate responses to customers and/or unplanned events. These organizations tend to perform best when they adopt an **organic structure**. Mass production organizations tend to perform best in a more structured, centralized manner referred to as a **mechanistic structure**. Optimal performance for continuous-process organizations is a combination of organic structure at the highest levels of the organization and mechanistic structure at the lower or operational levels.

Due to Woodward's research, organization theorists began to postulate that a firm's technology was critical to its choice of structure. Since managers managed each type of technology differently, and since firms set up similar structures in each group, small-batch, mass production, and continuous-process, a concept known as the **technological imperative** emerged. Simply put, the technological imperative says that technology determines structure. While this argument is intuitively appealing, work over the last several decades in the area of strategic management has cast a bit of a pall over the technological imperative. A firm's choice of strategy and the growth of very large multinational organizations may have as much bearing on structure as technology.

organic structure

method of organizing for firms that require flexibility in operations and the need to be close to the customer

mechanistic structure

the structured, centralized manner of organizing for mass-production organizations

technological imperative

concept that states that technology determines structure

10-5 Departmental Technology and Charles Perrow

The previous discussion focused on technology, primarily in the manufacturing sector, at the organizational level. The following information moves down the organizational ladder to examine technological complexity at the department level. Just as Joan Woodward laid the important groundwork for study of technological complexity at the organizational level, Charles Perrow provides the definitive study of this topic at the department level.⁹ Perrow identified two underlying dimensions of departmental tasks, variety and analyzability, that help us determine their routinization or complexity.

10-5a Task Variety

The first dimension of departmental activities that Perrow identified is **task variety**. Task variety defines the number of exceptions that occur during the transformation process in an organization. Put another way, when a person is working on a transformation process, how many times does something unexpected occur. If unexpected events occur frequently, the task variety is said to be high. When exceptions are infrequent, task variety is low.

A line worker who stuffs boxes all day with product would have a low task variety. While some boxes used to ship product may be damaged or perhaps an incorrect size, most of the time the task is without much variety. Engineers at NASA, however, may experience a good deal of task variety when designing new equipment to be used in space. Depending on where the mission is headed, what kind of conditions the equipment will be experiencing, and what the actual function of the equipment is all can contribute to any number of exceptions.

10-5b Task Analyzability

Perrow's second dimension of work, **task analyzability**, concerns the extent to which search activity is required to solve a problem. An activity that is analyzable is one where a worker can follow a company training manual or policy and procedures document in performing her tasks. Activities that fall within this parameter are usually programmable. That is, the tasks can be planned ahead of time.

Some job activities are not analyzable, except in the most general sense. Too much is unknown, and experimentation and/or research are critical in determining the job's outcome. A simple example is the scientists that work at Merck. While they are considered some of the most people in their respective fields of pharmaceuticals, sometimes the outcome of their work is difficult to predict. One of Merck's most popular drugs, Vioxx, was eventually pulled from the market because of the discovery of bad side effects, including an increased risk of heart attacks or strokes. This was a dramatic blow to Merck's bottom line, as Vioxx was a \$2.5 billion a year drug.¹⁰ The value of Vioxx and other COX-2 inhibitors to the general population for pain control is such that they may be brought back to market with more strict warnings as to potential negative side effects.

task variety

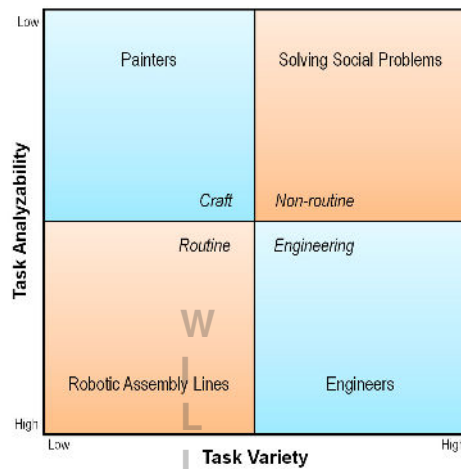
defines the number of exceptions that occur during the transformation process in a manufacturing organization

task analyzability

concerns the extent to which the transformation process can be analyzed or broken down into a sequence of steps

10-5c Perrow's Four Types of Technology

Figure 10.2 identifies Perrow's framework for categorizing task analyzability and task variety when viewed in the context of four types of general technology. Perrow's four types of technology are craft, routine, nonroutine, and engineering. Figure 10.2 uses a 2x2 matrix to depict the task analyzability and task variety of each of the four types of technology.



Craft technologies are jobs that are difficult to analyze because they require individual skill and ability. While they are low in variety due to the specific skills involved, these jobs are not programmable. Crafts people use their intellect and training in managing the various aspects of their work. If three actors were given the opportunity to audition for the role of Hamlet on the stage, each person would approach the role in his own unique style based on years of preparation and past experiences of having seen Hamlet performed by others. In a similar manner, if three painters are asked to paint a new house, each will have a different color scheme in mind based on how they visualize the finished product. Training, intellect, ability, and past experiences dramatically impact the transformational work of crafts persons.

Routine technologies are highly programmable tasks that contain little variety. Routine technologies involve tasks that have high analyzability, in that exceptions can be addressed according to programmed solutions. The production line of a 1940's automobile plant is an appropriate example because the mental image is familiar to most students of organizations. If a person's job was to attach bumpers every day of the week, every week of the year, he or she would become skilled at attaching bumpers due to the repetitive nature of the work and the lack of exception. There are obvious advantages to the routinization of work, such as lowering costs and standardizing products. In today's manufacturing environment, people performing many of these kinds of jobs are being replaced robotics or machinery. By removing the possibility of human error, organizations are manufacturing products to a much lower defect ratio. The replacement of people in these jobs is one reason the economy in America has shifted its emphasis to service businesses.

Nonroutine technologies are the most difficult activities to analyze. These tasks are high in variety and low in analyzability due to the ambiguous nature of this work. Examples include solving a complicated prediction sales model problem for Ford, a process which involves utilizing regression analysis. Another example might be how to solve the poverty problem in the United States. While we are clearly a wealthy country with many of the finest amenities of life available to us,

Figure 10-2

Perrow's Framework

*Source: Adapted from C. Perrow, **Organizational Analysis: A Sociological Approach** (Belmont, CA: Wadsworth, 1970):78*

craft technologies

jobs that are difficult to analyze because they require individual skill and ability

routine technologies

highly programmable tasks that contain little variety

nonroutine technologies

tasks high in variety and low in analyzability due to the ambiguous nature of the work

engineering technologies

production that is high in variety, but the variety is offset by the ease at which tasks can be analyzed

Best Practices

Dell Computer

In the year 2000, Michael Dell and his top managers were a bit concerned about their business model. Although Dell Computer, as it was known at that time, was king of the hill among pc users, new competitors were creeping in the back door. With its stock price lagging, and having already made a lot of people “Dellionaires,” the future of the company was uncertain. Of course, we now know in retrospect that 2000 was the end of the bubble, and Dell, as it is now known, was just getting started.

By 2004, Dell had moved into the server, storage, and printer markets with a vengeance. In fiscal 1995, Dell’s revenues were less than \$5 billion.¹¹ In 2003 they were \$41 billion.¹² What is Dell’s secret formula for success? According to Michael Dell, the company is built on sound management principles and the integration of the latest proven technologies into every facet of its business. As an assembly operation, Dell is nothing short of sensational.

Surviving on lower margins than most technology producers, Dell’s operation is a model that many try to emulate and most envy. Most of its orders are prepaid, it carries no more than a total of seven days of inventory, and it is able to assemble 84% of its orders in a customized way and ship them out in eight hours.¹³ By utilizing Internet marketing where customers specify what components they want in their pcs, Dell gives them what they want, not what his company wants to make. Each component is bar coded so future repairs can be made as simply and accurately as possible.

How does Dell keep making this low-cost strategy successful? According to company managers, it’s the culture. Employees are chosen with care, making every effort to ensure they are compatible with the culture. Of course, the culture is to do whatever it takes to serve the needs of the customer. It has worked pretty well for Michael Dell, whose personal wealth was valued at about \$16.5 billion in 2002.¹⁴

we still have a percentage of our population living in abject poverty. This kind of social problem is not only difficult to solve mentally; it is particularly difficult to solve in reality. One possible solution might be education, but education is another seriously debated issue in America. Those in poverty who need education the most, seem to be the least likely to thrive in the educational environment.

Engineering technologies represent production that is high in variety, but this is offset by the ease at which tasks can be analyzed. There are many rules and laws of mathematics and science, providing formulas and proven steps to take in determining the best way to handle the exceptions encountered in the transformation process. Engineers can take advantage of these laws of science while building custom products or large-scale projects. In this regard, engineering transformation processes are similar to batch production. Each project or customized product may be different, but the expertise and scientific approach needed to complete them are similar.



Technology is critical in moving people through large spaces, such as airports.

10-5d Designing Departments with Routine Technology

Departments utilizing routine technologies typically employ *mechanistic* organizational structures. The departmental tasks are programmed, standardized, and highly formalized. Policy and procedure drive much of what is accomplished in this environment. The mechanistic organization, with its centralized management, hierarchy of authority, and tall structure maintains the order and control that is required for repetitive transformation processes.

This controlling, mechanistic, formal structure has some drawbacks. For example, front-line workers are not encouraged to participate in very much except the work itself. Innovative solutions to problems that might bubble up from those actually doing the work will be lost as their input is discouraged by upper management so that total control of costs and decision-making responsibility can be maintained. Although management might believe this structure to be the only viable one for pursuing a low-cost strategy, much more may be getting lost than is gained. Changing an organization with a mechanistic structure is like trying to turn a large aircraft carrier on a dime. In today's hypercompetitive environment, change is not only desired, it is almost a necessity.

10-5e Designing Departments with Nonroutine Technology

Departments that utilize nonroutine technology find it necessary to stay close to the customer. Because the tasks tend to have variety and are difficult to analyze, programming is not effective. This means that standardization of work is low. This environment requires an *organic* structure to be most effective. Organic departments are more fluid, meaning they can quickly adopt a new perspective or take a new direction without disrupting operations or slowing down production.

The structural characteristics of this organic environment include decentralized decision making, a low level of formalization, and a relatively flat structure with few levels of management. Employees are empowered decision makers since their technical skill and customer relations abilities often determine if customers come back. The most common example of an organic department is research and development. However, many production departments making products to order (See Best Practices) operate organically, as well.

10-6 The Interdependence of Work

In this chapter we have examined technology, primarily manufacturing technology, from the organizational and department levels. Of particular concern has been how technology affects structure. The third piece to this puzzle is how departments are related to each other. The term for this is task interdependence. **Task interdependence** refers to the extent to which one department must rely on another to accomplish its goals. If task interdependence is low, a department can be expected to accomplish its goals with a great deal of independence. If task interdependence is high, departments can only partially accomplish their goals without assistance of some kind from another department.

task interdependence

refers to the extent to which one department must rely on another to accomplish its goals

To illustrate how departmental interdependence works we turn to the leading organizational researcher in this area, James Thompson. Thompson identified three types of technology, *mediating*, *long-linked*, and *intensive*, and three forms of matching interdependence, *pooled*, *sequential*, and *reciprocal*.¹⁵

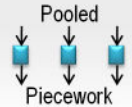

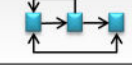
Form of Interdependence	Type of Technology	Type of Coordination	Cost of Coordination
	Mediating	Standardization	Low
	Long-linked	Planning & Scheduling	Medium
	Intensive	Mutual Adjustment	High

Figure 10-3
Interdependence and
Technology Type

10-6a Pooled Interdependence and Mediating Technology

The first manufacturing technology that impacts departmental goal accomplishment is mediating. In firms that utilize **mediating technology**, departments are able to work independently within the organization by serving different needs of customers. Morgan Stanley, for example, has the capability to advise clients on a multitude of investment strategies, involving different markets such as stocks or bonds, countries such as Germany or the United States, and different exchanges such as the NADAQ or the New York Stock Exchange. Area specialists are preferred by investors in each of these categories. However, some customers may prefer to be diversified in several areas.

To provide coordination of this type of diversified customer offering, firms employ pooled interdependence. **Pooled interdependence** means that departments can perform separate tasks from other departments but the contribution of different departments can be pooled. So, when a Morgan Stanley customer requests information on stocks, bonds, and gold for investment purposes, researchers in each area can provide the broker with extensive information to help the customer make informed decisions regarding each investment. The independence with which each department can operate in a pooled environment suggests the lowest need for coordination, as the tasks performed are usually categorized as piecework. The term piecework simply refers to employees performing individual tasks that are unrelated to each other.

The mediating technology Thompson describes can be seen in the management of a Taco Bell franchisee. The franchisee can own multiple Taco Bell locations and separately monitor the performance of each. Yet, the entire franchise operation

mediating technology
departments are able to work independently within the organization by serving different needs of customers

pooled interdependence
departments can perform separate tasks from other departments but the contribution of different departments can be pooled

is also monitored through the same technology, providing information on organization-wide performance as well as individual unit performance.

10-6b Sequential Interdependence and Long-linked Technology

Thompson's second type of manufacturing technology is long-linked. **Long-linked technology** implies that each department's outputs become inputs for the next department in the production chain. The performance of the first task or department in the chain can sometimes determine whether the final output will be acceptable to the customer or not, since each step of the process is linked. W. Edwards Deming addressed this problem in the U.S. auto industry when he first started consulting with Ford Motor Company in 1981. The interrelatedness of steps in the production of cars made them particularly susceptible to poor workmanship.

Dr. Deming came to the forefront in America with the airing of a television program in 1979 called "If Japan Can...Why Can't We." This program highlighted the total quality philosophy of Dr. Deming, particularly his work in Japan following World War II. Ford had adopted a slogan that quality was 'job one,' but the results of its production of automobiles did not reflect the slogan. In fact, Ford lost \$1.6 billion dollars in 1980, the year before Dr. Deming began working with the firm. It took over three years for Ford to fully adopt and understand Dr. Deming's statistical-based approach to quality, but the tools they learned served them well in the decade of the 1980's.¹⁶

One of the big problems facing Ford was the attitude of many departments within the organization that they could act independently, pursuing their own goals amidst an environment of distrust and extreme bureaucracy. Thompson's term, sequential interdependence illustrates the linked nature of automobile manufacturing technology. **Sequential interdependence** refers to the tasks performed by one department having a direct effect on another department. At Ford, a problem with transmissions early on in the Deming's tenure brought the sequential interdependence issue to light. Transmissions from Ford's Batavia plant could not keep up with orders. The company looked to Mazda to provide additional transmissions, of the same type, to take care of demand. Customers began to request Fords with the Mazda transmissions because they were less noisy. A close inspection of the Ford transmission and the Mazda transmission by a group of engineers discovered the Mazda product had less piece-to-piece variance than the Ford product. The end product for the customer, which was a Ford automobile, was perceived to be better when equipped with a Mazda transmission.¹⁷

While coordination by management is important, each department still acts relatively independently. Communication is needed at a higher level than the pooled interdependence model since each output becomes an input for another department.

10-6c Reciprocal Interdependence and Intensive Technology

Thompson's third type of technology is known as intensive technology. **Intensive technology** refers to organizations where all departments' tasks are necessary for all other departments in serving the needs of the customer. This type of technology

long-linked technology

type of interdependence in which each department's outputs become inputs for the next department in the production chain

sequential interdependence

departmental relationship in which tasks performed by one department have a direct effect on another department

intensive technology

refers to each department's work being necessary to every other department in serving the needs of the customer

is characterized best by the concept of reciprocal interdependence. Reciprocal interdependence exists when Department A's outputs become inputs for Department B whose outputs are then used as inputs back to Department A.

To demonstrate this situation, imagine a modern hospital that must coordinate several different types of healthcare services to ensure the best treatment possible for its patients. Some patients may need a variety of treatment or diagnostic options to allow doctors to pinpoint the exact nature of their medical situation. These options may include x-ray, respiratory therapy, laboratory blood analysis, surgery, or any of myriad other hospital services. As each test or procedure is completed the information travels with the patient to the next procedure, then back to the doctor. This process is greatly facilitated by sophisticated technology that captures the information provided at each step of the process. For example, at the Hackensack University Medical Center in Hackensack, New Jersey, technology has been woven into all phases of patient treatment, saving doctors from errors and patients lives.¹⁸ When medications are ordered by doctors, the drug-order entry system cross-checks it against any other prescriptions the patient may already be taking. Warnings are issued immediately when a possible dangerous mix of drugs is discovered. While expensive to adopt, this kind of technology is preventing mistakes that might have slipped through in the past.

From a management perspective, pooled interdependence is the most easily managed, as independent departments operate under the overall umbrella of the organization. Sequential interdependence requires a moderate amount of coordination, as one department's efforts serve as inputs for another. And, the reciprocal interdependent process is the most difficult to coordinate for management, as each department's outputs become inputs for another who then returns its output back to the original department.

10-7 People and Technology in Harmony

During the 1950's a group in England at the Tavistock Institute began studying the relationship between people and technology in the workplace. This stream of research became known as the **sociotechnical systems approach**,¹⁹ with *socio* referring to the human side of enterprise and *technical* the technology side. The needs of each component of this approach are different, thus posing the difficulty of designing systems where they work in harmony.

The social system of an organization thrives on people needs and skills. The system is comprised of individuals and their needs, teams, culture, and how people manage people. The technical system is comprised of the technology utilized in the transformation process,

People and technology work together in a reciprocal manner in modern health care organizations.

sociotechnical systems approach

the relationship between people and technology in the workplace



whether the technology is pooled, sequential, or reciprocal, the actual physical setting of the workplace, and so forth.²⁰ The goal of sociotechnical research is to identify the best system for each organization to reach **joint optimization**, where people and machines work toward accomplishing organizational goals in harmony. It should be noted that joint optimization is a difficult outcome in many modern organizations operating in today's hypercompetitive environment. This is particularly true in mature industries where price is the competitive feature of a product or service.

One area of work where the sociotechnical system approach has been successful is job design. **Job design** is specifying the tasks and responsibilities expected of employees in specific positions. The type of technology employed by an organization is critical in designing particular jobs, and those jobs can change dramatically when new technology is introduced. While most jobs in manufacturing are fairly straightforward, organizations intent on cutting costs have increased job responsibilities through a process known as job enlargement. **Job enlargement** is an increase in the number of tasks per job. A better approach is **job enrichment**, where workers are given more responsibility and the authority to carry out that responsibility. Finally, some jobs require very similar skills, allowing employers to practice job rotation. **Job rotation** involves employees learning several different jobs over time, providing them with more variety in their work in an attempt to improve job satisfaction.

Summary

Technology is a term that describes the machinery and equipment, production materials, computers, skills, and abilities necessary to take inputs and transform them into outputs. Mass customization, addressing individual customer needs without sacrificing economies of scale, has been made possible through the system of computer-integrated manufacturing, an integrative process where each step of production is coordinated, including design, machinery, robotics, and engineering.

In terms of technology's impact on organizational structure, Joan Woodward noted that the technical complexity of a production process, or how mechanistic or programmed it is, is the factor that distinguishes one type of process from another. Transformation processes that thrive on individual skills and abilities are low in technical complexity. Transformation processes that produce standardized outputs through programmable automation are high in technical complexity.

Charles Perrow analyzing firms at the departmental level, identified two underlying dimensions of tasks, variety and analyzability, that help us determine their complexity. Task analyzability and task variety are viewed in the context of four types of general technology, including craft, routine, nonroutine, and engineering.

joint optimization

where people and machines work toward accomplishing organizational goals in harmony

job design

the tasks and responsibilities expected of employees in specific positions

job enlargement

an increase in the number of tasks per job

job enrichment

workers are given more responsibility and the authority to carry out that responsibility

job rotation

job design system that involves employees learning several different jobs over time, providing them with more variety in their work in an attempt to improve job satisfaction

James Thompson helps us understand how departmental interdependence works. Thompson identified three types of technology, mediating, long-linked, and intensive, and three forms of matching interdependence, pooled, sequential, and reciprocal. How dependent a department is on others determines the way they are managed and how their activities coordinated.

A group on England at the Tavistock Institute studied the relationship between people and technology in the workplace. This stream of research became known as the sociotechnical systems approach, with *socio* referring to the human side of enterprise and *technical* the technology side. This research has been instrumental in subsequent job design efforts, tying the tasks and responsibilities expected of employees in specific positions to the need for technology.

Review Questions and Exercises

1. Compare and contrast task variety with task analyzability.
2. Discuss the differences between Woodward's three technology groups, small batch, large batch, and continuous process production.
3. Explain what Thompson meant by pooled interdependence.
4. What is the difference between *mass production* and *mass customization*?
5. Woodward's concept of technical complexity impacts organizational structure. Discuss.
6. Pick a local business in your town and analyze its technological composition. Using the analyses of Woodward, Perrow, and Thompson, discuss the level of technical complexity and the impact of technology on tasks performed there.

Glossary

- **Computer-integrated manufacturing** - an integrative process where each step of production is coordinated, including design, machinery, robotics, and engineering.
- **Continuous process production** - the highest form of technical complexity, automates or mechanizes a firm's production process completely.
- **Craft technologies** - jobs that are difficult to analyze because they require individual skill and ability.
- **Engineering technologies** - production that is high in variety, but the variety is offset by the ease at which tasks can be analyzed.
- **Intensive technology** - refers to each department's work being necessary to every other department in serving the needs of the customer.
- **Job design** - the tasks and responsibilities expected of employees in specific positions.
- **Job enlargement** - an increase in the number of tasks per job. -

- **Job enrichment** - workers are given more responsibility and the authority to carry out that responsibility.
- **Joint optimization** - where people and machines work toward accomplishing organizational goals in harmony.
- **Job rotation** - involves employees learning several different jobs over time, providing them with more variety in their work in an attempt to improve job satisfaction.
- **Large-batch technology** - increased use of machinery and technical complexity to ensure standardization of production.
- **Long-linked technology** - each department's outputs become inputs for the next department in the production chain.
- **Mass customization** - a customized product from a mass production operation.
- **Mechanistic structure** - the structured, centralized manner of organizing for mass production organizations.
- **Mediating technology** - departments are able to work independently within the organization by serving different needs of customers.
- **Nonroutine technologies** - tasks high in variety and low in analyzability due to the ambiguous nature of the work.
- **Organic structure** - method of organizing for firms that require flexibility in operations and the need to be close to the customer.
- **Pooled interdependence** - departments can perform separate tasks from other departments but the contribution of different departments can be pooled.
- **Routine technologies** - highly programmable tasks that contain little variety.
- **Sequential interdependence** - tasks performed by one department have a direct effect on another department.
- **Slack** - a lull in activity; or, in the case of slack resources, having excess on hand for surprise circumstances.
- **Small-batch and unit production** - characterized by skilled individuals who make products to order.
- **Sociotechnical systems approach** - the relationship between people and technology in the workplace.
- **Task analyzability** - concerns the extent to which the transformation process can be analyzed, or broken down into a sequence of steps.
- **Task interdependence** - refers to the extent to which one department must rely on another to accomplish its goals.
- **Task variety** - defines the number of exceptions that occur during the transformation process in a manufacturing organization.
- **Technical complexity** - how mechanistic or programmed a production process is.

- **Technological imperative** - technology determines structure.
- **Technology** - describes the ways that organizations find to do something. It may include the use of machinery and equipment, production materials, computers, or skills and techniques necessary to take inputs and transform them into outputs.

(Endnotes)

1. R. Zammuto, & E. O'Connor, 1992. Gaining advanced manufacturing technologies' benefits: The roles of organization design and culture, *Academy of Management Review*, 17, 701-728.
2. R. Daft, 2004. *Organization Theory & Design*, 8th edition, Mason, OH: South-Western, pg. 250.
3. A. Thompson, A. Strickland III, & J. Gamble, 2005. *Crafting and Executing Strategy*, 14th edition. New York, NY: McGraw-Hill/Irwin, pg. 122.
4. J. Woodward, 1965. *Industrial Organization: Theory and Practice*. London: Oxford University Press.
5. J. Woodward, 1958. *Management and Technology*. London: Her Majesty's Stationery Office.
6. India's Night of Death. (1984). *Time*, December 17, 22-31; It Was Like Breathing Fire. (1984). *Newsweek*, December 17, 26-32.
7. J. Woodward, 1965.
8. T. Burns, & G. M. Stalker, 1961. *The Management of Innovation*. London: Tavistock Publications.
9. C. Perrow, 1967. A framework for the comparative analysis of organizations, *American Sociological Review*, 32, 194-208.
10. J. Simmons, & D. Stipp, 2004. Will Merck survive Vioxx? *Fortune*, 150(9), 91-104.
11. B. Morris, 2000. Can Michael Dell escape the box? *Fortune*, 142(9), 93-110.
12. D. Kirkpatrick, 2004. Dell and Rollins: The \$41 billion buddy act. *Fortune*, 149(8), 84-88.
13. Morris, 2000.
14. J. Boorstin, J. Freedman, & C. Tkaczyk, 2002. America's 40 richest under 40. *Fortune*, 146(5), 169-176.
15. J. Thompson, 1967. *Organizations in Action*. New York, NY: McGraw-Hill.
16. M. Walton, 1986. *The Deming Management Method*. New York, NY: The Putnam Publishing Company.
17. Walton, 1986.
18. T. Mullaney, & A. Weintraub, 2005. The Digital Hospital. *Business Week*, March 28, 77-84.
19. E. Trist, & H. Murray, 1993. *The Social Engagement of Social Science: A Tavistock Anthology*, vol.II. Philadelphia, PA: University of Pennsylvania Press.
20. R. Daft, 2004. Based on the following sources: T. Cummings, 1978. Self-regulating work groups: A sociotechnical synthesis, *Academy of Management Review*, 3, 625-634; D. Hellriegel, J. Slocum, & R. Woodman, 1998. *Organizational Behavior*, 8th ed. Cincinnati, OH: South-Western; G. Norhtcraft, & M. Neals, 1994. *Organizational Behavior: A Management Challenge*, 2nd ed. Fort Worth, TX: The Dryden Press, 551.

Knowledge Management & the Learning Organization

11

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Key Terms

adaptive	information	personal mastery
building shared visions	intellectual capital	personalized knowledge management system
codified knowledge management system	knowledge	servant leadership
cognitive structure	knowledge management	systems thinking
creative management model	learning organization	tacit knowledge
explicit knowledge	life-long learning	team learning
	mental models	

Can you imagine what work was like before information and technology were as fully integrated as they are today? As an example, think about an office manager's job in the mid 1970's. Jane, our office manager, reports to work at 8:00 a.m., grabs a cup of coffee, and chats with several co-workers for a few minutes. Later, when she settles into her office, her secretary hands her a couple of telephone messages and goes over Jane's schedule for the day. The next hour is spent dictating memos for the secretary to type and distribute. Then she remembers she needs to make sure her secretary booked that flight to Cleveland

Now, fast forward thirty years to see how our new millennium office manager, Sarah, approaches her job. At 5:30 a.m. Sarah is up having a glass of juice while she checks her e-mail from home. At 6:00 she is at the health club working out on the Stairmaster, pausing only long enough to say hello to a colleague from an industry competitor. By 7:30 Sarah is in line at Starbuck's and talking to one of her employees on her cell phone.

Arriving at her office building, she goes through the metal detector, smiles at the security guard, and then settles into her cubicle. Turning on her computer, she follows up on a couple of e-mails, then checks her schedule on her software scheduling package. As she sends out some e-mails to her employees, Sarah reaches for her Blackberry to check on the details for the video conference with Shanghai

11-1 Introduction

The pace at which the world conducts business has changed. Technology has become prevalent. People work in a very different manner today than they did thirty years ago. One reason is that the entire concept of time has been altered. Businesses have shortened all time frames, quickened the decision-making process, and compressed the time frames for bringing new products and services to market.¹

The maturation of most markets, the ubiquity of machines and gadgets, and the 'need for speed' has contributed to a new dynamic business environment. Because of market maturation, many firms must compete on price. This leads to organizations demanding more productivity from each employee and the elimination of people from work wherever possible. The ubiquity of gadgets and machines has helped fuel this productivity increase, as well as the elimination of people from some jobs. And, the need for speed has been a byproduct of more productivity, hypercompetition, and machines and gadgets.

The search for competitive advantage in this fast-moving new environment has begun to focus on **information** and **knowledge**. Although these two terms are often used interchangeably, they are not the same thing. Information can be defined as making sense of disparate data, or facts, by compiling them into a useful form. Through the use of information, for example, organizations can rank their best

information

disparate data or facts, compiled into a useful form

knowledge

a conclusion drawn from different streams of information that can be shared by members of the organization and used to further its goals

customers as to volume, determine which products they purchase most often, and identify their primary destinations. Information, therefore, is valuable.

What is more valuable than information, however, is knowledge. Organizational knowledge is a conclusion drawn from different streams of information that can be shared by members of the organization and used to further its goals. This compiling and sharing of knowledge throughout the organization to those who need it is called **knowledge management**.

11-2 Knowledge Management

Knowledge management is not simply the storage of data or the publication of a policy and procedures manual. Knowledge must be systematically gathered and shared across the organization so it can be put to use by organizational members.² The process of making available the acquired knowledge of an organization has been greatly facilitated by the new advances in information technology.

Why is knowledge management becoming so important? Many organizations are finding that they are at a distinct competitive disadvantage without a system for capturing and disseminating knowledge. The global nature of the business environment means change is not just needed but required. When fast change is needed, information and analysis need to be available to every involved employee in the organization. The movement to reduce organizational structure levels and get people closer to customers and other stakeholders has made this need for knowledge dissemination even more important. If an organizational associate is expected to make more decisions and be empowered to act in the organization's interest, she must have access to the firm's intellectual capital. **Intellectual capital** is a term that describes the sum total of everything that is known by the people of an organization.³

A new dynamic that is affecting many firms today is the need for older, more experienced employees to learn from younger, newer ones.⁴ Managing the knowledge of an organization requires the input of new, fresh ideas and varied experiences to the already existing traditional intellectual capital. And, of course, the younger, newer employees need to understand the knowledge base that already exists upon which the firm was built. By understanding where the firm has been, new innovations for the future can be fostered, some out of old ideas that never worked and some out of totally new ideas that have never been considered.

One thing is for sure: Information technology and the management of organizational knowledge have altered the structure of organizations. Even something as simple as e-mail changes the way we do business. No longer is information passed down from the hierarchy, maybe getting to lower levels, maybe not. Now information is shared almost laterally, another example of the flattening of organizational structures.⁵ The internet is a tremendous source of information that employees have access to, as is the intranet of most large organizations, which have become

knowledge management

sharing of knowledge throughout the organization to those who need it

intellectual capital

describes the sum total of everything that is known by the people of an organization

“platforms of knowledge” for everyone involved.⁶ With many products and much business now conducted on the Web, customers can provide instant feedback to suppliers, and that feedback needs to be available to everyone.⁷

One obstacle to knowledge management is the issue of power that is discussed in chapter 8. Individual managers who may have spent years building power bases see the sharing of knowledge organization-wide as threat to their well-earned power status. Yet, unless knowledge can be transferred across the organization, innovative activity will suffer.⁸

11-3 Knowledge Management Methods

Two different kinds of knowledge are present in most organizations. The first, **explicit knowledge**, is the compilation of standardized facts that are used to manage the organization.⁹ Specifications, rules, policies, and processes comprise examples of explicit knowledge. The second type is **tacit knowledge**, a type of implicit or intuitive knowledge that is usually learned through experience.¹⁰

Organizational managers need to base their knowledge management system on the kinds of products and/or services they provide. Those firms that build products out of standardized parts can implement a **codified knowledge management system**.¹¹ Codifying data, information, specifications and procedures into an accessible and standardized system provides a reference for everyone in the organization. If a codified system can be continually updated as new standards emerge, from all functional areas of the organization, the ultimate goal of organizational learning can be facilitated.

If the products or services produced by a firm are not of a standardized nature a more **personalized knowledge management system** is needed. Non-standardized products, or customized products, require the capturing of expertise from individuals who are designing and delivering such products in a rapidly changing technological environment. In particular, customers with needs specific to their organizations may require customized solutions that involved industry knowledge, technology understanding, and some history of the customer’s operations. Codified systems cannot capture this kind of idiosyncratic, tacit knowledge.

If you were trying to manage the intellectual capital at the computer-animator Pixar, for example, you would have very little standardized information with which to work. With such diverse credits as *Toy Story*, *A Bug’s Life*, *Toy story 2*, *Monster’s Inc.*, *Finding Nemo*, and *The Incredibles*, Pixar has led the way in computer-animation. Pixar’s success, however, has been driven by Ed Catmull and his team’s creative genius, not a standardized operations manual of policy and procedures. Continuously pushing the envelope of computer graphics, Catmull’s teams of project developers must constantly interact and coordinate their individual tasks to make hits such as *The Incredibles* possible.¹² The innovative ideas generated at a business like Pixar could not be captured through a codified system.

explicit knowledge

the compilation of standardized facts, such as specifications, rules, and policies, that are used to manage the organization

tacit knowledge

implicit knowledge that is usually learned through experience

codified knowledge management system

codifying data, information, specifications and procedures into an accessible and standardized system to serve as a reference for everyone in the organization

personalized knowledge management system

captures the expertise of individuals designing and delivering customized products and services in a rapidly changing technological environment

11-4 Knowledge Management as Competitive Advantage

The ability of organizations to harness and manage intellectual capital, or knowledge, has been identified as a source of competitive advantage.¹³ Management researchers view superior intellectual capital as an inimitable resource, that is, one that cannot be duplicated by another organization.¹⁴ In fact, regardless of which generic strategic type (See chapter 2) an organization pursues, the acquisition and development of knowledge can be a source of competitive advantage.¹⁵ Indeed, the entire human capital of an organization can be developed over time through the process of organizational learning.¹⁶

11-5 The Learning Organization

Collecting, storing, and disseminating data and information and sharing it throughout the organization, or knowledge management, is valuable to its short-term success. Taking this to the next logical step, however, is the key to staying competitive for the long term. The next step is organizational learning, or becoming a **learning organization**.

Several definitions have been put used to describe the learning organization. To introduce the concept, two straightforward definitions are presented. The first comes from *Fortune's* Brian Dumaine. "...a consummately adaptive enterprise with workers freed to think for themselves, to identify problems and opportunities, and to go after them."¹⁷ The second definition, similar to *Fortune's*, is from organizational behavior researcher Stephen Robbins. According to Robbins, the learning organization is "an organization that has developed the continuous capacity to adapt and change."¹⁸

11-6 Becoming a Learning Organization

The best known proponent of creating learning organizations is Peter Senge. Senge describes the basic meaning of a learning organization as one "that is continually expanding its capacity to create its future."¹⁹ Senge proposed five new component technologies critical to the development of a learning organization. These five technologies are personal mastery, mental models, building shared visions, team learning, and systems thinking.²⁰ Because Senge has been the leader in this area of organizational theory research, each of these five will be briefly highlighted.

Personal mastery involves learning to expand ones capacity to create results desired. In this context mastery refers to becoming very proficient at something, as an artist would be to painting. Individuals in organizations must want to learn, and to learn to continually get better. As organizational members become more proficient, the organization itself becomes more learned. Thus a reciprocal relationship is developed between personal learning and organizational learning.

learning organization

an organization that has developed the continuous capacity to adapt and change

personal mastery

learning to expand ones capacity to create results desired

Mental models are the images that we utilize in our minds to understand the world. To promote organizational learning, individuals must take stock of their mental models about their firm, their markets, and their competitors. In many cases these mental images will have to be altered. This is accomplished through planning, as planning becomes learning for many people.

Building shared visions involves the leaders of organizations being able to translate their vision of the firm's future in a way that causes others to adopt, or share, the same vision. The goal is to bind people together through a vision they can actually relate to rather than a vision statement that was written for the strategic plan.

Team learning is where the skill level of the team exceeds that of the individual members and where the team performs at an exceptional level. The ability to learn as a team is dependent on dialogue, the sharing of insights by team members that lead to new understanding.

Systems thinking is a way of thinking about, and a language for describing and understanding, the pattern of interactions that form interrelationships and shape the behavior of organizations. Every action that occurs in an organization has some relationship to another action which impacts something else, and so on. This is clear from the total quality movement where internal customer/supplier relationships were stressed. If Department A provided an important input to Department B, and Department B was having trouble converting that input to what they really needed, a customer/supplier alignment would be recommended. In that situation, Department would be asked to alter their output, the input for Department B, to a form that facilitated the efficiency and effectiveness of Department B. This alignment process is necessary throughout an organization due to the systemic nature of organizational work. In the future, when Department A wants to make a change in their output process, they will know to consider the needs of Department B before making any substantial changes.

mental models

images that we utilize in our minds to understand the world

building shared visions

involves the leaders of organizations being able to translate their vision of the firm's future in a way that causes others to adopt, or share, the same vision

team learning

where the skill level of the team exceeds that of the individual members and where the team performs at an exceptional level

systems thinking

a way of thinking about, and a language for describing and understanding, the pattern of interactions that form interrelationships and shape the behavior of organizations

A learning organization as one that is continually expanding its capacity to create its future.



11-7 Learning Organizations Need Skilled Leaders

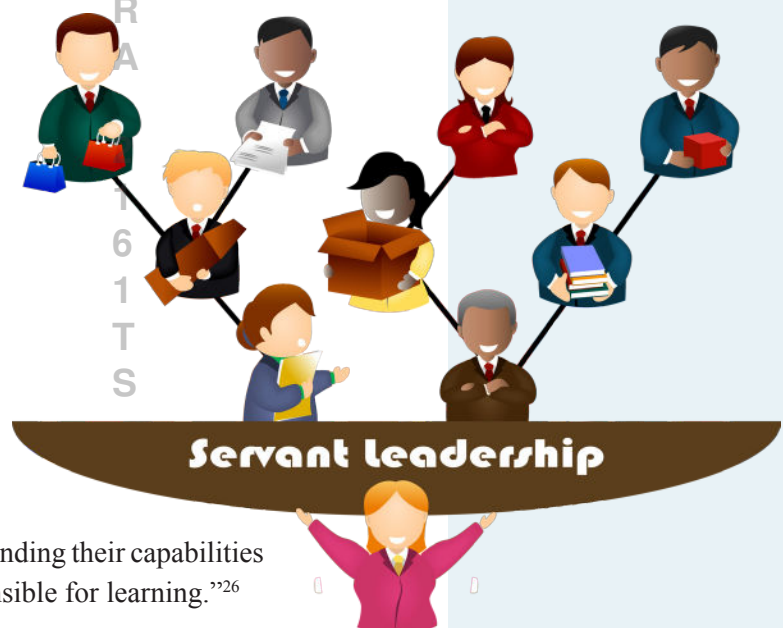
Senge has identified some specific skills needed by the leaders of learning organizations.²¹ First, a leader must be a designer. What must be designed are the strategies, policies, and structures of organizations. In a learning organization, these important design steps will be crafted, not dictated or presupposed.²² Once the strategies, policies, and structures are in place, a learning organization leader must focus on creating learning processes that will be adopted and fostered throughout the firm.

The second skill of a learning organization leader is that of teacher. Today's popular management literature couches management in terms of an athletic coach, one who exhorts, encourages, and teaches. The notion is that people become better at their jobs if they are motivated by a coach who can encourage them to contribute to a team effort while simultaneously improving their individual skills. In a learning organization, people need to develop the mental model of systems thinking, and leaders are responsible for setting the example and developing the culture of learning by being teachers.

The third skill of leaders in learning organizations is 'stewardship. Learning organization leaders have a steward's role for the organization's goals and one for the organization's employees. By being a servant to these two causes, leaders facilitate not only organizational learning, but also growth, development, and competitiveness. Many organizational leaders become consumed with the power of their position and become users of employees, not a steward of people resources. This idea of stewardship, put forth in the **servant leadership** literature, requires a commitment to a higher purpose that tends to rise above the level of the organization, representing something of higher importance.²³ To fully understand servant leadership, one must think of a philosophy of management where the leader is servant first.

If learning organizations require dramatic culture changes, and most do early on in the process, new leaders must emerge who can facilitate such change.²⁴ Mintzberg suggests a need for leaders who can combine art and science, understanding the importance of analytical, strategic thinking without dismissing the contribution that can be made by being creative and artful.²⁵ Senge sums up the leadership requirements for learning organizations: "In short, leaders in learning organizations are responsible for *building organizations* where people are continually expanding their capabilities to shape their future—that is, leaders are responsible for learning."²⁶

servant leadership
a philosophy of management where the leader is servant first



11-8 A New Paradigm For Organizations

While management theory has not progressed seamlessly through the centuries, there have been some clearly identifiable periods and movements. Traditional theories have included Scientific Management (efficient task performance), the Bureaucratic Model (authority and structure), and Administrative Management (universal management principles). Two important modifications to those theories are Behavioral Science (psychological, sociological, and cultural issues) and Management Science (economic-technical rationality). The concept of the Learning Organization reflects an attempt at a new paradigm, or framework, of organizations. For this paradigm to become reality, several traditional ways of thinking and doing in organizations must be drastically altered.

In section 11-5 of this chapter, the definition of a learning organization is presented. Several things become clear when that definition is fully understood. First, our organizations must become much more **adaptive**. In the past, managers have espoused the idea of a best way to do things to produce the most for the least. In an adaptive culture, people are encouraged to change so that the organization can successfully compete as their environments change. One example of this adaptive behavior is IBM. A world leader in mainframe computers for several decades suddenly found itself outdated, outmoded, and out of touch with the new pc based environment. Under the direction of Lou Gerstner, IBM became invigorated, pursuing a new strategy made possible by a dramatic cultural overhaul that has made Big Blue a world leader in on-demand technology.²⁷

Two other changes that are important to learning organizations go hand-in-hand. The first is the flattening of organizational structure to ensure fast response and close customer contact. This change also requires empowering workers, even those at the lowest level. Tall, hierarchical structures promote rigid, policy-driven cultures, where work is standardized and decision making is a process of checks and balances. This structure is epitomized at firms like General Motors, where twenty-three levels of organization structure make change slow and difficult. Modern organizations with three or four levels of structure are considered extremely flat, while those with more than ten are considered relatively tall.²⁸

Flatter organizational structures and empowered employees represent drastic changes from past management philosophies. Learning organizations foster empowerment for employees, as individuals improve their knowledge base, making them more ably equipped to make decisions and handle problems or opportunities as they arise. The sharing of knowledge to employees across the organization, as discussed earlier in this chapter, facilitates the empowerment process.

There is no single recipe for a successful learning organization. However, the changes mentioned above are a good place to start if top management seeks to create an internal environment that promotes learning. Flatter organizational structures, more adaptive corporate cultures, empowered employees, and a broad sharing of knowledge are primary ingredients for a successful learning organization recipe.

adaptive

encouraging change so that an organization can successfully compete as its environments change

Career Point

The Importance of Learning

The fast-paced and fast-changing world of business has become fertile ground for a concept known as life-long learning. **Life-long learning** is a long-term self-improvement process whereby workers continue to upgrade their skills and knowledge level, making them better employees. This phenomenon is being driven by the constantly changing external environment, the accelerated improvements in the world of technology, and the quickly-evolving discriminating consumer.

No longer do high school graduates migrate to the factory and perform the same, routine set of tasks for forty years and retire. Factories of today look very little like factories of forty years ago. Technology and demand drive production, not people. To be qualified to make a contribution in this new manufacturing environment, you must constantly upgrade your personal knowledge-base, learn new skills, and understand all aspects of customer service.

In what used to be referred to as the white-collar world, an out-of-date term to be sure, we encourage the development of knowledge workers²⁹ to handle the staff and support functions necessary to every organization. Life-long learning is just as important to this group as it is to those in manufacturing. New software packages, improved product designs, and constantly-changing government regulations are just a few of the reasons training and learning are needed.

So, if you think graduation will mark the end of your learning phase, think again. It's called "commencement" for a reason. When you begin your search for a career position, inquire about in-house training programs, external classes and certificated programs, and even informal, on-the-job training. While a college degree seems to be a prerequisite to getting an entry job into most large organizations, the real training and learning actually occur inside the company. Indeed, noted management theorist Peter Drucker has dubbed the organization as the most important educational system in the United States.³⁰ The more eager you are to improve yourself, the more open it appears you are to change. For a practical business example of organizational learning, see the Best Practices section on Google on the next page.

Table 11-1 Factors that Facilitate Organizational Learning Capabilities

1. Scanning imperative	6 1 T S	6. Continuous education
2. Performance gap		7. Operational variety
3. Concern for measurement		8. Multiple advocates
4. Experimental mind-set		9. Involved leadership
5. Climate of openness		10. Systems perspective

Source: "Facilitating Factors" from Organizational Learning and Competitive Advantage by B. Moingeon and A. Edmondson, Copyright 1996 Sage Publications



Best Practices

Google

One of the most talked-about companies in the world today is Google. With its stock price soaring, its founders Larry Page and Sergey Brin famous, and its services used by millions, Google is probably here to stay. What has been the secret of Google's success, and why are people paying \$180 for a share of its stock?

The key to Google's success has been difficult for analysts to determine. While its search engine service is considered very, very good, others, like Yahoo, Amazon, and Microsoft, are also very good. Yet, in the last year Google's market share has risen in the face of increasing competition. The key to Google's success is its ability to innovate and stay close to the customer.

Google relates well to the concepts discussed in this chapter for several reasons. First, Google's organizational structure is relatively flat, keeping employees and managers (there are three levels of management currently at Google) close to the customers. Staying close to the users of Google's services is also facilitated by the e-mail system known as Gmail. Google customers are provided an e-mail account through its system, Gmail, that gives the company easy and quick access to each customer.

The Gmail accounts also provide customers with a gigabyte of free online storage. Messages are easily saved and recalled with the Gmail system. Another benefit to Google is that it can target advertising from its vast array of corporate advertisers to specific customers by reading their Gmail accounts to see what they are interested in. And, through Picassa, a desktop photo organizer, Google customers can send photographs to their family members.

Another effort at innovation is the effort to globalize Google's search engine, which is now available in 8 languages, including Chinese. As the service becomes adopted by more foreign users by adding more language choices, the number of advertisers will grow as well. Advertising provides nearly \$2 billion in revenues for Google at the present time. Google also provides ads for its major sponsors to other company web sites, such as seatguru.com and mobiletracker.net.

To establish the corporate culture that Google believes it needs to be successful, the company's headquarters remind one of a university setting. Offices have several people in them to resemble the atmosphere of graduate school. Employees are encouraged to make their offices resemble dormitory rooms, with hockey gear and roller blades hanging on the walls. Google also provides three free meals a day for employees and free laundry service and banking. Brin and Page hope to make new employees, many who are just out of college or graduate school, feel right at home. Meetings even start at seven minutes after the hour to emulate an academic environment.

Google is an interesting example of a company trying to continually learn about its customers, competitors, and partners. Its technological capabilities allow the spread of this knowledge both within and without the organization to be accomplished quickly. And, its ability to continually innovate in areas that are favorably received by its stakeholders, may ensure its eventual goal of being the next Microsoft.³¹

11-9 Factors That Impede Organizational Learning

Everyone who has ever worked has heard the phrase, “That’s not how we do things around here” from someone with tenure in the organization. It is a natural response when new ideas are proposed, particularly new ideas that seem somewhat threatening to employees who are comfortable with the status quo and fearful of change. This attitude seems most prevalent in organizations where programmed decision making (see chapter 8) is prevalent.

The more programmed decisions are utilized by an organization, the more resistant to change it becomes. Many of these firms are pursuing low cost strategies that require extreme efficiency of operations in order to maximize margin. As programmed decision making becomes not only prevalent but also successful, innovation and creativity become stifled. This creates an atmosphere of complacency, and organizational learning suffers. The fear of the unknown, or that which could be learned, takes precedence, and searches for new knowledge are stifled. Even in times of crisis, organizations may not recognize a need for change, choosing instead to increase the centralization of decision making as a further deterrent to external threats.³²

A second reason for lack of organizational learning is that some managers or people in positions of authority have worked in one environment for an extended period of time, limiting their exposure to new ideas and methods of operation. This is a particular problem at firms where the top management team has been together for many years such that their collective beliefs are very similar. Known as **cognitive structure**, this system of beliefs, values, and expectations limit the way top management teams make decisions. Of particular importance is how these homogeneous managers view their external environment. A more heterogeneous team of managers might perceive environmental changes differently than one where most of the managers have similar cognitive structures.

A different model, one that works best in a learning environment, is the creative top management team suggested by Hurst, Rush, and White.³³ These authors propose a top management team that practices insight and innovation. Differing from the traditional strategic management model, the **creative management model** fosters a learning process that institutionalizes successful innovations, making them routine. This represents a drastic departure from the left-brained, analytical approach championed by the strategic management model. A top management team that is creative, imaginative, and innovative will set a positive tone for learning for the rest of the organization.



Life-long learning is a long-term self-improvement process whereby workers continue to upgrade their skills and knowledge level, making them better employees.

cognitive structure

system of beliefs, values, and expectations that limit the way top management teams make decisions

creative management model

theory that a top management team that is creative, imaginative, and innovative will set a positive tone for learning for the rest of the organization

Summary

Knowledge must be systematically gathered and shared across the organization so it can be put to use by organizational members, a process known as knowledge management. Two different kinds of knowledge are present in most organizations. The first, explicit knowledge, is the compilation of standardized facts that are used to manage the organization. The second type is tacit knowledge, a type of implicit knowledge that is usually learned through experience. Firms that build products out of standardized parts can implement a codified knowledge management system. If the products or services produced by a firm are not of a standardized nature a more personalized knowledge management system is needed.

The next step for firms managing knowledge is organizational learning, or becoming a learning organization. The learning organization is an organization that has developed the continuous capacity to adapt and change. Five new component technologies critical to the development of a learning organization are personal mastery, mental models, building shared visions, team learning, and systems thinking.

Leaders in learning organizations must be designers, teachers, and stewards of organizational resources. In the new learning paradigm, organizations must become much more adaptive, develop flatter organizational structures, and empower employees. Over time, the more frequently programmed decisions are utilized by an organization, the more resistant to change it becomes. A top management team that is creative, imaginative, and innovative will set a positive tone for learning for the rest of the organization.

Review Questions & Exercises

1. What are some examples of data and information that organizations would store and make available through a knowledge management system?
2. Discuss the difference between knowledge and information.
3. Explain why systems thinking is so important to the concept of the learning organization.
4. What skills are necessary for a leader who is developing a learning organization?
5. What is meant by the term “adaptive?”
6. What are some of the factors that impede organizational learning?

Glossary

- **Adaptive** encouraging change so that an organization can successfully compete as its environments change.
- **Building shared visions** involves the leaders of organizations being able to translate their vision of the firm's future in a way that causes others to adopt, or share, the same vision.
- **Codified knowledge management** codifying data, information, specifications and procedures into an accessible and standardized system to serve as a reference for everyone in the organization
- **Cognitive structure** system of beliefs, values, and expectations that limit the way top management teams make decisions.
- **Creative management model** a top management team that is creative, imaginative, and innovative will set a positive tone for learning for the rest of the organization.
- **Explicit knowledge** the compilation of standardized facts, such as specifications, rules, and policies, that are used to manage the organization.
- **Information** making sense of disparate data, or facts, by compiling them into a useful form.
- **Intellectual capital** describes the sum total of everything that is known by the people of an organization.
- **Knowledge** a conclusion drawn from different streams of information that can be shared by members of the organization and used to further its goals
- **Knowledge management** sharing of knowledge throughout the organization to those who need it.
- **Learning organization** an organization that has developed the continuous capacity to adapt and change.
- **Life-long learning** a long-term self-improvement process whereby workers continue to upgrade their skills and knowledge level, making them better employees.
- **Mental models** images that we utilize in our minds to understand the world.
- **Personal mastery** learning to expand ones capacity to create results desired.
- **Personalized knowledge management system** captures the expertise of individuals designing and delivering customized products and services in a rapidly changing technological environment.
- **Servant leadership** a philosophy of management where the leader is servant first.
- **Systems thinking** a way of thinking about, and a language for describing and understanding, the pattern of interactions that form interrelationships and shape the behavior of organizations.
- **Tacit knowledge** implicit knowledge that is usually learned through experience.
- **Team learning** where the skill level of the team exceeds that of the individual members and where the team performs at an exceptional level.

(Endnotes)

1. M. Harvey, & M. Ronald Buckley, 2002. Assessing the “Conventional Wisdoms” of management for the 21st century, *Organizational Dynamics*, 30(4), 368-378.
2. D. Garvin, 1998. Building a learning organization. In *Harvard Business Review on Knowledge Management*. Boston, MA: President and Fellows of Harvard University, 47-80.
3. M. Hitt, R. Ireland., & R. Hoskisson, 2003. *Strategic Management: Competitiveness and Globalization*, 5th edition. Mason, OH: South-Western, 74.
4. G. Hamel, 2000. Reinvent your company, *Fortune*, 141(12), 98-118.
5. T. Stewart, 1994. Managing in a wired company, *Fortune*, 130(1), 44-56.
6. T. Stewart, 1994; 46.
7. G. Hamel & J. Sampler, 1998. The e-corporation, *Fortune*, 138(11), 81-92.
8. W. Tsai, 2001. Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance, *Academy of Management Journal*, 44, 996-1004.
9. R. Grant, 1990. Toward a knowledge-based theory of the firm, *Strategic Management Journal*, 17, 109-122.
10. S. Berman, J. Down, & C. Hill, 2002. Tacit knowledge as a source of competitive advantage in the National Basketball Association, *Academy of Management Journal*, 45, 13-31.
11. M. Hansen, N. Nohria, & T. Tierney, 1999. What’s your strategy for managing knowledge? *Harvard Business Review*, March-April, 3-19.
12. B. Schlender, 2004. The man who built Pixar’s incredible innovation machine, *Fortune*, 150(10), 206-212.
13. T. Davenport, J. Harris, D. DeLong, & A. Jacobson, 2001. Data to knowledge to results: Building an analytic capability, *California Management Review*, 43(2), 117-138.
14. S. McElivy & B. Chakravarthy, 2002. The persistence of knowledge-based advantage: An empirical test for product performance and technical knowledge, *Strategic Management Journal*, 23, 285-306.
15. J. Katz, 2000. Blown to bits: How the new economics of information transforms strategy, *Academy of Management Executive*, 14, 160-162; H. Tsoukas & E. Vladimirou, 2001. What is organizational knowledge? *Journal of Management Studies*, 38, 973-994.
16. A. Sheldon, 2001. Strategy rules, *Fast Company*, January, 164-166.
17. B. Dumaine, 1989. What the leaders of tomorrow see, *Fortune*, 120(1), 48.
18. S. Robbins, 2003. *Organizational Behavior*, 10th edition. Upper Saddle River, NJ: Prentice-Hall, 666.
19. P. Senge, 1990. *The Fifth Discipline: The Art & Practice of the Learning Organization*. New York, NY: Doubleday, p. 14.
20. P. Senge, 1990. P. Senge, 1990. The leader’s new work: Building learning organizations, *Sloan Management Review*, Fall, 7-23.
21. P. Senge, 1990.
22. H. Mintzberg, 1987. Crafting strategy, *Harvard Business Review*, July-August, 66-75.

23. R. Greenleaf, 1977. *A Journey into the Nature of Legitimate Power and Greatness*. New York, NY: Paulist Press.
24. M. Sashkin, & W. Burke, 1990. Organization development in the 1980's, and An end-of-the-eighties retrospective, in *Advances in Organization Development*, F. Masarik (ed.). Norwood, NJ: Ablex.
25. H. Mintzberg, 1989. *Mintzberg on Management*. New York, NY: The Free Press.
26. P. Senge, 1990; 9.
27. D. Kirkpatrick, 2004. Inside Sam's \$100 billion growth machine, *Fortune*, 149(12), 80-98.
28. P. Wright, M. Kroll, & J. Parnell, 1996. *Strategic Management Concepts*. Englewood-Cliffs, NJ: Prentice-Hall.
29. B. Schlender, 2004. Peter Drucker sets us straight, *Fortune*, 149(1), 115-118.
30. B. Schlender, 2004.
31. F. Vogelstein, 2004. Google @ \$165: Are these guys for real? *Fortune*, 150(12), 98-110.
32. P. Nystrom, & W. Starbuck, 1984. To avoid organizational crises, unlearn, *Organizational Dynamics*, 12, 53-65.
33. D. Hurst, J. Rush, & R. White, 1989. Top management teams and organizational renewal, *Strategic Management Journal*, 10, 87-105.

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