THE POCKET MBA:
CONCEPTS AND STRATEGIES

Delta Publishing Company

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PREFACE

This course is a one-stop problem-solver for today’s busy executive. It’s a working guide to help you quickly pinpoint in the complex world of business.

- What to look for
- What to do
- What to watch out for
- How to do it

You’ll find concepts, guidelines, and rules of thumb to help you conceptualize, analyze, and evaluate any business-related problem. Throughout, you’ll find this course practical, quick, and useful.

Uses for this course are as varied as the topics presented.

Part I (Chapters 1, 2, 3, and 4) takes you through the world of business strategy, management, marketing, and legal environments of business. You will learn strategic analysis, various management techniques, production/operations management, the marketing process of planning and distribution, and how to price and promote products. These management and marketing techniques and processes have been presented in an extremely understandable and practical format to make them as useful as possible. The statutory and case law affecting business operations and decisions are also presented. Legal requirements must be known to protect the business entity.

Part II (Chapters 5, 6, and 7) covers the economic issues of interest to business managers because they have a significant impact upon corporate success or failure. Attention should be given to the changing economic environment as well as economic indices and statistics in making financial and investment decisions. Many companies are multinational so business managers must understand the opportunities and difficulties associated with international business and multinational finance. Some relevant issues of concern to business people are foreign exchange rates, currency risk management, political risk, and international sources of financing. Chapter 7 takes up the issue as to how information technology (IT) assists managers in business decisions. It covers the use of information systems in all phases of business and in all functional areas to analyze and solve business problems in the "real world."

This course has been designed in question-and-answer format in order to address the pertinent issues that come up during the course of business. The questions are typical of those asked by persons like yourself. The answers are clear, concise, and to the point. In short, this is a veritable cookbook of guidelines, illustrations, and “how-to’s” for you, the modern decision maker.

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Glossary

CHAPTER 1
BUSINESS STRATEGY AND OPERATIONS MANAGEMENT

Upon completion of this chapter, you will be able to

- Outline the key elements of a mission statement?
- Develop an organizational strategy using The Strength, Weaknesses, Opportunities and Threats (SWOT) analysis and describe Porter's competitive strategies.
- Summarize the types of management decisions and the steps to be followed in the decision-making process.
- List some useful management techniques and tools such as break-even and profit analysis, aggregate planning strategies, scheduling, and project management and control.

This chapter provides a discussion of strategic management and production and operations management (P/OM) including:

- Mission statement
- Strategic management
- Strength, Weaknesses, Opportunities and Threats (SWOT) analysis
- Management decision making
- Simulation
- Capacity management
- Location analysis
- Time-study procedures
- Aggregate planning schedules
- Inventory management
- Scheduling, including project scheduling

Strategy can be defined as a course of action or a plan, including the specification of resources required, to achieve a specific objective. All business organizations have objectives, but because of the dynamic nature of the organizations' environment, overall plans or strategies are needed to specify in broad terms just how the objectives of the organization can be achieved, given the uncertainty of the environment.

Strategic management is therefore concerned with deciding on a strategy and planning how that strategy is to be put into effect. As such, strategic management has general relevance in that strategic management is relevant for managers in all types of organizations, both profit seeking and non-profit organizations, state and private sector.

Production and operations management is a vital management activity in both manufacturing and service organizations. It is primarily concerned with the process of transforming organizational resource inputs into final organizational outputs. It is a comprehensive process that treats the organization as a system of interconnected functions. The major functions of P/OM incorporate design, planning, decision making, operations, and system controls.

1.1 THE ORGANIZATIONAL MISSION STATEMENT

What is the purpose of a mission statement?

A mission statement describes the basic operational intent of an organization. It takes a long-term perspective and states the reason for a firm's existence. It is a function is to provide guidance for its shareholders, customers, and employees about the organization's overall direction and rationale.

How is a mission statement developed?

A mission statement should be consistent with the organization's history, including past achievements, organizational culture, attributes, and basic policies. A new organization will take into consideration the history of the industry they are joining as well as the purpose they wish to serve. Successful mission statements emphasize areas where an organization has its greatest strengths and resources.

What are the key elements of a mission statement?

A mission statement must be:

- Meaningful for the organization's client or customer base. Organizations must be constantly aware of who their clientele is, and their requisite needs.
- Realistic and attainable. Unrealistic mission statements will cause the organization to fail.
- Stimulating and inspiring. A motivating mission statement will enhance employee creativity and commitment.
- Definitive and explicit. Unclear mission statements result in dispersed and unsuccessful organizational strategies.

Examples of a mission statement are as follows:

—Are you customer-focused? Walt-Mart’s mission is simple:
“We exist to provide value to our customers:’ The entire focus of the organization is on doing whatever they can to keep prices low and selection high.
--Are you employee focused? Hewlett Packard, on the other hand, focuses on respect and opportunity for HP people, including giving them an opportunity to share in the success of the organization.
—Are your products and services the focus of your competitive advantage? Who can forget

the classic Ford commercials that proclaimed that quality is job no. 1? At a time when the quality of American cars was in decline, Ford’s efforts went a long way to putting quality back into the vocabulary of American car producers.
—Do you value taking risks? Sony focuses its efforts on being a pioneer—not just following others, but doing the “impossible." Their support for employee risk-taking has resulted in products that have changed the way we spend our time.

Once each of these companies established a core mission, that mission became the driver of all operations.

EXAMPLE 1.1

An independent power producer states that its mission consists of four central values:

1. Integrity: To act with integrity and honor its commitments.
2. Fairness: To treat fairly its employees, customers, suppliers, and the governments and communities in which it operates.
3. Fun: To create and maintain an atmosphere where employees can advance in their skills while enjoying their time at work.
4. Social Responsibility: To undertake projects that provide social benefits, such as lower costs to customers, a high degree of safety and reliability, increased employment, and a cleaner environment.

EXAMPLE 1.2

A rapidly growing petroleum company states that its mission is to create value by adding substantial oil and gas reserves while minimizing geological risk and leveraging staff expertise.

EXAMPLE 1.3

A company which introduced the first independent, electronic, product information database that uses the industry standard Universal Product Code (UPC) numbering system states that its mission is to provide quality electronic merchandise management services and technologies to the retail industry.

1.2 STRATEGY DEVELOPMENT PROCESS

What is the purpose of an organizational strategy?

The purpose of an organizational strategy is to achieve the goals of the mission statement. This is done by developing a logical plan for utilizing the organization's strengths and resources. An organizational strategy provides direction for the organization's activities and its human resources within the context of its mission statement's objectives.

What strategy must an organization develop to achieve its mission?

An organizational strategy must be developed for each functional area within its mission statement. The resulting strategies contain:

1. A clear purpose
2. Measurable expected outcomes
3. Fall-back plans in the event the primary strategy cannot be implemented
4. Costs and benefits

Developing an organizational strategy using The Strength, Weaknesses, Opportunities and Threats (SWOT) ***analysis.***

SWOT analysis is to combine the assessment of the environment with the analysis of the organization's internal resources and capabilities. The key objective is to arrive at strategic fit - the matching of strength to opportunities, the elimination or avoidance of threats, and the strengthening or avoidance of weaknesses.

Elements analyzed within the organization's environment consist of the following variables:

1. culture
2. demographics
3. economic technology
4. organizational publics
   - (a) capital originators including shareholders, creditors, bankers, and underwriters
   - (b) raw material and component providers
   - (c) customers
   - (d) human resources
   - (e) competitive rivals
   - (f) governmental and legal environment including regulators
   - (g) special-interest lobbying groups

The SWOT analysis allows managers to develop a strategic plan by examining organizational strengths and weaknesses in terms of the opportunities and threats presented by its environmental elements. Subsequent strategies and tactical decisions can produce a competitive advantage.

What does strategic analysis seek?

Strategic analysis seeks to understand the strategic position of the organization. The analysis should encompass the environment, resources, objectives, expectations, and behaviors. Strategic choice concerns the formulation of possible courses of action, their evaluation and the choice between them. And strategic implementation is the planning of how the strategy can be put into effect. Implementation would affect all aspects of the organizational system.

More specifically, strategic analysis is concerned with the understanding of the strategic position of the organization, and will thus seek to analyze:

- The mission - what business are we in? Why it exists at all? What is the value system of the business?

- The goals - the specific relevance of the mission to the various stakeholders.
- The objectives - embodying the mission, quantifiable and used to measure actual performance against.
- The external environment - scanning of the environment for factors relevant to the organization's current and future activities.
- The internal appraisal or position audit - the current state of being in terms of resources, assets, facilities, and performance values.
- The corporate appraisal - evaluation of the strengths, weaknesses, opportunities and threats (SWOT) in relation to the internal and external factors.
- The gap analysis - identifying the gap between where we are, where we will be when extrapolated, and where we desire to be.

What do strategic management and control involve?

Strategic management is facilitated when managers think synergistically. Synergy occurs when the combination of formerly separate elements has a greater effect than the sum of their individual effects. Market synergy arises when products or services have positive complementary effects. Shopping malls reflect this type of synergy.

Strategic control measures may be categorized as concerning either external effectiveness or internal efficiency. Flexibility overlaps these categories. It relates to effectiveness and efficiency. Thus, an organization must be externally flexible in responding to changing customer needs and internally flexible in reordering its structural arrangements, retraining employees, etc.

How important is value chain analysis in the strategic planning process?

Value-chain analysis for assessing competitive advantage is an integral part of the strategic planning process. Value-chain analysis is a continuous process of gathering, evaluating, and communicating information for business decision making. A value chain depicts how customer value accumulates along a chain of activities that lead to an end product or service. A value change consists of the activities required to research and develop, design, produce, market, deliver, and support its product. Extended value-chain analysis expands the view of the parties involved to include those upstream (e.g., suppliers) and downstream (e.g., customers).

What are the three levels of planning? How are they related?

There are in general three levels of strategy: corporate strategy, business strategy and functional strategy. Corporate strategies define what business or businesses the firm is in or should be in and how integrated these businesses should be with one another; business strategies decide how each business attempts to achieve its mission within its chosen area of activity; and functional strategies governs how the different functions of the business (marketing, production, sales, finance, HRM, IT, etc.) support the corporate and business strategies.

These levels of strategies are matched by the three levels of planning: strategic planning, tactical planning, and operational planning.

Strategic planning decides on the objectives of the organization, on changes in these objectives, on the resources used to attain these objectives and on the policies that are to govern the acquisition, use and disposition of these resources. Tactical planning ensures that the resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives. Operational planning ensures that specific tasks are carried out effectively and efficiently.

What are Porter’s generic competitive strategies?

Michael Porter proposes two "generic" competitive strategies for outperforming other corporations in a particular industry: lower cost and differentiation**. *Lower cost*** is the ability of a company or a business unit to design, produce, and market a comparable product more efficiently than its competitors. *Differentiation*, in contrast, is the ability to provide unique and superior value to the buyer in terms of product quality, special features, or after-sale service. These strategies are called generic because any type or size of business firm—and even not-for-profit organizations—can pursue them.

What are the objectives and goals?

Objectives are the end results of planned activity. They state what is to be accomplished by when and should be quantified if possible. The achievement of corporate objectives should result in fulfillment of the corporate mission. A community bank, for example, might set a one-year objective of earning a 10% rate of return on its investment portfolio.

The term *goal* is often confused with the term objective. In contrast to an objective, a goal is an open-ended statement of what one wishes to accomplish with no quantification of what is to be achieved and no time horizon for completion. *Note:* Effective goal setting requires a sufficient knowledge of employees’ jobs. Employees must also understand how goal-oriented performance will be measured.

For example, a community bank's goal might be to increase its rate of return—a rather vague statement. Some of the areas in which a corporation might establish its goals and objectives are:

- Profitability (net profits);
- Efficiency (low costs, etc.);
- Growth (increase in total assets, sales, etc.);
- Shareholder wealth (dividends plus stock price appreciation);
- Utilization of resources (ROE or ROI);
- Reputation (being considered a "top" firm);
- Contributions to employees (employment security, wages);
- Contributions to society (taxes paid, participation in charities, providing a needed product or service);

- Market leadership (market share);
- Technological leadership (innovations, creativity);
- Survival (avoiding bankruptcy); and/or
- Personal needs of top management (using the firm for personal purposes, such as providing jobs for relatives).

The top management of most large, publicly traded U.S. corporations like to announce their long-term objectives for the company—partially because that will set challenging measurable goals to work toward and partially because they hope to impress shareholders and financial analysts. For example, Rubbermaid, Inc., a maker of housewares, toys, outdoor furniture, and office products, established the objective that its sales and earnings should increase by 15% annually. To emphasize the importance of developing new products in this highly competitive market, it also set the objective that 30% of its yearly revenue come from products launched in the past five years.

What is the role of the board in strategic management?

How does a board of directors fulfill strategic management's responsibilities? In terms of strategic management, a board of directors can do so by carrying out three basic tasks.

- *Monitor:* By acting through its committees, a board can stay abreast of developments both inside and outside the corporation. It can thus bring to management's attention developments that management might have overlooked. At a minimum, a board should carry out this task.
- *Evaluate and influence*: A board can examine management's proposals, decisions, and actions; agree or disagree with them; give advice and offer suggestions; and outline alternatives. More active boards do so in addition to monitoring management's activities.
- *Initiate and determine*: A board can delineate a corporation's mission and specify strategic options to its management. Only the most active boards take on this task in addition to the previous two.

1.3 MANAGERIAL DECISION MAKING

All managers have a shortage of knowledge, resources, and time. Working within these parameters, the management process culminates in decisions to implement various actions. Decision-making is the focal point of all organizational dynamics, and management effectiveness is judged on the basis of the quality of these decisions.

What is managerial decision making?

Managerial decisions are deliberate choices made from a range of alternatives. Before making the decision, the manager must evaluate each choice according to its projected outcomes in terms of the organization's resources as well as the amount of information and time available. Thus, every managerial decision is a best-effort compromise made in an environment of uncertainty.

What are the types of management decisions?

From a management perspective there are three types of decisions:

1. Long-term strategic decisions concerning the external environment of the organization.
2. Administrative decisions intended to order the functions of the organization in the most cost-effective way.
3. Operational decisions designed to maximize a firm's profitability through productive procedures.

What are the types of strategic decisions?

There are several types of strategic decisions in production and operations management (P/OM):

1. *Product or service strategies.* Management decisions regarding product line market strategies (including design, quality and cost) determine production cost parameters.
2. *Process strategy*. Management decisions regarding process methods are critical in determining technological and organizational production requirements. The process strategy decision is also crucial in determining capital and financial requirements.
3. *Research and Development (R&D) strategy.* R&D is critical for organizational survival in today's rapidly changing marketplace. The R&D strategy includes total resources being devoted to the effort, the type of research to be performed including pure vs. applied research, manufacturing vs. market research, and product development vs. process development.
4. *Location strategy.* Often the success or failure of a business, production, or service is determined by a location decision.
5. *Inventory management strategy*. It is essential to develop a strategy for coordinating production needs with raw material and component inventories. However, the inventory strategy is determined by whether the demand is dependent or independent of the demand for other components. If the demand for one product, such as air conditioners, is independent of another product, such as kitchen chairs, then an independent inventory management strategy is required. However, if the overall component demand is dependent on the demand for the product, then a Material Requirements Planning (MRP) strategy is needed. MRP is a component manufacturing planning method in which items required for a manufacturing process are indexed to overall product demand. With MRP it is not essential that all inventory items are available at all times, but only when they are required in the production process. Thus, under MRP, inventory needs are coordinated with production needs.

6. *Human resource planning and management strategy.* As a rule of thumb more than 75% of a firm's operating expense is for human resources. Therefore, adequate hiring, training, and utilization of human resources is a critical operational strategy for achieving success.

EXAMPLE 1.4

The management of an organization makes a strategic decision to develop a five-year marketing plan to achieve a competitive advantage through the introduction of a new service.

EXAMPLE 1.5

An automobile manufacturer makes a process strategy decision to offer a standard group of options on its automobiles in order to reduce the variation in its production needs and lower unit costs.

EXAMPLE 1.6

A computer chip manufacturer makes a strategy decision to increase R&D expenditures on an advanced CPU chip design enabling compatibility with multiple computer operating systems.

EXAMPLE 1.7

A firm makes a location strategy decision to conduct a nationwide survey of state industrial development agencies to evaluate where the company could receive the greatest financial and environmental location benefits.

EXAMPLE 1.8

A lawn mower and snow blower manufacturer makes an inventory management decision to use an MRP system to coordinate their need for lawn mower and snow blower components with seasonal manufacturing schedules.

EXAMPLE 1.9

A manufacturer makes a human resource strategy decision to give more responsibility to its employees by creating work teams to assemble entire products rather than components in the belief that it will obtain greater productivity because of job enrichment.

What are the types of administrative decisions?

1. Programmed decisions. Decisions typically made regarding highly routine situations where little discretion is required.
2. *Non programmed decisions*. Decisions made in unstructured situations where problem conceptualization and original thinking is required.

EXAMPLE 1.10

Management makes a programmed administrative decision to establish a vehicle maintenance schedule.

EXAMPLE 1.11

Management makes a non programmed administrative decision to implement an organizational downsizing plan to reduce duplication of services, decrease costs, and increase profitability.

What are the types of operational decisions?

1. *Quality.* Decision making regarding product and service quality is a vital operations responsibility necessitating comprehensive organizational support. Quality decisions are made in the design stage of the product or service plan and require the creation and maintenance of standards.
2. *Process.* Operational decisions are made regarding the design of the process used in the manufacturing or servicing of a final product. Process decisions normally are long range and cannot easily be reversed.
3. *Capacity*. Operational capacity decisions are concerned with the long-term capability of an organization to produce the required amount of output over time. Capacity planning determines not only the size of an organization's physical productive capability, but also its human resource needs.
4. *Inventory.* Inventory decisions are crucial in fulfilling management's inventory management strategy. The challenge for operations management is to create a balance in inventory between product demand, cost, and supply needs.
5. *Human Resources.* Human resources are an extremely important operational management responsibility. Organizations pay a major portion of their revenues to employees. Therefore, selection, hiring, training, termination, and general management of human resources are critical for the future of the organization.

EXAMPLE 1.12

The franchise management of a fast-food retail chain makes a determination concerning quality standards in terms of the content and temperature of the food when it is served to the customer. It implements a program to ensure the individual franchises meet the quality standards.

EXAMPLE 1.13

The management of a car-washing company makes a process decision to utilize a brushless car-washing facility that requires fewer workers, results in less damage to the car finish, and is more productive.

EXAMPLE 1.14

A seasonal manufacturer of lawn equipment makes a capacity operational decision to hire and train a second shift of employees during peak demand periods rather than increase overall plant capacity. This will make more productive use of existing capacity without increasing long-term overhead costs including plant maintenance and capital financing costs.

EXAMPLE 1.15

The franchise manager of a chain of job printers makes an operational decision to allow the individual store managers to buy their own printing supply inventory as long as they use the franchise's equipment.

EXAMPLE 1.16

A franchise manager makes a human resource operational decision to allow individual franchisees to hire, train, and supervise their own employees. Thus, the individual franchisee has the entire human resource operational responsibility.

What are the steps in the decision-making process?

Making good decisions is essential to the management process. As discussed, decisions are rational choices among a group of alternatives. Good decisions are the result of a sequential series of analytical steps:

1. Identify and delineate the problem. No management action can occur unless there is a need to resolve an issue. Additionally, when identifying a problem, it is necessary to assess the seriousness of the issue. Highly critical issues require more immediate attention and a greater demand on existing resources. Difficulties in identifying problems include:

    Perceptual errors. Often problems are not identified because of personal biases, which do not allow the individual to perceive that there is a problem needing attention. Preconceived notions of how something should be (as well as personal preferences) will interfere with the ability to identify a problem.

    Insufficient information. Insufficient research about a specific problem can lead to misleading and unwarranted conclusions regarding the true nature of the problem and its possible solution.

    - *Mistaking a symptom as the cause of the problem.* An apparent cause of a problem may just mask a systemic cause. Again, further research is essential to find the cause and nature of a problem.

2. *Establish decision priorities and goals*. Managers constantly deal with problems. However, all organizations have limited resources. They must assign priorities to problems in terms of their importance relative to the organization's goals. This process results in a matching of organizational resources with priorities and creates a management methodology for administering solutions to problems.

3. *Ascertain the cause of the problem.* In order to develop a solution to a problem, it is essential to understand its cause. This requires a systemic understanding of the dynamics of the situation that has caused the problem.

4. *Develop realistic alternatives.* It is important for the manager to develop a range of alternative realistic solutions. This means doing extensive research into the nature of the problem and discovering what alternatives would be a good fit.

5. *Weigh the best alternative.* This requires extensive evaluation and comparison using a cost benefit analysis. The alternative solutions are developed within the constraints of limited time and resources, and with a degree of uncertainty.

6. *Choose a solution.* After conducting extensive research, a decision will have to be made regarding an optimal solution. Managers operate within an environment of incomplete information, time deadlines, and limited resources. All solutions represent opportunity choices having limited outcome predictability. Therefore, managers must make decisions within a range of known alternatives having unknown outcomes.

7. *Implement the decision.* This requires developing human resources to carry out the decision. This mandates a high communication level between the manager and the human resource team.

8. *Follow up*. All decisions require constant monitoring. Changes will have to be made over time to ensure optimum results. This requires an effective organizational control and evaluation system for future organizational decisions

EXAMPLE 1.17

A word processing software manufacturer that has been very successful in the text-based operating system market is facing a crucial decision when the industry standard operating system is changed to a graphical user interface (GUI) system. The company's text-based word processor is extremely successful and has a large following. The commands used in the text-based word processor are difficult to learn, but once learned, it is a very versatile word processor.

If the word processor is converted to a graphical user interface, then a portion of the installed user base may be lost, and its competitive advantage based on powerful non-intuitive commands may also be compromised. However, failure to convert the word processor to a graphical user interface will mean losing its market share since the major competitors have already released GUI word processors.

After deciding to develop a GUI word processor, the company had to decide whether to do a fundamental rewrite of the program, which could take at least two years, or simply update it and make it GUI compatible. The company decides to release a GUI update to its word processing program with a fundamental GUI rewrite scheduled for a future date.

What is decision making under certainty and conflict?

Decision-making involves managing three major elements:

1. *Decision strategy.* A decision maker develops a plan affecting long-term organizational outcomes utilizing existing organizational resources.
2. *States of nature.* These are elements of the environment over which the manager has little or no control. States of nature include the weather, political environment, the economy, technological developments, etc. They can dramatically affect the outcomes of any decision strategy.

3. *Outcome*. This is the result of the interaction of the implementation of a decision strategy with the states of nature. Because of the many variables within the states of nature, outcomes can be extremely difficult to forecast.

Thus, outcomes of a decision strategy, O, the dependent variable, is a function of the interaction of the two independent variables, D, decision strategies and, S, the states of nature. Figure 1.1 shows a decision matrix. The rows are strategic choices a manager can make while the columns represent decision outcomes. An outcome O_{ij} is a function of a decision strategy D_i; and a state of nature S_j.

FIGURE 1.1 DECISION MATRIX

States of Nature

Strategies	S_1	S_2	S_X	S_X	S_X	S_j
D_1	O_{11}	O_{12}	*	*	*	O_{1j}
D_2	O_{21}	O_{22}	*	*	*	O_{2j}
D_x	*	*				*
D_x	*	*				*
D_j	O_{i1}	O_{i2}	*	*	*	O_{ij}

Mathematically this relationship can be expressed as:

$O_{ij} = f(D_i, S_j)$

What are decision trees and decision tables?

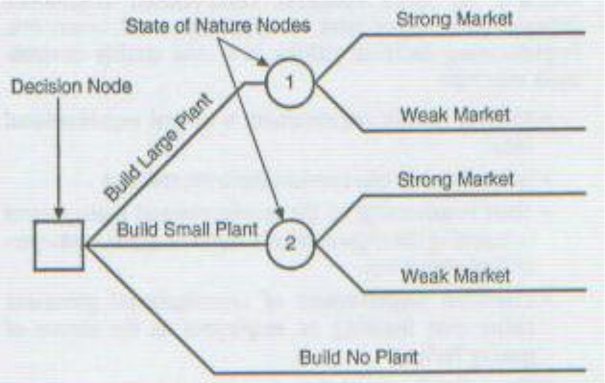
Developing a graphical display is an effective way of mapping the alternatives and probable events that can occur in a complex decision-making environment. Decision trees use symbols consisting of squares and circles. Branches of the decision tree that extend from a square depict an area where several choices can be made while a circle connotes a unique state of nature having certain outcomes.

A decision tree is analyzed in reverse order from right to left going back chronologically. Decision trees are normally accompanied by a payoff or decision table where all the alternatives are listed down the left side of the table with states of nature listed across the top of the table and payoffs stated in the main part of the table.

EXAMPLE 1.18

The Jackson Lawn Products Corporation is studying the possibility of manufacturing a new line of lawn mowers. Since the market for the new mowers is uncertain, the corporation must decide whether to construct a large or small plant, or do nothing. Figure 1.2 presents a decision tree depicting the Jackson Lawn Products decision choices.

FIGURE 1.2 JACKSON LAWN PRODUCTS CORPORATION DECISION TREE



A payoff or decision table can be developed to assist Jackson Lawn Products in determining what type of a lawn mower plant they should build. There is an outcome for each decision and state of nature that can be described in units of monetary value. The units of monetary value are also described as conditional values.

Exhibit 1.1 describes all of Jackson's decision alternatives in the left column of the exhibit, the states of nature across the top, and the payoffs (conditional values) in the main part of the exhibit. In the case of building a large plant, a strong market will produce a $250,000 net profit, whereas a weak market will result in a $125,000 net loss. If a small plant is built, a strong market will produce a $125,000 net profit with a $60,000 net loss in a weak market.

EXHIBIT 1.1 DECISION TABLE WITH CONDITIONAL VALUES FOR JACKSON LAWN PRODUCTS CORP

	States of Nature	
Decision Alternatives	*Strong Market*	*Weak Market*
Build Large Plant	$250,000	-$125,000
Build Small Plant	$125,000	-$60,000
Build No Plant	$0	$0

What is decision making in a Total Quality Environment?

Total Quality Management evolved from W. Edwards Deming's 14 points, which was termed Total Quality Control. Decision making in a total quality environment essentially involves the elements of a continuous process focusing on three essential components: continuous improvement, assessment management, and teamwork.

Implementing decision-making in a total quality environment requires:

- Making quality improvement a central organizational focus.
- Extensive and continuous employee training.
- Total involvement of the employees and management concerning the organization's mission, goals, and operational objectives.
- Continual improvement of organizational processes rather than focusing on employees as the source of quality failures.
- Team decision-making.
- The recognition that the customer defines quality, and that a total quality decision objective is to meet or exceed customer satisfaction standards.

Decision-making in a TQM environment is a shared experience for all employees throughout the organization. Information is an organizational resource essential for making quality decisions. Increased quality leads to increased productivity, lower unit costs, and higher customer satisfaction.

EXAMPLE 1.19

A transmission manufacturing company was machining highly exacting parts to be used in automatic transmissions. The parts consisted of gears, bearings, and assorted spacers and shafts. The parts were engineered to be within the industry standard of + or - .003" of specifications. However, other manufacturers were able to produce the same transmissions at two-thirds of the price and achieve higher productivity and quality.

Management decided to make a 300% improvement in the tolerances of the parts by reducing them to + or .001" tolerance. The net result was there were fewer returns, lower unit costs, and higher overall customer satisfaction. Consequently, productivity and profits grew substantially.

1.4 SIMULATION MODELS

Management uses simulation techniques to replicate the characteristics and dynamics of a real system. Simulations enable management to test models of performance when it is too expensive, risky, or time consuming to do it with the real materials, workers, and/or equipment. Using simulation, a manager can test the effects of a decision in a wide variety of situations including time compression scenarios without disrupting an operational system. It allows the manager to evaluate alternative system designs when implementing a given operational strategy. Additionally, simulation permits the manager to evaluate the effects of interactions between individual system components and various when/if tactics.

The weaknesses of simulations are that they are syllogistic in that they can evaluate only the information built into the model. Therefore, variables not included or not capable of being included in the model cannot be evaluated. Another limitation for simulation is that it is typically designed for unique situations restricting transferability to other scenarios.

How is simulation implemented by management?

When implementing a simulation model, management is required to:

1. Delineate the problem.
2. Categorize the factors associated with the problem.
3. Develop an analytical model.
4. Construct strategic alternatives for testing.
5. Implement the simulation.
6. Analyze the outcomes of the simulation.
7. Apply the analysis to an operational system.

What is the Monte Carlo simulation?

When a scenario contains elements of chance, the Monte Carlo simulation can be used to estimate outcomes. The Monte Carlo simulation analyzes the probability distribution of variables in a problem and uses random sampling of the data. Using random sampling these probabilities are calculated to estimate a problem's solution.

The Monte Carlo simulation is developed through the following procedures:

1. Probability distributions for major elements of the problem are established. A critical feature of the Monte Carlo simulation is the generation of probability distributions. The probability distribution must correspond to the actual data as closely as possible in order for the simulation to be valid and reliable. A commonly accepted method for doing this is historical frequency.
2. Cumulative probability distributions are developed for each variable. After establishing a probability distribution for each variable in the model, the probabilities are sequentially totaled.
3. Random samples are established using the cumulative probability distributions to obtain specific element values for each observation. A random number table is often used to generate numbers for the sampling distribution.
4. Perform several simulation trials. The actual number of trials needed is determined by statistical tests of significance.

Monte Carlo simulations have a wide number of applications including estimating inventory demand on a time interval basis, times between machine failures, project scheduling times, and servicing schedules. Exhibit 1.2 presents a Random Number Table.

EXAMPLE 1.20

A computer memory chip manufacturer's records show the following failure rates of a particular memory chip when tested individually:

Memory Chip Failures

Failures	*Frequency of Failure in Hours*
2	10
5	20
6	30
8	40
2	50
1	60
Total Hours	210

Memory Chip Failures, Frequency of Failure, Failure Probability, Cumulative Probability, and Monte Carlo Numbers

Failures	Frequency of Failure in Hours	Probability (Frequency/Total Hours)	Cumulative Probability	Monte Carlo Numbers**
2	10	0.05	0.05	01-05
5	20	0.10	0.15	06-15
6	30	0.14	0.29	16-29
8	40	0.19	0.48	30-48
3	50	0.24	0.72	49-72
1	60	0.29	1.01*	73-00
Total Hours	210	1		

* Rounding error

**Derived from cumulative probability

Random numbers are then assigned, using a computer generated table of random numbers

EXHIBIT 1.2 RANDOM NUMBER TABLE

75	55	41	96	97	38	33	79	91	22	20	24
39	75	58	48	68	6	62	30	21	96	4	56
91	88	78	58	94	5	51	61	59	90	40	14
79	93	62	48	73	88	17	56	48	22	53	3
50	22	76	38	2	46	68	94	89	17	83	76
5	21	35	52	95	79	19	51	26	46	2	10
76	44	51	15	98	71	33	75	26	47	58	99
77	71	51	20	75	9	91	92	22	99	33	11
4	89	54	62	67	9	65	79	47	39	25	77
88	18	17	46	7	16	98	90	54	56	95	66

56	31	44	50	29	74	66	35	55	81	43	76
55	61	97	16	32	31	66	29	65	61	6	26
65	82	50	68	26	53	76	6	99	98	14	46
30	1	20	47	92	61	76	17	72	15	57	94
95	45	83	50	100	49	58	32	19	0	13	79
70	94	39	19	64	33	28	61	81	6	88	99
87	38	16	34	9	89	19	69	77	24	33	84
47	26	29	96	9	96	2	70	9	34	42	91
85	90	31	79	89	3	86	75	61	59	40	73
48	94	57	21	70	72	23	57	97	50	4	39

The next step is to simulate the memory chip failures. In this example, twenty simulations are run using random numbers from the first column of the random number table. The number of memory chip failures is derived from where the random number coincides with the Monte Carlo interval, as shown in Exhibit 1.3.

EXHIBIT 1.3 FAILURE RATES

Simulation	*Random Number*	*Simulated Failures*
1	75	1
2	39	8
3	91	1
4	79	1
5	50	3
6	5	2
7	76	1
8	77	1
9	4	2
10	88	1
11	56	3
12	55	3
13	65	3
14	30	8
15	95	1
16	70	3
17	87	1
18	47	8
19	85	1
20	48	8
Total Number of Failures		60
Average Failure Rate 60/20 =		3

A frequency distribution for the Hours and Failures of the simulation can now be tabulated, as shown in Exhibit 1.4.

EXHIBIT 1.4 SIMULATION FREQUENCY DISTRIBUTION

Hours	*Failures*	*Probability of Failure*
10	4	0.07
20	0	0
30	0	0
40	32	053
50	15	0.25
60	9	0.15
		1

In this simulation, the average failure rate for the memory chips is 3; however, the greatest number of failures occurs between 40 and 50 hours of operation. Assuming enough simulated iterations occurred, the simulated outcomes will represent real operations.

In this example, running more simulations could have changed the average failure rate for the memory chips. The expected failure rate for the memory chips can be calculated from the failure rates and their probabilities:

$$\text{Expected failure rate} = \sum_{i=1}^{5} (\text{probability of } i \text{ units}) \text{ x } (\text{failure rate of } i \text{ units})$$

$$= (.05)(2) + (.10)(5) + (.14)(6) + (.19)(8) + (.24)(3) + (.29)(1)$$

$$= .1 + .5 + .84 + 1.52 + .72 + .29$$

$$= 3.97 \text{ failure rate}$$

The expected failure rate for the memory chips is higher than the average for the sample simulation. Assuming more simulations were run, the average failure rate would more closely approximate the expected failure rate.

1.5 CAPACITY MANAGEMENT

Capacity is the total productive capability of a system during a unit of time. For a manufacturing facility, capacity is simply the maximum output that can be attained with the existing capital equipment during a period of time. Thus, an automobile manufacturer may define its capacity as the number of cars that can be assembled in an hour, day, week, or month. Capacity is critically important for a productive organization because:

- It provides the output required to meet product demand.
- It directly impacts the cost and efficiency of productive capability.
- It is a major organizational investment.

What is design capacity?

Design capacity is the total achievable capacity under perfect conditions. Normally, perfect conditions are not achievable, and few organizations operate for any period of time at design capacity. Furthermore, operating at designed capacity can cause rapid wear and breakdowns. Operating at design capacity essentially means operating at the organization's productive limits.

What is effective capacity or utilization?

Effective capacity or utilization is a ratio between the expected capacity of a firm and its design capacity. It can be computed by the following formula:

$$\begin{array}{c}\text{EFFECTIVE CAPACITY}\\ \text{OR UTILIZATION}\end{array} = \frac{\text{EXPECTED CAPACITY}}{\text{DESIGN CAPACITY}}$$

Effective capacity is affected by an organization's product mix, production scheduling, age of equipment, and maintenance standards.

EXAMPLE 1.21

A television manufacturing company has a design capacity of 50 televisions per hour, but due to intensive quality control standards, it normally produces only 40 televisions per hour. The effective capacity or utilization of the television manufacturing company is calculated in the following manner:

$$\begin{array}{c}\text{EFFECTIVE CAPACITY}\\ \text{OR UTILIZATION}\end{array} = \frac{\text{EXPECTED CAPACITY}}{\text{DESIGN CAPACITY}}$$

$$\begin{array}{c}\text{EFFECTIVE CAPACITY}\\ \text{OR UTILIZATION}\end{array} = \frac{40}{50} = 80\%$$

What is capacity efficiency?

Capacity efficiency is a ratio of production output to effective capacity. It is a measure of effective management in utilizing effective capacity. It is calculated using the following formula:

$$\text{EFFICIENCY} = \frac{\text{ACTUAL OUTPUT}}{\text{EFFECTIVE CAPACITY}}$$

EXAMPLE 1.22

The effective capacity of a candy manufacturing company is 1,000 units of candy per hour; however, it actually produces only 850 units per hour. The efficiency of the candy manufacturing company can be computed in the following manner:

$$\text{EFFICIENCY} = \frac{\text{ACTUAL OUTPUT}}{\text{EFFECTIVE CAPACITY}}$$

$$\text{EFFICIENCY} = \frac{850}{1{,}000} = 85\%$$

What is rated capacity?

Rated capacity is a determination of the maximum usable capacity of manufacturing capability. Rated capacity can never exceed design capacity. It is a product of design capacity times effective capacity times efficiency. The formula used to calculate rated capacity is:

Rated capacity = Design capacity x Effective capacity x Efficiency

EXAMPLE 1.23

A computer printer manufacturer has a manufacturing facility operating at an effective capacity of 80% with 85% efficiency. It has two assembly lines operating five days a week with two shifts a day. Each assembly line has a designed capacity of 40 printers per hour.

The rated capacity of the computer printer manufacturer is calculated by multiplying the design capacity times the effective capacity times the efficiency of the plant. To determine the design capacity, the two production lines have to be multiplied by the number of printers times the combined number of hours of production.

Design Capacity = 40 printers/hour x 2 assembly lines x 80 hours = 6,400 `

Rated capacity = Design capacity x Effective capacity x Efficiency

Rated capacity = 6,400 x 0.8 x 0.85 = 4,352 printers per week

What factors affect capacity?

Many factors affect an organization's productive capacity. Some are within management's control while others are not. Factors within management's control include the acquisition and supervision of land, physical resources, and the utilization of labor.

Management challenges affecting organizational capacity include personnel issues, technological maximization, and issues that are not directly controllable such as the impact of weather events, political issues, or war.

1.6 LOCATION ANALYSIS

Few decisions have more long-lasting and critical-cost implications than plant location. Costs affected by location decisions include:

- Transportation—the geographic location will determine how far products must be transported to markets.
- Energy—utility geographic service areas determine the respective energy costs for any particular location. These costs vary widely.
- Taxation—local and state tax rates vary widely. Location decisions have major taxation cost implications.
- Wages—wage levels vary widely depending on geographic regions. However, a location decision made solely on the basis of wage levels without considering labor productivity is counterproductive.
- Raw materials—certain industries are extremely dependent on the ready availability of specified raw materials such as wood or iron ore. Location analysis therefore must include the availability of these raw materials.

Note: One of the most important subjective factors in location analysis is the personal preference of the owners and managers. In fact, personal preference may well dominate as a factor in the location of single-plant enterprises. Multiplant enterprises are much more likely to be influenced primarily by objective and subjective economic factors.

Steps to be followed in a facility location decision are as follows:

- Define the location goals and associated factors.
- Identify the decision criteria: quantitative (e.g., cost) or qualitative (intangible)
- Choose a decision model (such as break-even, factor ratings, etc.)
- Select the location that best meets the criteria.

Location decisions need to be reviewed occasionally. They are not one-time decisions.

What is locational break-even and profit analysis?

Locational break-even analysis is an economic comparison of locational options based on a cost-volume examination. Location decisions can be compared in graph form using alternative production/sales volumes. In order to perform locational break-even analysis it is essential to:

1. Establish the fixed and variable costs for each location.
2. Graph the costs for each location where costs are on the Y axis and production/sales volume is on the X axis of the graph.
3. Determine which location has the lowest production/sales volume.

EXAMPLE 1.24

A washing machine manufacturer is analyzing three possible locations-Buffalo, New York; Toledo, Ohio; and Orlando, Florida - to build an additional manufacturing facility. Research analyses indicate the annual fixed costs for the sites are respectively $45,000; $60,000; and $95,000. The variable unit costs respectively are $235; $205; and $185. The anticipated selling price for the washing machines is $350. The company is seeking the most economical location for an expected volume of 5,000 units annually.

The total cost for each city at the expected volume of 5,000 units is calculated using the following formula:

Total cost = Fixed cost + Variable cost x Total volume

Buffalo:
Total cost = $45,000 + $235 x 5,000 = $1,220,000

Toledo:
Total cost = $60,000 + $205 x 5,000 = $1,085,000

Orlando:
Total cost = $95,000 + $185 x 5,000 = $1,020,000

Expected annual profits for each location can be calculated using the following formula:

Total revenue = (Selling price x 5,000) - Total cost (Fixed cost + Variable cost x total volume)

Buffalo:
$1,750,000 - $1,220,000 = $530,000

Toledo:
$1,750,000 - $1,085,000 = $665,000

Orlando:
$1,750,000 - $1,020,000 = $730,000

Assuming a maximum production of 5,000 units, Orlando provides the lowest cost location at $1,020,000 and the highest annual profit of $730,000.

Figure 1.3 shows the locational break-even analysis. At 500 units Buffalo and Toledo are both cheaper than Orlando. At 1,500 units Toledo is the cheapest location, but at 2,000 units of production Orlando becomes the cheapest. Therefore, the crossover points in the breakeven analysis are 500 and 1,500 units of production.

FIGURE 1.3 LOCATIONAL BREAK-EVEN ANALYSIS

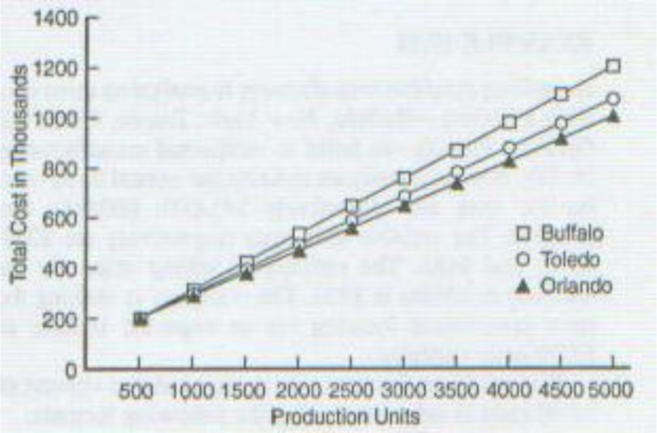
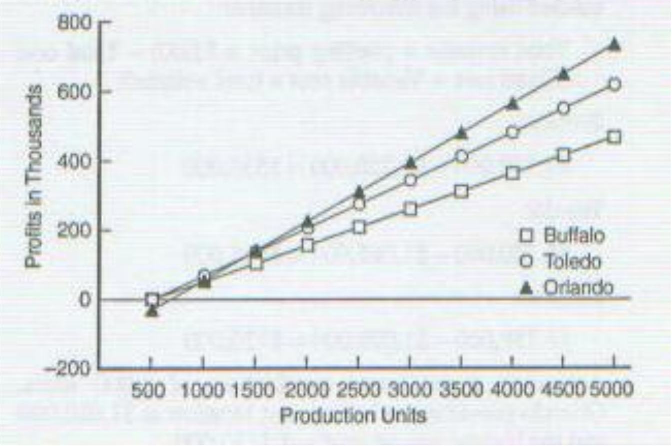


Figure 1.4 shows the location profit analysis. At 500 units both Buffalo and Toledo earn a profit of $12,500. A 1,000 units Toledo earns a profit of $85,000, while Buffalo and Orlando earn $70,000. At 1,500 units Buffalo shows a profit of $127 500, while Orlando shows a profit o $152,500 and Toledo's profit is $157,500. From 2,000 to 5,000 units Orlando is clearly more profitable than either Buffalo or Toledo. The crossover points are 500, 1,000 1,500 and 2,000 units for location profitability.

FIGURE 1.4 LOCATIONAL PROFIT ANALYSIS



Therefore, from both a cost analysis and profit analysis, Orlando at 2,000 units and over is the best locational choice.

What is the center of gravity location method?

The center of gravity location method relies on mathematical analysis for determining where a warehouse should be located to service a number of retail stores in disparate locations. The method considers three factors:

- Market location
- The volume of goods handled in these markets
- Shipping expenses to each location

In order to develop the center of gravity location method, each retail outlet has to be given coordinates within a map grid system where the geographical distances are correctly established.

The center of gravity is determined by using the following formula:

$$C_x = \frac{\Sigma i\ d_{ix} V_i}{\Sigma i\ W_i}$$

$$C_y = \frac{\Sigma i\ d_{iy} V_i}{\Sigma i\ W_i}$$

where

C_x = x coordinate of the center of gravity
C_y = y coordinate of the center of gravity
d_{ix} = x coordinate of the center of gravity
d_{iy} = y coordinate of the center of gravity
V_i = volume of goods moved to or from location i

In order to accurately reflect the true cost of distance on shipping, the center of gravity method evaluates the distance as well as the total volume actually being shipped to any respective location. The ideal location for a warehouse servicing several retail outlets is that which has the lowest weighted cost of distance and volume of units actually shipped.

EXAMPLE 1.25

Good Worth Hardware is a chain of six retail hardware stores being supplied by an outdated warehouse close to its first store. Stores are located in cities A, B, C, D, E, and F in Ohio, Pennsylvania, and New York.

The monthly volume of goods shipped to the respective stores is shown in Exhibit 1.5.

EXHIBIT 1.5 MONTHLY VOLUME OF GOODS SHIPPED TO STORES

Hardware Store Location	(d_{ix}, d_{iy})	Volume of Monthly Shipments
City A	(40,30)	600
City B	(100,90)	800
City C	(150,140)	900
City D	(165,180)	1,200
City E	(50.60)	850
City F	(110.120)	1,100

The company needs to find a more centralized location in which to locate a modern warehouse to supply all the hardware stores.

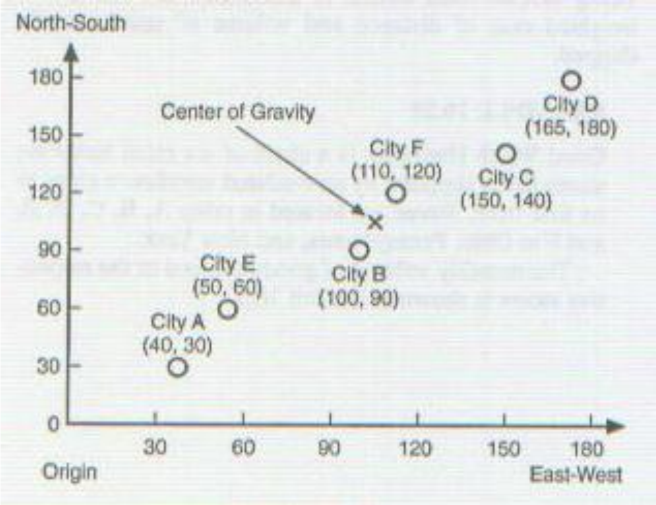
The data from the coordinate locations is then used in the formulas for coordinates x and y.

$$C_x = \frac{\begin{gathered}(40)(600) + (100)(800) + (150)(900) + \\ (165)(1{,}200) + (50)(850) + (110)(1{,}100)\end{gathered}}{600 + 800 + 900 + 1{,}200 + 850 + 1{,}100}$$

$$C_y = \frac{\begin{gathered}(30)(600) + (90)(800) + (140)(900) + \\ (180)(1{,}200) + (60)(850) + (120)(1{,}100)\end{gathered}}{600 + 800 + 900 + 1{,}200 + 850 + 1{,}100}$$

The center of gravity coordinate is shown in the coordinate locations in Figure 1.5.

FIGURE 1.5 COORDINATE LOCATIONS FOR HARDWARE STORES



1.7 TIME STUDIES

The classical approach to time studies was developed by Frederick W. Taylor in 1911, and is the accepted procedure for production analysis. A time study, also termed a stopwatch time study, is an analysis of a worker's performance against a time standard. Time studies are normally performed on short repetitive production types of tasks.

How is a time study performed?

There are several basic steps which must be followed in any time study:

1. Define the job to be analyzed.
2. Break the job into discrete tasks.
3. Measure the actual time required for each task.
4. Develop a statistically significant sample size of the task work cycles to be measured. Work measurement depends on sampling the work process. However, in order to counter inherent variability in the work samples, a sufficient representation of the sample universe must be selected. Therefore, it is essential to determine an adequate work cycle sample size. In order to do this, a preliminary analysis must be performed usually consisting of anywhere from 5 to 20 repetitive work cycles in order to determine variability.

The work sample size is dependent on three factors:

a. Observed variance in the work cycles.
b. How closely the sample will conform to the average work cycle (accuracy).
c. The desired statistical level of confidence.

The work cycle element having the greatest variability will determine the sample size needed to obtain an acceptable statistical level of confidence.

The typical statistical level of confidence expected is 95% with a reliability of t =5%. The following formula will determine required sample sizes:

$$N = \frac{nZ^2\,[n\Sigma X^2 - (\Sigma X)^2]}{(n - 1)^{a2}\,(\Sigma X)^2}$$

where

n = initial sample size
X = cycle time
a = accuracy
Z = confidence level (Z = 1 for 68.3% confidence level, Z = 2 for 95.5% confidence level, and Z = 3 for 99.7% confidence level)

5. Calculate the average time required for each job element using the following formula:

$$\text{AVERAGE JOB ELEMENT TIME} = \frac{\text{SUM OF THE TIME NEEDED TO PERFORM EACH TASK}}{\text{NUMBER OF JOB CYCLES}}$$

6. Rate the performance of each worker (Performance Rating).

7. Calculate the normal time required for each job element using the following formula:

$$\text{Normal time} = (\text{average element time}) \times \frac{\text{Performance rating}}{100}$$

Here the observed time, normal time, for a particular employee is rated against the average job element time.

8. Determine allowances that may be permitted for a particular job task. This may take into consideration personal factors as well as unavoidable constraints encountered in the work situation. Allowances include all unavoidable delays, but rule out avoidable delays. An allowance factor represents time lost due to personal factors, shift adjustments, improper equipment, fatigue, and related issues. The performance rating is adjusted for any allowances.

9. Calculate the standard time. When calculating the standard time, three different types of time are actually utilized. Actual time is the time a particular employee actually takes to perform a particular job operation. Normal time is the time needed to complete an operation by an employee working at 100% efficiency having no delays. Standard time is the time needed to complete an operation by an employee working at 100% efficiency with unavoidable delays:

$$\text{Standard time} = \text{normal time} + \text{allowance time}$$

$$\text{Standard time} = \frac{\text{normal time}}{\text{1- allowance fraction}}$$

EXAMPLE 1.26

A work operation consisting of three procedures is observed using a stopwatch time procedure. The allowance for the work operation is 15% of mean time. It is necessary to determine the standard time for the operation and what the standard should be in hours per 1,500 units. The observed data are contained in Table 1.1:

TABLE 1.1 STOPWATCH TIME STUDY

Job Element	Performance (%)	1	2	3	4	5	6	7	8	9	10	Mean Time (sec)	Normal Time (sec)
1	85	10	4	9	8	5	6	8	6	8	8	7	6
2	90	11	9	12	12	14	11	10	9	11	13	11	10
3	105	8	9	9	7	8	6	10	7	8	9	8	9
													Total: 25

The standard time is 28.94 seconds/unit and the standard for 1500 units is 12.06 hr.

EXAMPLE 1.27

A manager wants to determine the required sample size for three different work cycle elements after having performed 12 sample observations. The manager is seeking a 95.5% statistical confidence level with an accuracy of ± 5%. Refer to Exhibit 1.6.

EXHIBIT 1.6 REQUIRED SAMPLE SIZE AT .005 LEVEL OF CONFIDENCE

Sample	Element 1		Element 2		Element 3	
Observation	X	X^2	X	X^2	X	X^2
1	8	64	12	144	7	49
2	7	49	13	169	6	36
3	10	100	14	196	9	81
4	9	81	16	256	8	64
5	6	36	18	324	9	81
6	8	64	15	225	7	49
7	9	81	16	256	9	81
8	10	100	17	289	8	64
9	9	81	14	196	7	49
10	9	81	15	225	8	64
11	7	49	16	256	7	49
12	8	64	14	196	9	81
Total	100	850	180	2,732	94	748

Z = 95.5% confidence level = 2

Element 1:

$$N = \frac{nZ^2\,[n\Sigma X^2 - \Sigma\,(X)^2]}{(n - 1\,)a^2\Sigma\,(X)^2} = \frac{12(4)[\,12(850) - 10{,}000]}{11(.0025)\,10{,}000} = 34.91$$

Element 2:

$$N = \frac{12(4)[12(2{,}732) - 32{,}400]}{11(.0025)\,32{,}400} = 20.69$$

Element 3:

$$N = \frac{12(4)[12(748) - 8,836]}{11(.0025)\ 8,836} = 27.66$$

Element I has the largest required sample size of 35. Therefore, the manager needs to make another 23 sample observations to complete the total sample size of 35.

1.8 WORK SAMPLING

Work sampling is a work measurement methodology that estimates the proportion of time an employee utilizes in performing assigned job tasks. The methodology uses random observations of actual worker activity and is dependent on the laws of probability. Since it does not require a formalized time study procedure conducted by qualified stopwatch analysts, it is less costly. The methodology requires that the manager simply determine whether an employee is actually working or is idle during any particular observation.

After all the observations have been completed, the percentage of working observations is computed from the total observations. The greater the number of observations, the more accurate the technique is.

How is work sampling used?

Work sampling is used for the following:

1. *Ratio delay studies.* Worker allowances are determined by calculating the percentage of time an employee spends on unavoidable delays.
2. *Percent utilization of equipment.* The technique is used to determine the actual utilization of machinery and other equipment.
3. *Determining labor standards.* The technique is useful in determining work standards for various tasks by rating the employee's performance.
4. *Evaluating employee performance.* A performance standard can be calculated utilizing the work sampling procedure and resulting standards.

How is work sampling performed?

1. *Sample observations*. Several sample observations are performed to act as the basis for developing a correct sample size based on the problem's parameters.
2. *Compute the actual sample size.* The sample size is dependent on the desired level of statistical confidence and accuracy. Normally, the acceptable level of confidence is 95% with an accuracy level of ± 5%. The following formula determines the actual sample size necessary for a work sampling procedure:

$$N = \frac{Z^2 (1 - p)}{a^2 p}$$

Where
p = estimate of time utilized in an activity
$1\text{-}p$ = estimate of time not utilized in an activity
a = accuracy level fraction
Z = confidence level (Z = 1 for 68.3% confidence level, Z= 2 for 95.5% confidence level, and Z= 3 for 99.7% confidence level)

A higher confidence level and a reduced accuracy level fraction will increase the required sample size. The 95% confidence level and ± 5% accuracy level establish that in 95 cases out of 100 the sampling activity will be accurate within ± 5% of the proportion of time utilized in an activity (p).

3. Prepare a random schedule of employee observations.
4. Observe and rate the employee's work performance.
5. Total the number of units produced and calculate the normal time per unit.
6. Compute the standard time per unit.

EXAMPLE 1.28

The supervisor of a large production organization wants to determine what the idle time is with a confidence level of 95.5% and an accuracy level of 5%. After performing a random sample of 75 observations, it is determined there is 20% idleness. Analyze the percentage of operational idleness.

The required sample size is determined by using the following formula:

$$Z \quad = \quad 95.5\% \text{ confidence level} = 2$$

$$N \quad = \quad \frac{Z^2\,(1-p)}{a^2 p} \quad = \quad \frac{4\,(1\text{- }.80)}{0.0025(0.80)} \quad = \quad 400$$

Additional observations needed for sample = 400 - 75 = 325

For establishing labor standards, work samples are used in a similar manner to time studies. However, work samples, are more appropriate for operations having long production cycles, group service or production operations, and work using indirect labor. A determination is made as to whether the employee is busy or idle during the observation, a ratio is given to the employee, and the units produced are totaled in order to produce an average. Using this data, the normal time and standard time can be determined:

$$\text{Normal time} \quad = \quad \frac{\text{(Total study time) x (working time percent) x (performance rating)}}{\text{numbers of units produced}}$$

The standard time is the normal time plus allowance time:

$$\text{standard time} = \text{normal time} + \text{allowance time}$$

$$= \frac{\text{normal time}}{1 - \text{allowance time}}$$

EXAMPLE 1.29

A work sample study of a production operator was conducted over 60 hours (3,600 minutes) and disclosed the following data:

Number of pieces produced	580
Total number of observations	800
Total number of observations working	650
Average performance rating	95%

The total allowance given by the company for this operation is 15%. What is the standard time for each operation?

$$\text{Normal time} = \frac{\text{(Total study time) x (working time percent) x (performance rating)}}{\text{numbers of units produced}}$$

$$= \frac{(3600 \text{ min.})(0.8125)(.95)}{580} = 4.8 \text{ minutes/unit of production}$$

$$\text{Standard time} = \frac{\text{normal time}}{1 - \text{allowance time}}$$

$$= \frac{4.8}{1- .15} = 5.65 \text{ minutes/unit of production}$$

1.9 AGGREGATE PLANNING STRATEGIES

Planning is a primary management responsibility. Aggregate planning is concerned with organizing the quantity and timing of production over a medium period of time up to eight to ten months with undetermined demand. Specifically aggregate planning means combining all of an organization's resources into one aggregate production schedule for a predetermined intermediate time period. The objective of aggregate planning is to maximize resources while minimizing cost over the planning period.

The aggregate production plan is midway between short-range planning and long-range planning. Aggregate planning includes the following factors:

1. Work force size and composition

2. Demand forecasts and orders
3. Raw material planning
4. Plant capacity management
5. Utilizing outside subcontractors
6. Inventory management

Aggregate planning is the link between short-term scheduling and long-term capacity planning.

What are aggregate planning strategies?

There are three types of aggregate planning strategies:

Pure Strategy. In this strategy, only one production or supply factor is changed.
Mixed Strategy. This strategy simultaneously alters two or more production or supply factors or some combination.
Level Scheduling. This strategy has been adopted by the Japanese and it embodies maintaining constant monthly production schedules.

What aggregate planning strategies influence demand?

Aggregate planning can influence demand in the following ways:

1. *Pricing strategies.* Pricing can be used to increase or reduce demand. All things being equal, increasing prices reduces demand while lowering prices will increase demand.
2. *Advertising and promotion strategies.* Advertising and promotion are pure demand management strategies in that they can increase demand by making a product or service better known as well as positioning it for a particular market segment.
3. *Delayed deliveries or reserving orders.* Managing future delivery schedules is a strategy for managing orders when demand exceeds capacity. The net effect of delayed deliveries, or back ordering, and reservations is to shift demand to a later period of time, often to a more slack period, which provides a smoothing effect for overall demand. However, the negative is that a percentage of orders will be lost as consumers are unwilling or unable to wait the additional amount of time.
4. *Diversifying the product mix.* Product mix diversification is a method used to offset demand seasonality. For example, a lawn mower manufacturing company may diversify into snow removal equipment to offset the seasonality of the lawn mower industry.

What aggregate planning strategies influence supply?

Aggregate planning is also used to manage supply considerations by using the following strategies:

1. *Subcontracting.* Subcontracting is a method of increasing capacity without incurring large capital investment charges. It can turn the competitive advantage of other

corporations to the contracting organization's advantage. However, subcontracting can be costly, and also reveals part of the business to potential competitors.

2. *Overtime and idle time.* A direct short-term strategy for managing production capacity is to either increase or decrease the number of the work force. This strategy has the advantage of utilizing the currently existing work force. However, overtime is expensive and can produce job burnout if relied upon too extensively. On the other hand, enforcing idle time on the work force can result in resistance as well as a drop in morale.
3. *Hiring and laying off employees*. Hiring and laying off employees is a medium- to long-term strategy for increasing or decreasing capacity. Hiring employees usually involves the cost of training while laying off employees can incur severance charges. Laying off employees can also cause labor difficulties with unions and reduce morale
4. *Stockpiling inventory.* Accumulating inventory is a strategy for smoothing variances which may occur between demand and supply.
5. *Part-time employees.* Certain industries have seasonal requirements for lower skilled employees. Aggregate planning can be used to manage these seasonal requirements.

What is the charting method of aggregate planning?

Charting is a highly utilized trial-and-error aggregate planning method. It is relatively simple to use and is easily understood. Essentially, the charting approach uses a few variables in forecasting demand, applying current production capacity. While the charting method does not assure an accurate prediction, it is simple to implement requiring only minimal calculations. But trial and error method does not provide an optimal solution.

The charting method requires five steps to implement:

1. Calculate each period's demand.
2. Calculate each period's production capacity for regular time, overtime, and subcontracting.
3. Determine all labor costs including costs for hiring and layoffs as well as the cost of holding inventory.
4. Evaluate organizational employee and stock policies.
5. Create optional policies and evaluate their costs.

EXAMPLE 1.30

A Florida men's suit manufacturer has created expected demand forecasts for the period June-January, as shown in Table 1.2.

TABLE 1.2 EXPECTED DEMAND FOR MEN'S SUITS, PRODUCTION DAYS, AND DAILY DEMAND

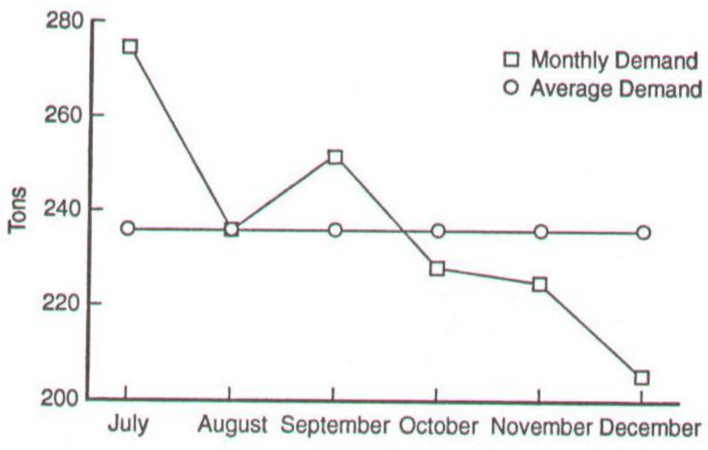
Month	*Expected Demand*	*Production Days*	*Daily Demand*
July	5,500	20	275
August	5,200	22	236

September	5,300	21	252
October	4,800	21	229
November	4,300	19	226
December	4,100	20	205
Average			237

The daily demand is calculated by dividing the total expected demand by the number of monthly working days:

$$\text{AVERAGE DEMAND} = \frac{\text{TOTAL EXPECTED DEMAND}}{\text{NUMBER OF PRODUCTION DAYS}}$$

FIGURE 1.6 MONTHLY AND AVERAGE MEN'S SUIT DEMAND



The graph in Figure 1.6 illustrates that there is a substantial variance between the monthly and average men's suit demand.

What are the costs of aggregate planning?

Aggregate planning is a systems methodology having major organizational impacts. Every strategy has associated costs and benefits. Increasing hiring means increasing training costs and incurring associated employment benefit costs. Increasing inventory increases carrying costs consisting of capital and storage costs, deterioration, and obsolescence. Using part-time employees involves the costs and risks of using improperly trained and inexperienced personnel as well as creating possible union conflicts. Using subcontractors has the cost of exposing an organization to potential competitors.

EXAMPLE 1.31

Using the data in example 1.30, it is possible to develop cost estimates for the men’s suit manufacturer. Basically, the manufacturer has three choices:

1. The manufacturer can meet expected monthly production fluctuations by varying the work force size, hiring and laying off employees as needed. In this scenario, an assumption is made that the men’s suit manufacturer has a constant staff of 55 employees.
2. Another alternative is to maintain a constant work force of 51 employees and subcontract for additional expected demand.
3. A third alternative is to maintain a work force of 69 employees and store suits during the slack demand months.

Organizational Costs

Inventory Holding Cost Per Unit Per Month	$3
Subcontracting Cost Per Unit	$25
Labor Hours Per Men's Suit	2
Layoff Cost Per Employee	$500
Hiring and Training Cost Per Employee	$650

THREE PLAN SUMMARY COSTS

	Plan 1	*Plan 2*	*Plan 3*
Items	*Hiring & Lay Off*	*Subcontract*	*Store Inventory*
Hiring Costs	19,278		
Layoff Costs	2,000		
Inventory Holding Costs			14,244
Subcontractor Costs		102,700	
Total	21,278	102,700	14,244

In this example, the best production plan is plan 3 which maintains a work force of 69 employees and stores men's suit inventory during low demand months.

1.10 TRANSPORTATION METHOD

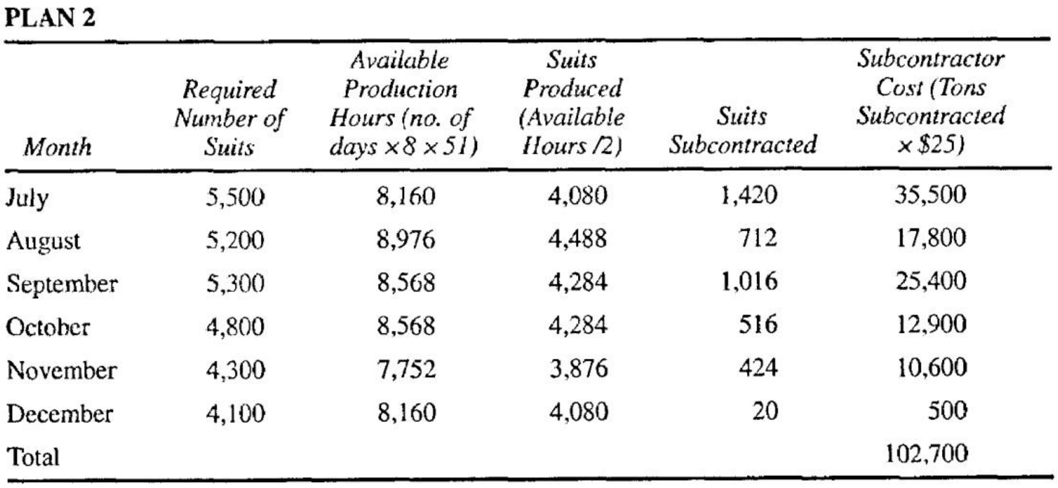
The objective of the transportation method is to limit shipment costs from several points of origin to several points of destination. Organizations having an origin and destination network must maximize effectiveness in order to limit costs while expediting the shipments. The transportation model is a special type of linear programming. It involves physical movement of goods from sources of supply to destinations. The objective function includes the transportation cost of each item from each source to each destination. The constraints are the output for each supply point and the demand by each destination.

How is the transportation method implemented?

The transportation method is implemented initially by determining point of origin predictive capacities, destination requirements, and shipment costs to the various destinations from the points of origin. The analysis is structured utilizing a matrix containing these factors.

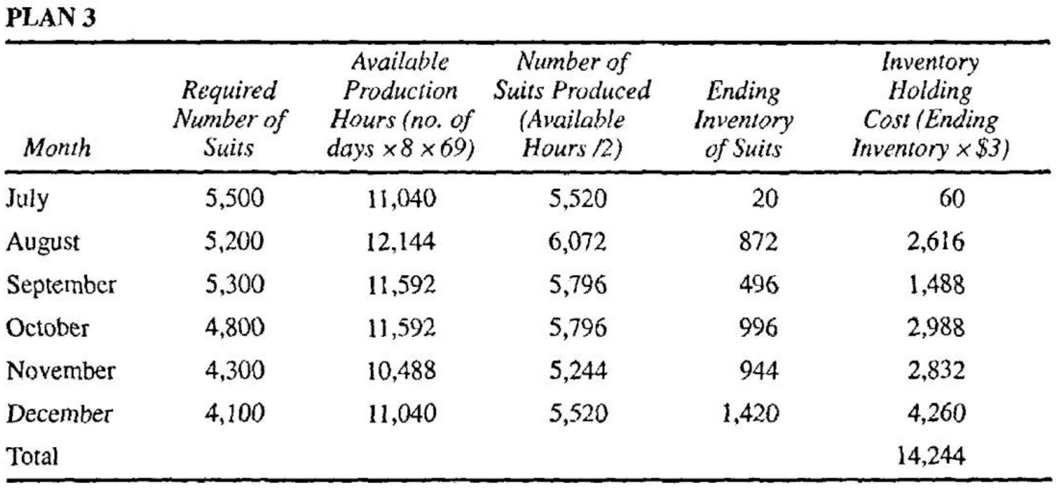
PLAN 1

Month	*Required # of suits*	*Required Production Hours (Suits Required x 2)*	*Hours Available Per Employee per Month (# of days x 8)*	*Workers Required (Required Production Hours / Hours Available)*	*Workers Hired*	*Workers Laid Off*	*Hiring Cost (Workers Hired x $650)*	*Layoff Cost (Workers Laid Off x $500)*
July	5,500	11,000	160	69	14	0	8,938	
August	5,200	10,400	176	59	4	0	2,659	
September	5,300	10,600	168	63	8	0	5,262	
October	4,800	9,600	168	57	2	0	1,393	
November	4,300	8,600	152	57	2	0	1,026	
December	4,100	8,200	160	51		4		2,000
Total							19,278	2,000



PLAN 2

Month	*Required Number of Suits*	*Available Production Hours (no. of days × 8 × 51)*	*Suits Produced (Available Hours /2)*	*Suits Subcontracted*	*Subcontractor Cost (Tons Subcontracted × $25)*
July	5,500	8,160	4,080	1,420	35,500
August	5,200	8,976	4,488	712	17,800
September	5,300	8,568	4,284	1,016	25,400
October	4,800	8,568	4,284	516	12,900
November	4,300	7,752	3,876	424	10,600
December	4,100	8,160	4,080	20	500
Total					102,700



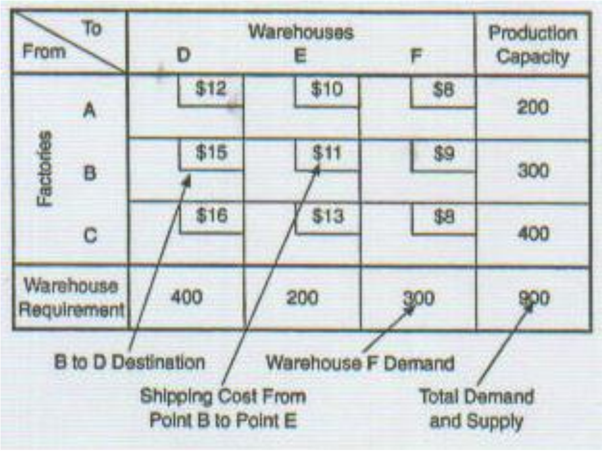
PLAN 3

Month	Required Number of Suits	Available Production Hours (no. of days × 8 × 69)	Number of Suits Produced (Available Hours /2)	Ending Inventory of Suits	Inventory Holding Cost (Ending Inventory × $3)
July	5,500	11,040	5,520	20	60
August	5,200	12,144	6,072	872	2,616
September	5,300	11,592	5,796	496	1,488
October	4,800	11,592	5,796	996	2,988
November	4,300	10,488	5,244	944	2,832
December	4,100	11,040	5,520	1,420	4,260
Total					14,244

EXAMPLE 1.32

A company manufactures furnaces in three different cities, A, B, and C located in various regions of the country. They are shipped to three different warehouses, D, B, and F also located in various regions of the country. Each manufacturing site has different capacities, and each warehouse has different requirements. A transportation matrix is developed to illustrate the data in Figure 1.7.

FIGURE 1.7 A TRANSPORTATION MATRIX



From \ To		Warehouses D	E	F	Production Capacity
Factories	A	$12	$10	$8	200
	B	$15	$11	$9	300
	C	$16	$13	$8	400
Warehouse Requirement		400	200	300	900

What is the Northwest corner rule?

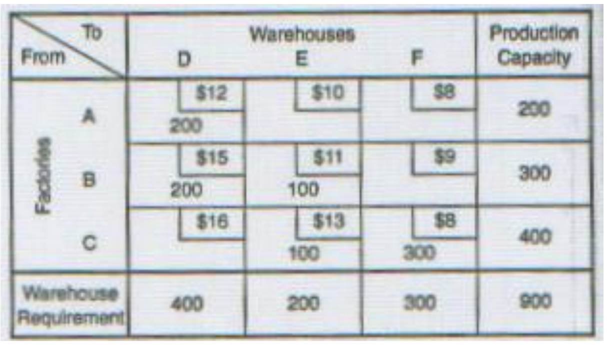
In the Northwest corner rule the maximum amount of a shipment is shipped from the upper left-hand corner (Northwest corner) of the matrix and distributed through the other cells going to the right and down throughout the matrix until all demands are met.

EXAMPLE 1.33

Develop an initial feasible transportation solution from the previous example as shown in Figure 1.8. The following shipments are assumed to have occurred:

1. 200 furnaces are shipped from A to D (this consumes A’s production capacity)
2. 200 furnaces are shipped from B to D (this fulfills D’s warehouse requirement)
3. 100 furnaces are shipped from B to E (this consumes B’s production capacity)
4. 100 furnaces are shipped from C to E (this fulfills E’s requirement)
5. 300 furnaces are shipped from C to F (this fulfills F’s warehouse requirement and C’s production capacity)

FIGURE 10.8 WAREHOUSES, DEMAND, AND SHIPPING COST



	To From	Warehouses D	 E	 F	Production Capacity
Factories	A	$12 200	$10	$8	200
	B	$15 200	$11 100	$9	300
	C	$16	$13 100	$8 300	400
Warehouse Requirement		400	200	300	900

Using this information, furnace shipping costs are calculated for each respective destination, as shown in Table 1.3.

TABLE 1.3 RESPECTIVE FURNACE SHIPPING COSTS FOR EACH DESTINATION

Route	*Furnaces Shipped*	*Unit Cost*	*Total Cost*
From A to D	200	$12	$1,200
From B to D	200	$15	$3,000
From B to E	100	$11	$1,100
From C to E	100	$13	$1,300
From C to F	300	$8	$2,400
Total Cost			$9,000

This is an initial solution where all demands and capacities were utilized. However, this may not be the least expensive transportation solution for this set of variables since no consideration was given to limiting costs.

What is the stepping-stone method and how does it reach an optimum transportation solution?

The stepping-stone method is a technique for optimizing an initial transportation solution. The methodology calculates cost by testing each unused square in a transportation table. The following methodology is followed to calculate an optimal transportation solution:

1. Choose any unused square in a transportation table such as Figure 1.8.
2. Develop a closed horizontal and vertical path back to the original square through the squares that are being used. Unused squares are skipped in the process.
3. The first unused square is marked with a + sign and subsequent corner squares in the developed closed path are alternately marked with — and + signs.
4. An evaluation index is created by adding the unit cost figures in each square containing a plus sign and then subtracting the unit costs in each square containing a
minus sign.
5. The methodology repeats all of these steps until an evaluation index is calculated for all the unused squares. An optimal solution is achieved when all the results are equal to or greater than zero. If a square evaluation is negative, cost reductions can be accomplished by transferring as many units as possible to that square.

EXAMPLE 1.34

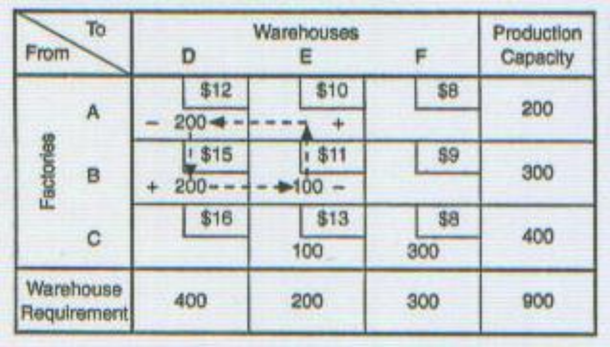
Using the transportation matrix for the furnace company, the stepping-stone method can be used to evaluate an optimal shipping route. Every empty cell must be tested using a closing pathway of engaged cells. In the stepping-stone method, the number of engaged squares has to equal the number of rows in the table plus the number of columns minus 1 (R + C - 1 = number of engaged cells). In the furnace example we have:

R + C - 1 = number of engaged cells
3 + 3 – 1 = 5

If there are fewer engaged cells than the stepping-stone rule calls for, there is a degeneracy, meaning it is not possible to trace a closed path for one or more unoccupied squares.

Shipping route A to E: starting’ in empty cell AE, a route is traced using only engaged squares. Thus, a route is traced from AE to AD to AB to BE and alternate + and — signs are placed in each square. This is shown in Figure 1.9.

FIGURE 1.9 SHIPPING ROUTE AE



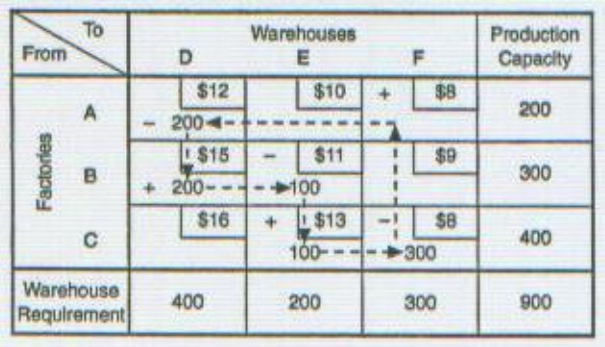
	To From	Warehouses D	 E	 F	Production Capacity
Factories	A	$12 − 200	$10 +	$8	200
	B	$15 + 200	$11 100 −	$9	300
	C	$16	$13 100	$8 300	400
Warehouse Requirement		400	200	300	900

A shipping cost index for route AE is calculated using the shipment costs in the upper right-hand corner of each square:

$l0 -$12+$15-$11 =+$2

Thus, for route AE an additional cost of $2 would be incurred for each furnace shipped. Figure 1.10 shows shipping route AF.

FIGURE 1.10 SHIPPING ROUTE AF



	To From	Warehouses D	 E	 F	Production Capacity
Factories	A	$12 − 200	$10	+ $8	200
	B	$15 + 200	− $11 100	$9	300
	C	$16	+ $13 100	− $8 300	400
Warehouse Requirement		400	200	300	900

The shipping cost index for shipping route AF is:

$8-$l2+$l5-$11 +$13-$8=+$5

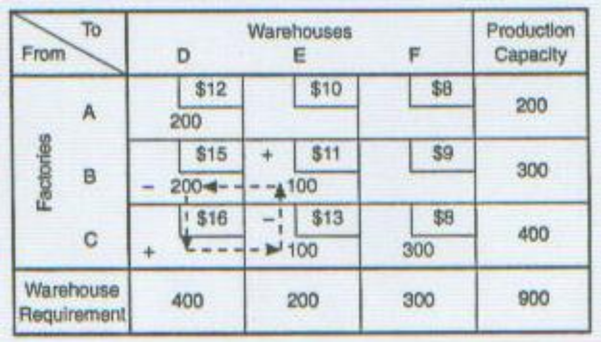
Using route AF will increase furnace shipping costs by $5 per unit.

Shipping route BF (not shown) would start in square BF going to square BE to square CE and back to square BF. The shipping cost index for shipping route BE is:

$9-$11+$13-$8=+$3

Using route BE will increase furnace shipping costs by $3 per unit. Figure 1.11 presents route CD.

FIGURE 1.11 SHIPPING ROUTE CD



From \ To		Warehouses D	Warehouses E	Warehouses F	Production Capacity
Factories	A	$12 200	$10	$8	200
	B	$15 − 200	+ $11 100	$9	300
	C	$16 +	− $13 100	$8 300	400
Warehouse Requirement		400	200	300	900

The shipping cost index for route CD is:

$16 - $13 + $11 -$15 = -$1

Of the three routes, shipping route CD is the optimum since it would reduce the furnace shipping costs by $1 per unit.

The total amount that may be shipped on the optimum route is the smallest number in the squares having minus signs. Thus, in shipping route CD 100 furnaces, found in square CE, is the greatest amount that can be shipped. Using shipping route CD reduces furnace shipping costs by $100 (100 units x $1 = $100).

1.11 SCHEDULING

Scheduling is the management of organizational resources to achieve an orderly and uninterrupted workflow process. The basic objective of scheduling is to maintain high organizational productivity, low inventory levels, and high levels of customer satisfaction. Scheduling involves the use of time and the setting of priorities into operational rules. Scheduling is generally categorized into forward and backward scheduling.

What is forward scheduling?

Forward scheduling begins as soon as demand is known. This type of scheduling is generally used by custom fabricators and manufacturers who rely on individual customer orders. Normally, forward scheduling assumes a very short delivery date. It is essential that fabrication and manufacturing times be accurately estimated in order to develop reliable deadlines. This mandates the development of reliable estimates of fabrication and manufacturing capacities.

What is backward scheduling?

In backward scheduling, start and due dates as well as the required capacity for individual jobs are developed by calculating processing times and required capacities sequentially from the last job back to the first.

What is shop loading?

Shop loading is the apportioning of jobs to production centers. While the method determines which manufacturing centers receive specific jobs, it does not specify processing priorities. When job orders can be performed equally well by several manufacturing centers, a prioritizing of the manufacturing centers becomes necessary.

What are the two shop loading methods?

The two types of shop loading method are infinite loading and finite loading. Infinite loading does not consider capacity limitations when apportioning jobs to work centers, while finite loading apportions work to manufacturing centers consistent with their production capacities. Infinite loading monitors and measures production underloads and overloads and projects the timing sequence of their occurrence. The net result of infinite loading's monitoring and measuring of the production process results in a determination of capacity requirements. An overload occurs when a manufacturing center cannot finish scheduled jobs because of capacity constraints, whereas an underload occurs when a manufacturing center experiences periods of idleness because of insufficient job scheduling.

Since finite loading does not permit capacity overloads, it mandates job rescheduling based upon existing manufacturing capacities.

What are the advantages of finite and infinite loading?

All jobs must be prioritized before implementing finite loading. Since finite loading cannot exceed capacity, it should generate more realistic completion times. Those jobs not having the highest priority are rescheduled for a later period of time.

Infinite loading's advantage is that it does not consider capacity. Therefore, it gives a more realistic assessment of what production capacity is really required to complete designated jobs. Using the capacity requirements that infinite loading provides allows management to more accurately schedule work among the available manufacturing centers.

How are Gantt charts useful in loading and scheduling?

The Gantt load chart depicts the apportioning of jobs to a production center. While many variations exist, normally the load chart is a table depicting the production center, assigned jobs, hours required for the assigned jobs, and remaining capacity in hours arranged along horizontal and vertical lines.

A Gantt schedule chart is a graph used to analyze the progress of currently scheduled jobs. It is a visual method for surveying the actual progress of jobs in production.

What are the advantages and disadvantages of the Gantt loading and scheduling charts?

Gantt charts are a very popular management tool for assessing job loading for production centers as well as for analyzing actual job progress in the production centers. They are easy to develop and understand.

However, criticisms are that they are unsophisticated in the sense that no allowance is provided for uncontrollable production delays resulting from human error, unavoidable technical failures, or material shortages. They also require continual adjustment as conditions change. Also, when there is more than one production center equally capable of processing job orders, the Gantt methodology does not provide the required sophistication to help management make decisions as to which should process particular jobs. Essentially, Gantt charts tend to be more useful in simply maintaining records regarding current operations.

EXAMPLE 1.35

It is necessary to chart the loading of ten jobs and calculate the remaining production hours available in three different production centers. A Gantt load chart, shown in Figure 1.12, Is prepared to demonstrate the loading of the jobs.

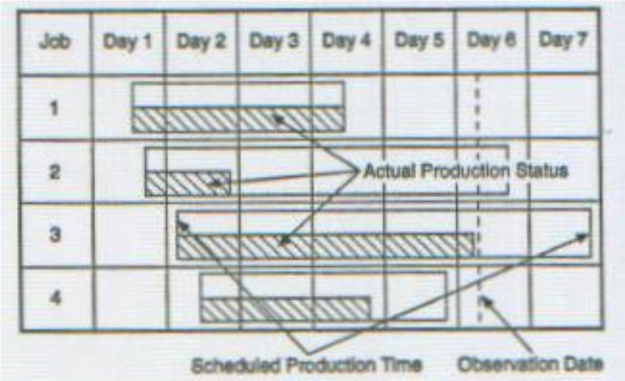
FIGURE 1.12 GANTT LOAD CHART

	Production Center					
Job Number	#1		#2		#3	
	Required	Available	Required	Available	Required	Available
1	7	70	2	50	3	60
2	3	63	4	48	6	57
3	6	60	5	44	4	51
4	4	54	3	39	7	47
5	9	50	7	36	8	40
6	2	41	6	29	4	32
7	4	39	4	23	8	28
8	7	35	8	19	5	20
9	3	28	4	11	7	15
10	4	25	5	7	2	8
Remaining Hours		21		2		6

EXAMPLE 1.36

Management needs to visualize the scheduling and production status of four different job orders, 1, 2, 3, and 4. A Gantt scheduling chart shown in Figure 1.13 displays the scheduling and production status of the four products.

FIGURE 1.13 GANTT SCHEDULING CHART



1.12 SEQUENCING

While the Gantt charts are useful for tracking job loading, they do not have the sophistication to help management determine what job order priorities should be. Sequencing is a process that determines the priorities job orders should have in the manufacturing process. Sequencing results in priority rules for job orders.

What are priority rules?

The basic function of priority rules is to provide direction for developing the sequence in which jobs should be performed. This assists management in ranking job loading decisions for manufacturing centers.

There are several priority rules which can be applied to job loading. The most widely used priority rules are:

DD—Due Date of a job. The job having the earliest due date has the highest priority.
FCFS—First Come, First Served. The first job reaching the production center is processed first.
LPT—Longest Processing Time. Jobs having the longest processing time have the highest priority.
PCO—Preferred Customer Order. A job from a preferred customer receives the highest priority.
SPT—Shortest Processing Time. The job having the shortest processing time has the highest priority.

EXAMPLE 1.37

Using the data contained in the table Job Processing Data, it is necessary to schedule orders according to the priority rules of Due Date (DD), First Come, First Served (FCFS), Longest Processing Time (LPT), Preferred Customer Order (PCO), and Shortest Processing Time (SPT).

Job Processing Data

Job	*Preferred Customer Status (1 = Highest)*	*Processing Time (days)*	*Due Date (days)*
A	3	7	9

B	4	4	6
C	2	2	4
D	5	8	10
E	1	3	5

PRIORITY RULES AND JOB SEQUENCING OUTCOMES

Priority Rules

Due Date	*First Come, First Served*	*Longest Processing Time*	*Preferred Customer Order*	*Shortest Processing Time*
C	A	D	E	C
E	B	A	B	E
B	C	B	A	B
A	D	E	C	A
D	E	C	D	D

What is the critical ratio method?

The critical ratio method assigns a priority that is a continually updated ratio between the time remaining until due date and the required job processing time. When used in conjunction with other jobs waiting to be processed, it is a relative measure of critical job order priority.

The critical ratio gives the highest priority to jobs that must be done to maintain a predetermined shipping schedule. Jobs that are falling behind a shipping schedule receive a ratio of less than 1, while a job receiving a critical ratio greater than 1 is ahead of schedule and is less critical. A job receiving a critical ratio score of 1.0 is precisely on schedule.

The critical ratio is calculated by dividing the remaining time until the date due by the remaining process time using the following formula:

$$\text{critical ratio} = \frac{\text{remaining time}}{\text{remaining process time}}$$

$$= \frac{\text{Due Date - Today's date}}{\text{days of remaining process time}}$$

EXAMPLE 1.38

On day 16, four jobs, A, B, C, and D, are on order for Ferguson’s Kitchen Installation Service:

Jobs on Order

Job	*Due Date*	*Days of Remaining Process Time*

A	27	8
B	34	16
C	29	15
D	30	12

Using this data, the critical ratios and priority order are computed.

Critical Ratios and Priority

Job	*Critical Ratio*	*Priority*
A	(27—16)/8=1.38	4
B	(34—16)/16=1.13	3
C	(29—16)/15=.87	1
D	(30—16)114=1	2

Job C has a critical ratio less than one indicating it has fallen behind schedule. Therefore, it gets the highest priority. Job D is exactly on schedule, but jobs B and A have respectively higher critical ratios indicating they have some slack time. This gives them respectively lower priorities.

What Is Johnson's rule for scheduling N jobs in two production centers?

Johnson's rule provides an optimum prioritization based on minimum processing time when N jobs have to be sequentially processed in two production centers. The net result of utilizing Johnson's rule is a minimization of total idle time at a production center.

The procedure for using Johnson's rule is the following:

1. Show all the processing times for all orders at each respective processing site.
2. Find the job having the shortest processing time. If the job is at the first processing site, schedule it first; however, if it is at the second processing site, schedule it last.
3. Once the job is scheduled, it no longer receives further consideration.
4. The remaining jobs are scheduled using rules 2 and 3.

EXAMPLE 1.39

Five job orders must be sequentially processed through two processing centers. The orders need to be sequenced to achieve minimum idle time.

Processing Time for Jobs in Hours

Job	*Processing Center 1*	*Processing Center 2*
A	11	3
B	6	8
C	9	4
D	2	9
E	10	6

Now it is necessary to sequence the jobs starting with the smallest processing time. The smallest job is job D in Processing Center 1. Since it is in Processing Center 1, it is sequenced first and then eliminated from further consideration.

D				

The second smallest processing time is A in Processing Center 2. It is placed last, since it is at Processing Center 2, and eliminated from further consideration.

D				A

The next smallest processing time is job C in Processing Center 2. It is placed next to last.

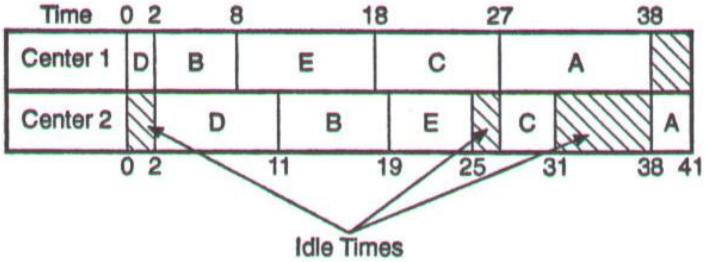
D			C	A

For the next smallest processing time, there is a tie in job B in Processing Center 1 and Job E in Processing Center 2. B is placed in the next highest sequence after job D and job E is placed directly after B.

D	B	E	C	A

The resulting sequential processing times are:

Processing Center 1	2	6	10	9	11
Processing Center 2	9	8	6	4	3



In Processing Center 2 the five jobs are completed in 41 hours, and there are 11 hours of idle time.

1.13 PROJECT MANAGEMENT TECHNIQUES: PERT AND CPM

What is PERT?

The Program Evaluation Review Technique (PERT) was originally developed for the U.S. Navy’s Polaris submarine project. The primary purpose of PERT is to plan, schedule, and coordinate the sequential activities required in one time complex project. The PERT model develops a graphical depiction of the sequential activities required to complete a project. It then determines the total anticipated time needed for the project’s completion. PERT is considered a network method of project scheduling since activities are depicted as arrows while intermediate goals, or events, are depicted as circles. There are four steps necessary in developing a PERT network project schedule:

1. A comprehensive project analysis is performed.
2. All of the required project activities are categorized according to their order of precedence.
3. A PERT chart is drawn where all the activities preceding an event are shown using a lettered arrow and events are numbered using circles.
4. Time and/or cost estimates are assigned to each activity.

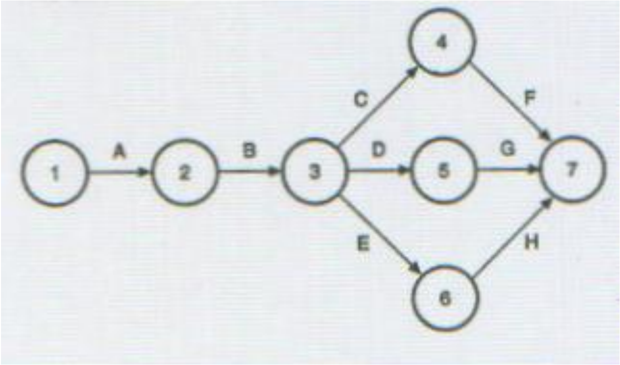
EXAMPLE 1.40

It is necessary for a manager to develop a PERT network using the following information listing activities and their respective predecessors.

Activity	*Preceding Activity*
A	--
B	--
C	B
D	B
E	B
F	C
G	D
H	E

A PERT chart is drawn as in Figure 1.14, where all the activities are lettered using arrows and the events are numbered using circles.

FIGURE 1.14 PERT NETWORK PROJECT SCHEDULE



Activities can also be designated by their beginning and ending events. For example:

Beginning Event	*Ending Event*	*Activity*
1	2	1-2
2	3	2-3
2	4	2-4
3	4	3-4
4	5	4-5
4	6	4-6
5	7	5-7

What is the critical path method (CPM)?

The critical path method was originally developed to schedule the startup and shutdown of major production plants. It is based on developing three activity time estimates for calculating project completion time with variances. The three time estimates are an optimistic time (a), pessimistic time (b), and most likely time (m).

What are the optimistic, pessimistic, and most likely times?

1. Optimistic time (a). This is an estimate of the least, or minimum, time an activity will take to complete.
2. Pessimistic time (b). This is an estimate of the most, or maximum, time an activity will take to complete.
3. Most Likely time (m). This is an estimate of the average or normal amount of time an activity would take assuming it were to be repeated several times.

In arriving at an expected time (t_e) for a given project activity, a beta probability distribution is employed in PERT. The three time estimates are combined and averaged to calculate a time estimate. Normally, in PERT applications the most likely time (m) is given a weight of 4 while the optimistic time (a) and pessimistic time (b) are each given a weight of 1. The variance (v) for each activity is also calculated:

$$t_e = \frac{a + 4m + b}{6}$$

and

$$v = \left[\frac{b - a}{6}\right]$$

The expected times (t_e) and variance (v) are calculated for each activity after the network for the PERT analysis is completed.

EXAMPLE 1.41

There are five activities in a project. It is necessary to compute the expected times and variances for the project:

		Most		*t*	*V*
	Optimistic	*Likely*	*Pessimistic*	*a + 4m + b*	*b - a*
Activity	*Time(a)*	*Time (m)*	*Time (b)*	*6*	*6*
1-2	5	7	9	7	0.67
1-3	1	3	5	3	0.67
2-4	2	3	4	3	0.33
3-4	4	6	8	6	0.67
3-5	3	7	9	6.67	1

What is critical path analysis?

Critical path analysis consists of analyzing the sequence of activities from the beginning event to the ending event. The critical path is the longest path through a network. It is critical because any increase in time for an activity on this path will delay the entire project. Moreover, any decrease in time for an activity not on the critical path will not shorten the project. To calculate the critical path, data must be obtained on the earliest start and finish times, the latest start and finish times, and the available slack time:

1. ES—Earliest activity start time. The time when all preceding activities are finished; the earliest an activity can commence.

2. LS—Latest activity start time. The time when all successor activities have to be finished without delaying the entire project. The latest activity start time is calculated by subtracting the expected time of the activity (t) from the latest finish time (LF) and then subsequently subtracting (t) for the slowest (longest (t) path(s).

3. EF—Earliest activity finish time. The earliest activity finish time equals the earliest activity start time (ES) of the activity plus expected time (t) for the activity.

4. LF—Latest finish time. The time when the project must be finished. The latest activity finish time equals the latest start time (LS) plus the expected time (t) of the activity.

5. S—Slack time. An activity's total slack is the difference between the latest and earliest activity start times (LS — ES) or the latest and earliest activity finish times (LF-EF). Slack is the free time associated with each activity. In other words, paths that are not critical have slack time. Slack represents unused resources that can be diverted to the critical path.

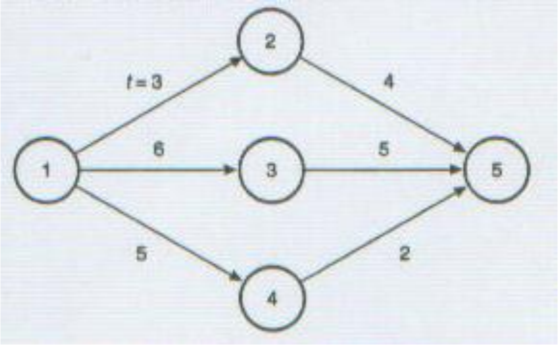
After calculating the preceding data for each activity, the overall project can be analyzed. This includes:

1. The critical path. The time it takes to finish all the project's activities without any slack time.

EXAMPLE 1.42

Using the PERT chart in Figure 1.15, calculate ES and EF for each activity.

FIGURE 1.15 PERT CHART



Now the earliest start (ES) and earliest activity finish times (EF) are determined. In order for an activity to begin, all of the preceding activities must be finished. EF is calculated by adding expected time (t_e) to ES for each activity.

Activity	*t*	*ES*	*EF* *(t + ES)*
1-2	3	0	3
1-3	6	0	6
1-4	5	0	5
2-5	4	3	7
3-5	5	6	11
4-5	2	5	7

The latest activity finish time (LF) of the project is 11 since the earliest activity finish time (EF) for activity 3-5 is 11.

In order to calculate a project's critical path, it is necessary to determine the latest start time (LS) by subtracting the expected time (t) of the activity from the latest finish time (LF). It is also necessary to determine the slack time for each activity by subtracting the earliest activity start time (ES) from the latest activity start time (LS).

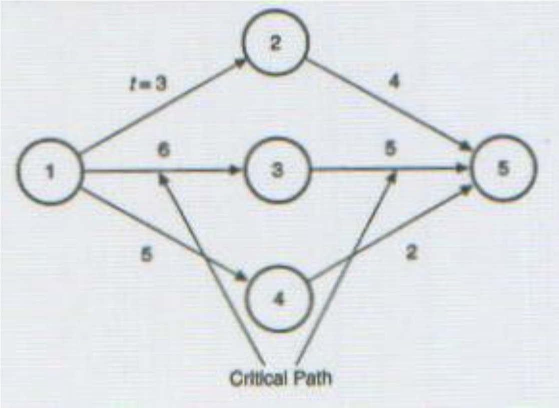
EXAMPLE 1.43

Using the above data, what is the project's slack time and critical path?

			EF		*LF*	*S*
Activity	t_e	*ES*	*(t_e + ES)*	*LS*	*(LS + t_e)*	*(LS – ES)*
1-2	3	0	3	4	7	4
1-3	6	0	6	0	6	0
1-4	5	0	5	4	9	4
2-5	4	3	7	7	11	4
3-5	5	6	11	6	11	0
4-5	2	5	7	9	11	4

The critical path is the activity with 0 slack time, or activity 3-5. The total completion time of the project is 11 since activity 3-5 is the longest path to completion. Figure 1.16 presents the critical path.

FIGURE 1.16 PERT CHART SHOWING CRITICAL PATH



Note: If the project duration (length of critical path) exceeds the allowable deadline, options include (1) changing the deadline or (2) "crashing" the project. Crashing means speeding up one or more activities along the critical path. This may involve shifting more resources (money) to those activities or perhaps outsourcing some of the work. The critical path method (CPM) model, also known as pert/cost, argues that most activities can be reduced in duration if extra resources (men, machines, money, and so on) are assigned to them. The cost for getting the job done may increase, but if other advantages outweigh this added cost, the job should be expedited or crashed. When making a cost/time trade-off, the first activity to be crashed (have its completion time accelerated) is one on the critical path. To select and activity on another path would not reduce the total time of completion. The activity chosen should be the one whose completion time can be accelerated at the lowest possible cost per unit of time saved.

CHAPTER 2
GENERAL MANAGEMENT

Upon completion of this chapter, you will be able to

- Outline the steps in the planning process.
- Demonstrate how the Just-in-Time (JIT) Inventory Management System works as compared to traditional inventory planning concepts.
- Define continuous improvement (CI).
- Discuss quality control, TQM, and quality costs.
- Compare the advantages and disadvantages of group decision making.
- What is brainstorming and how is it used?
- What functions do centralization and decentralization perform?
- What is the graphic rating scales performance evaluation method?
- What are behaviorally anchored rating scales (BARS)?
- List the types of common compensation method and discuss how successful they are

Management is a process that utilizes various functions and activities to help an organization accomplish its goals. Managers are charged with the responsibility of achieving the organization's goals by getting things done. Above all else, the management process is dependent on coordinating and motivating people in the organization to achieve high quality outcomes. The study of management involves theories, principles and concepts used in this process.

2.1 JUST IN-TIME (JIT) INVENTORY

Inventory is maintained to prevent production problems caused by the lack of supply of needed materials. Inventory activities are inherently nonvalue-adding. Nonvalue-adding activities are those that do not add utility to the product. Thus, a system, such as JIT, that simplifies production and reduces inventory and its attendant procedures (storage, handling, etc.) also reduces nonvalue-adding activities. *Note:* This system, however, increases the risk of the stockout costs because the inventory buffer is reduced or eliminated.

What is the cost of inventory?

Inventory entails many hidden and obvious costs. Among these are the costs of carrying, ordering, and storing supplies as well as the risks of obsolescence, spoilage, shrinkage, inadequate insurance, and undetected defects. Inventory costs can involve an enormous amount of money.

How does the Just-in-Time (JIT) Inventory Management System work?

The Just-in-Time Inventory Management System seeks to have the exact amount of production materials available when needed, without having shortages or excess inventory. In order to maintain this exacting performance specification, the methodology is designed to minimize system variances both inside and outside of the production process.

What are system variances and what causes them?

Basically, production system variances occur because of ineffective management practices and insufficient utilization and/or processing of production materials, i.e., waste. One bottleneck can be an ineffective procurement system, which includes purchasing, source, supply, and materials management.

Waste occurs because:

- Production results have unacceptable quality, quantity, or timeliness due to poor employee training, low quality production resources, or poor quality materials.
- Design specifications are faulty.
- Customer specifications are incomplete or unrealistic.

How does JIT minimize production variances?

JIT minimizes production variances in the following ways:

- Small lot sizes are used. Small lot sizes require smaller material inventory needs, and delivery times can be more reliably estimated and managed.
- The stages of the manufacturing process are carefully synchronized. This prevents unanticipated material demands.
- Inventory is used only when required instead of accumulating waiting for need. This is called an inventory "pull" strategy, as opposed to a "push" strategy.
- Smaller lot size produces a steadier inventory demand since maximum and minimum inventory levels are reduced. This can be demonstrated by calculating a mean inventory level:

$$\text{Maximum Inventory Level} = \frac{\text{Maximum Inventory + Minimum Inventory Level}}{2}$$

EXAMPLE 2.1

A manager wants to understand the Mean Inventory Levels in two different production departments. The first has large lot production of 5,000 units while the second only produces in small lot sizes of 200 units. The manager must calculate the mean inventory levels:

Mean Inventory
Level = Max.

Lot Size	Minimum Inventory	Maximum Inventory	Inventory + Min. Inventory/ 2
5,000	500	9,000	4,750
200	150	250	200
Difference			4,550

The large lot size has a mean inventory level of 4,750 while the small lot size has a mean inventory level of 200. The difference between the large and small lot sizes in Mean Inventory Levels is 4,550.

2.2 MATERIAL REQUIREMENTS PLANNING (MRP)

A Material Requirements Planning system provides a methodology for analyzing and forecasting material needs for the purpose of developing a schedule of the material necessary to complete production goals. MRP requires the existence of a production schedule, a bill of material, inventory and purchase records, and lead times for each production item. The MRP graphically demonstrates when inventory materials need to be ordered or when production on an item must begin so a particular item will meet the production schedule.

Normally, an MRP is computerized. It is a widely used inventory management system in companies involved in mass assembly.

EXAMPLE 2.2

A company produces a consumer item which consists of several components it also manufactures. Using these items, an MRP is constructed:

Gross material Requirements plan for 75 units of A

	Weeks								
Component Deadline and Start Date	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*Lead Time*
A. Deadline Date								75	1 week
Start Date							75		
B. Deadline Date							150		3 weeks
Start Date				150					
C. Deadline Date							200		2 weeks
Start Date					200				
D. Deadline Date					350				1 week
Start Date				350					
E. Deadline Date					400				1 week
Start Date				400					

F. Deadline Date			550	1 week
Start Date		550		
G. Deadline Date		400		2 weeks
Start Date	400			
H. Deadline Date		500		2 weeks
Start Date	500			

In this gross material requirements example, in order to produce 75 units of A in week eight, their manufacture must begin in week seven. However, that requires that 150 components of B and 200 of C be available at that time. In turn, that means manufacture of components B and C must start at weeks 4 and 5, respectively. The MRP shows the start and deadline dates of the other required components in the manufacturing chain. Transforming these dates into an actual calendar allows managers to quickly view their progress in the manufacturing process.

How is an MRP adjusted when there is inventory on hand?

When there is inventory on hand, the MRP manufacturing schedule is adjusted to the actual net requirements to meet the production deadlines.

How does manufacturing resource planning (MRP II) differ from MRP?

Manufacturing Resource Planning (MRP II, or “closed loop” MRP) is an integrated information system that steps beyond first-generation MRP to synchronize all aspects (not just manufacturing) of the business. The MRP II system coordinates sales, purchasing, manufacturing, finance, and engineering by adopting a focal production plan and by using one unified database to plan and update in all systems. Manufacturing resources planning (MRPII) integrates such information as work force levels, inventory investment, and "what if" analyses.

2.3 PLANNING

What is planning?

Planning is a fundamental management process that influences an organization's mission, goals and objectives, and Management determines a future course of action. Planning is dynamic and continually responds to changes in the business environment. Rather than reacting to changes, planning allows the proactive control of future environmental variables. The planning process normally results in a management plan that can be widely distributed throughout the organization.

Why is planning essential?

Planning requires an organization to consider its future actions. The reality is that the organizational environment is becoming far more competitive and complex because of

increasing international competition and technological progress. While research and development expenditures are increasing, product life cycles are getting steadily shorter.
Planning is absolutely essential in order to develop an understanding of where an organization should be devoting its resources and energy. Without planning, proactive strategies and programs cannot be developed to secure the organization's future success. Planning allows the organization to develop a rational method for controlling and developing the future.

Who has the responsibility for planning?

The real question in planning authority is whether it is centralized or decentralized. Traditionally, the planning function was centralized as a staff management responsibility. The role of the centralized planner was to help shape the organization's mission, goals and objectives, and to develop management strategies for future actions. This was predicated on the advantage management traditionally had in accessing strategic information. It was only natural for planning to be positioned in a centralized management environment.

As the organizational environment has become more dynamic, with management information systems becoming more sophisticated and ubiquitous, information management capabilities have proliferated throughout all levels of an organization. Thus, the planning function has become integrated into the operational levels of organizations. This provides for a dynamic environment where the organization's mission, goals, and objectives are continuously being tested and shaped by those having the responsibility for operationalizing them.

What are the advantages of planning?

Planning makes it possible for an organization to:

- Achieve a coordinated system where all levels of the organization have input into operationalizing its mission, goals, and objectives.
- Control and manage the future consistent with the organization's capabilities and resources.
- Develop a sophisticated management information system so the organization can increase its information processing capability.
- Define organizational and performance objectives to achieve higher quality and productivity.
- Coordinate an overall management development effort throughout the organization.

What are the types of planning?

There are several ways of categorizing plans. Two methods are specificity and timeliness.

1. *Functionally specific plans.* These plans apply to individual organizational functions including human resource management, operations, financial, and marketing management.
2. *Time range of the plan***.** The time range of a plan can correspond with the time parameters of objectives from short- and medium- to long-range.

Organizational plans are normally classified into several general categories which encompass a wide range of activities and functions:

- *Strategic Planning*. Strategic planning encompasses the broadest and most comprehensive type of planning. It includes the main purpose of the organization, its mission, as well as the organization's short-, intermediate- and long-range objectives, including the specific details of how the objectives and goals will be achieved. Strategic planning contains within it operational and tactical planning as well as standing and single-use plans.
- *Tactical Planning.* This type of planning is concerned with specific methods of implementing an overall strategic plan. If an organization, for example, would like to enter into a new market, tactical planning would be concerned with the types of products or services that might be necessary to do that.
- *Operational Planning.* Operational planning is very specific and is concerned with actual methods of operationalizing tactical plans which are designed to implement the overall strategic plan. For example, an operational plan might be concerned with managing a manufacturing process to produce a specific product that a tactical plan developed.
- *Single-use Plans*. Single-use plans have very specific time limits and purposes. Single-use plans are used to implement a program, product, project, or service. A single-use plan might, for example, be used for designing and implementing a specific manufacturing
process for the production of a particular product within a clearly defined time frame.
- *Standing Plans*. Standing plans are ongoing management plans for particular organizational policies.

What are the steps in the planning process?

Basically there are six steps in the planning process:

1. Survey the current organizational environment. Before a strategic plan can be established, management must conduct a thorough review of the organization's overall environment. This must include the firm's strengths and weaknesses, the competitive and regulatory environment, and current economic and market developments. This review will help the organization form a strategic plan; however, this must be coordinated with the organization's operational plan based on current cash flow, market performance, and overall capabilities.
2.Develop goals and objectives. The survey of the organization's current environment assists the organization in determining short-term objectives and future goals. Organizational objectives have different time spans depending on the nature of the objectives and the type of organization. Long-range plans can be for as long as 25 years. Short-term plans can last up to one year while intermediate-term plans can last from one to five years. All objectives must be met prior to achieving the organization's long-term goals. Complex organizations often have multiple objectives which create additional planning and budgeting challenges.

There are several types of organizational objectives:

-*Quality and productivity objectives*. Quality and productivity go hand-in-hand. Productivity is a ratio of the input of organizational resources to its output. An example is labor to units produced. However, without some standard of quality, there can be no productivity, while high quality increases productivity by decreasing imperfections and waste.
-*Marketing objectives.* Marketing objectives are the degree of success the organization is experiencing in achieving market, product, and service growth. Management also seeks to

evaluate an organization's overall market mix in order to determine where resources should be allocated.

-*Profitability objectives.* Profitability objectives include the total increase in profits relative to sales, and net assets. Numerous financial ratios are used to measure profitability. Profitability objectives are important to management for monitoring an organization's financial progress.

3. *Create an organizational action plan.* The net result of the planning process is the establishment of an organizational action plan designed to achieve short-term objectives and longer-term goals. An organizational action plan is derived from the careful definition and understanding of the organization's short-term objectives which are consistent and instrumental in achieving intermediate to longer-term objectives. After establishing a consensus with those having responsibility for carrying it out, the plan is transformed into a clearly written document. While the plan must encompass all of the short-, intermediate- and long-term objectives in order to achieve the organization's longer-term goals, it must also be flexible to permit adaptation to future changes in the organizational and external environment.

4. *Earmark resources*. In order to implement an action plan, a careful assessment of the quantity and nature of the necessary resources is required. A budget is developed for the purpose of allocating the required resources. The budget is based upon a priority analysis of each objective. It must be consistent with the organization action plan's short-, intermediate- and longer-term objectives. Budget allocations require constant monitoring to measure their success in achieving objectives.

5. *Execute the plan*. An organizational action plan will have no effect unless it is carried out. Organizational action plans are executed through the cooperation and teamwork of those within the organization. Management efforts must be coordinated while employees are oriented and trained in the plan's implementation.

6. *Manage the plan*. The management process involves constant feedback of information regarding the success of the plan in achieving its stated objectives. The use of a management information system would be extremely instrumental in managing the plan's implementation.

EXAMPLE 2.3

A beer brewery is planning to establish an organizational action plan. The company has several short-term objectives designed to achieve its long-term goal of increasing its overall market share.

• *Offset server liability*. One of the objectives of the company is to offset the server's legal liability when selling alcoholic beverages. The company creates a series of posters intended to be posted in establishments serving alcoholic beverages. Some posters illustrate the effects of drunk driving, and others urge the necessity of choosing a designated driver. The company also develops beer having a lower alcohol content.

• *Offset the actions of the Mothers Against Drunk Driving (MADD) and other groups such as the Students Against Drunk Driving (SADD).* The company decides to initiate a social responsibility campaign which emphasizes not consuming more than an individual's limit, and the need for responsible automobile driving.

• *Change the image of its products*. In addition to introducing a low-alcohol beer, it also introduces a low calorie "lite beer" including a non-alcohol product.

- *Develop a sales training program*. In order to achieve higher sales, the company develops a sales training program that emphasizes the importance of educating customers about the company's variety of beer products including low-alcohol and low-calorie beverages. It also seeks to demonstrate the company's commitment to social responsibility.

After creating a consensus regarding its organizational action plan, the brewery initiates a training program where its sales managers and representatives are trained in the significance of the newly developed plan. The company also develops a sophisticated management information system containing a large database where sales representatives can continuously update the database from remote locations using telecommunications.

Over time the company makes steady progress in increasing its market share while improving relations with MADD and SADD. The company has also achieved success in reducing the number of server liability cases as well as witnessing a reduction in driving-while-intoxicated convictions in its market area.

Finally, the company's market share, net profit, and stockholder equity show steady growth.

2.4 TOTAL QUALITY MANAGEMENT (TQM)

TQM is an extremely well-publicized organizational methodology. It is intended to involve all parts of the organization, beginning with total commitment from top management. It is a system-wide concept where all parts of the organization must function congruently in order for it to be functional. A major component of TQM is employee involvement, which management strongly encourages in every step of the decision-making process. This is accomplished by in-depth training and the delegation of extensive quality responsibility to operational employees.

TQM is the continuous pursuit of quality in every aspect of organizational activities through a philosophy of doing it right the first time, employee training and empowerment, promotion of teamwork, improvement of processes, and attention to satisfaction of customers, both internal and external.

What are the main components of TQM?

The following are some of the basic components of TQM:

- Organizations succeed through constant product and service development and innovation.
- Organizations must embrace a new management philosophy where traditional management views are rejected.
- Quality is achieved by design rather than by inspection.
- Purchasing must be made based on total cost. Short-term material savings could be disastrous if their quality is unacceptable.
- Production and service methods must be continuously improved. Single or occasional standard review and revision is unacceptable.
- Employees must receive training.
- Management needs to demonstrate leadership by teaching others what must be done on a continuous basis.

- A positive and personally rewarding organizational environment must be established for employees to be productive.
- Organizational communications must be open and free at all levels.
- Slogans and short-term employee objectives are not successful.
- Quotas are not successful motivators.
- Employees should be recognized and rewarded for the work they do.
- Continuous education and training programs should be made available to employees.
- A management program must be created to implement TQM or else it will never happen. Implementing TQM needs the active support of top management.

What is the role of quality in TQM?

Quality is a central focus in TQM. The concept of quality goes far beyond the acceptance of a standard minimum number of defects. It essentially means preventing defects from occurring in the first place. This concept has come to be known as "Zero Defects." However, TQM does not limit itself to zero defects in products. It also means providing superb service to develop loyal customers who are so impressed with the quality of the service and products delivered that they recommend the organization to others. TQM's operational definition of quality is nothing less than total customer satisfaction. This is achieved by meeting or exceeding the customer's expectations.

Quality itself is not a fixed objective. Rather it is a continuously evolving target. Organizations cannot be satisfied merely with achieving zero defects in a product or a high level of customer satisfaction. Continuous improvement is essential where previous quality levels are used as the basis for future improvements.

TQM promotes teamwork by modifying or eliminating traditional (and rigid) vertical hierarchies and instead forming flexible groups of specialists. Quality circles, cross-functional teams, and self-managed teams are typical formats. Teams are an excellent vehicle for encouraging the sharing of ideas and removing process improvement obstacles.

What is necessary to achieve continuous improvement?

Continuous improvement is dependent on continuously improving work methods where employees and customers have unlimited opportunities to express their points of view. This involves developing a dynamic, continually changing, flexible and broad, organizationally based quality planning process. This process would not only lead to new levels of quality performance, but also to new opportunities.

How does TQM compare with the traditional view of management?

TQM goes far beyond the traditional view of management where a defect standard was defined as acceptable. Table 2.1 compares the traditional management view with TQM.

TABLE 2.1 TRADITIONAL MANAGEMENT VIEW COMPARED WITH TQM

Traditional Management View	*TQM*
High quality is unaffordable. Low quality produces lower costs.	Low quality is unaffordable High quality produces lower costs.
A percentage standard of defects is acceptable.	Only zero defects are acceptable.
Defects are a function of employees.	Defects are a function of the system designed by management
Annual quality standards are established .	Continuously improve quality standards to maintain competitive advantages
Manage by using quotas and standards.	Eliminate quotas and standards.
Employees are a cost center.	Employees are a profit center.
Manage by fear.	Drive out fear.
Low costs create profits.	Loyal customers create profits.
Buy on the basis of price.	Buy on the basis of total costs.
Manage on the basis of profits.	Profits are historical and do not predict the future.

2.5 OTHER QUALITY CONTROL TECHNIQUES

What are the Baldrige National Quality Award Criteria?

In 1987 the Malcolm Baldrige National Quality Award (MBNQA) was created to recognize outstanding companies in quality management and control. The criteria specified in the MBNQA are leadership, information and analysis, strategic quality planning, human resource utilization, quality assurance, quality results, and customer satisfaction. Each company uses its own unique approach to winning the award. They define the management strategies and techniques required for each category.

The winning companies share certain characteristics:

- They dedicate themselves to changing former management practices in order to implement newer strategies often requiring radically different operational procedures.

• They display a singular resolve in committing the organization to the new strategy for the long term. They do not expect quick "fixes" will solve their problems.
Various innovative practices often emerge including outside partnering, human resource empowerment, and developing operational strategies to achieve new objectives and long-term goals.

What is the ISO 9000 standard?

ISO 9000 is the general name for the quality standard accepted throughout the European Economic Community. It was initially adopted in 1987. ISO is a series of documents on quality assurance published by the Geneva based International Standards Organization. The five documents outline standards for developing Total Quality Management and a Quality Improvement Process. ISO 9000 consists of guidelines for the selection and use of the quality systems contained in 9001-9003. ISO 9001 outlines a model for quality assurance in design, development, production, installation, and servicing. ISO 9002 outlines a model for quality assurance in production and installation. ISO 9003 outlines a model for quality assurance for finance inspection and testing. ISO 9004 is not a standard but contains guidelines for quality management and quality system elements.

Today, over fifty trading countries, including the United States, use the ISO 9000 standard. It is anticipated that certification in the ISO 9000 standard will be mandatory for firms involved in international trade. Companies doing business with many U.S. agencies are required to meet ISO 9000 standards.

What is Statistical Process Control (SPC)?

SPC is a widely used statistical variation measurement system which plots data graphs over time to illustrate upper and lower control limits for a particular process. The basic concept seeks to monitor excessive variations in a process. *Note:* statistical quality control and statistical process control can be grouped under prevention activities because they not only detect faulty work but also allow for adjustment of processes to avoid future defects.

What is special cause variation?

Special cause variations are those process variations caused by external influences. In order to use SPC effectively, management must undertake the demanding process of detecting and eliminating all special cause variations from a process. For example, a special cause variation may be electrical surges experienced from a power source causing manufacturing equipment failures. In order to eliminate this special cause, management installs a surge protector on the line.

What is common cause variation?

Common cause variations are random variations in a process. While management procedures can be developed to control common cause variation, its complete elimination is unrealistic. However, common cause that exceeds upper or lower control limits around a predetermined mean value must be carefully investigated by management.

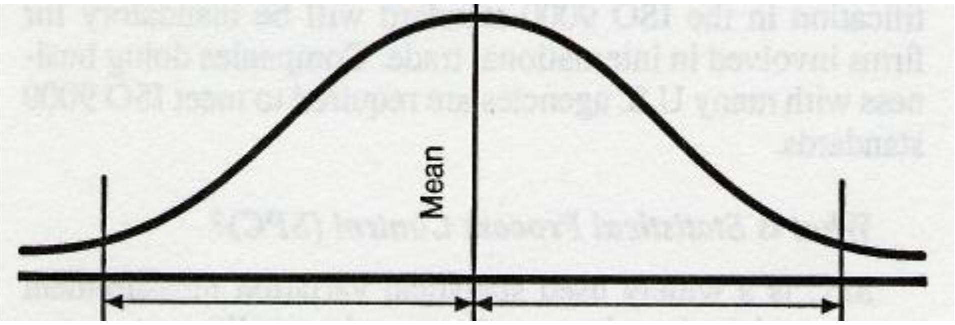
What is a stable system?

A stable system is a process operating within the tolerances of common cause variation. This can also be described as operating in statistical control. This does not mean there is no variation in the process; rather it is operating within the upper and lower control limits of common cause variation around a predetermined mean value.

How is SPC computed?

Standard deviation measures of a data sample mean are used to establish upper and lower process control limits. A process operating in statistical control should be within three standard deviation units from the mean. (See figure 2.1.)

FIGURE 2.1 PRODUCTION PROCESS VARIABILITY



3 standard deviations 3 standard deviations

***99.7% confidence level**

What are statistical control charts?
Control charts are used to assist management in determining when excessive variation is occurring in a process. This is determined by setting upper control limits (UCL) and lower control limits (LCL) for a given data sample.

A method for determining upper and lower control limits for the percent defective in a large sample, a p-chart, is as follows:

UCL = $\bar{p} + z\sigma_\rho$
LCL = $\bar{p} – z\sigma_\rho$

Where
$\bar{p}$ = average defectives in a sample
z = number of standard deviations (3 = 99.7% confidence level)
σ_ρ = standard deviation of the sample population
n = sample size

σ_p is calculated by the following formula:

$$\sigma_p = \sqrt{\frac{\bar{p}\ (1-\bar{p})}{n}}$$

EXAMPLE 2.4

An automobile tire manufacturing company is seeking to develop a statistical process control chart of defective tires manufactured over a period of time. The manufacturer takes a weekly sample of 100 tires over a 20-week period.

Weekly sample	Number defected	Fraction defective	Weekly Sample	Number defected	Fraction defective
1	11	0.11	11	7	0.07
2	3	0.03	12	3	0.03
3	4	0.04	13	4	0.04
4	6	0.06	14	9	0.09
5	9	0.09	15	5	0.05
6	5	0.05	16	8	0.08
7	4	0.04	17	10	0.10
8	14	0.14	18	13	0.13
9	10	0.10	19	7	0.07
10	15	0.15	20	5	0.05
Total Defects				152	
Mean					0.076

$\bar{p}$ =	Total number of defects
	Total number of tires examined

$$= \frac{152}{(100 \text{ x } 20)} = .076$$

$$\sigma_p = \sqrt{\frac{(.076)(1-.076)}{(100)}} = 0.0265$$

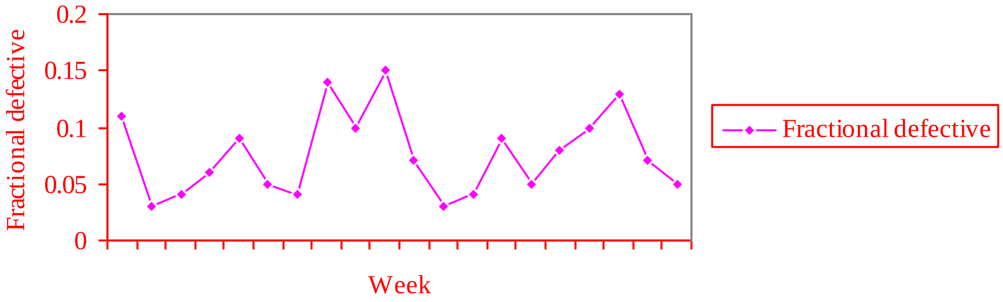
UCL$_p$= $\bar{p}$ + zσ_p = .076 + 3(.0265) = .1555

LCL$_p$= $\bar{p}$ + zσ_p = .076 - 3(.0265) = .00*

* cannot have a negative LCL

When the process chart for the tire manufacturer is developed. it becomes apparent that no sample of defects exceeds the control limits, and it is therefore in statistical control. Only in week 10 does it approach the upper control limit with 15 defects. (See Figure 2.2.)

FIGURE 2.2 TIRE MANUFACTURER PROCESS (p) CHART



2.6 MANAGING QUALITY CONTROL

Quality control management is a crucial organizational responsibility. Now, as never before, organizations are vigorously competing on the basis of quality. ISO 9000 standards and global competition are pushing quality performance standards to ever higher levels. A major responsibility of quality control management is to develop procedures to locate quality bottlenecks and to ensure that products are made right the first time. *Note:* A traditional quality control process in manufacturing consists of mass inspection of goods only at the end of a production process. A major deficiency of the traditional control process is that it does not focus on improving the entire production process. The intent of quality control is to ensure that goods and services conform to the design specifications. Whether the focus is on feedforward, feedback, or concurrent control, the emphasis is on ensuring product or service conformity. For example, Dollar-unit sampling has been uniquely applied to auditing account balances. It is not used in statistical processing control.

How should a quality control program be designed?

Management should develop and implement a quality control program using these four steps:

1. *Delineate product and service quality requirements.* The quality interrelationship between products and services and market requirements has to be carefully established. Performing market surveys in appropriate market segments may be helpful in understanding the level of quality available and required by the marketplace. Management, however, has greater understanding of products and services than customers do, and this knowledge can be used for developing their full quality potential and competitive advantage.

2. *Develop quality standards.* Products and services should be designed to the highest quality standards available. Manufacturers who use computer aided design (CAD) and computer automated manufacturing (CAM) are able to achieve the highest technical

standards possible in achieving lasting quality. It is quantitatively cheaper to design quality prior to manufacturing or delivering a service than correcting flaws at the customer level where the costs escalate beyond control. Additionally, global competition demands the highest quality standards available.

3. *Develop a quality analysis program.* Management must develop a consistent and systematic program for insuring high quality. Not only does this mean selecting samples for a continual review process, but it also means constantly improving products and services to achieve ever improving quality standards.

4. *A total organizational commitment to quality must be established.* Management not only has the obligation of designing quality requirements and standards, but also has the responsibility to ensure a total organizational commitment to achieving them. This means developing an employee training program where all will gain the ability to perform to their highest potential.

For example, for a customer-service department, a criterion that requires all customer inquiries to be answered within 7 days of receipt permits accurate measurement of performance. The quantitative and specific nature of the appraisal using this standard avoids the vagueness, subjectivity, and personal bias that may afflict other forms of personal evaluations.

What is benchmarking and how is it useful?

Benchmarking is a process of comparing an organization's products or services against those considered to be the best in a particular industry or market segment. There are several types of benchmarking. Benchmarking typically involves the following steps:

(a) Identify those practices needing improvement.
(b) Identify a company that is the world leader in performing the process.
(c) Interview the managers of the company and analyze data obtained.

The benchmarking procedures that should be followed include the following:

- Identify a particular product, service, procedure, or function that could be improved
- Create a benchmarking team
- Target a particular organization or group of organizations having characteristics that would be most suitable for analysis
- Evaluate practices, procedures, and functions within a given market that are the most productive and then adapt and implement those that would be most useful to the target organization

What are quality circles (QC) and how are they used?

The purpose of QC is to allow a forum within an organization where those who are charged with the operational responsibilities interact with colleagues to improve the quality and productivity of the workplace and organization. Most QC groups have ten or fewer members, and all are volunteers.

Normally, although their schedules are flexible, most quality circles meet weekly or monthly depending on the group's needs. The most successful QC groups consist of highly dedicated and disciplined members who strongly desire to improve the work methods and procedures followed in the organization. They seek to work together as a group to share their experience and abilities to solve common problems.

QC groups work best when they are integrated into an ongoing organizational quality control program having strong management support. QC programs are ongoing and seek to improve the overall organization through constant quality improvements.

The benefits of QC groups have been dramatic increases in organizational productivity and quality, increased job satisfaction, and lowered rates of absenteeism, job-related accidents, and turnover.

How do you classify quality costs?

Quality costs are costs that occur because poor quality may exist or actually does exist. These costs are significant in amount, often totaling 20 to 25 percent of sales. The subcategories of quality costs are prevention, appraisal, and failure costs. Prevention costs are those incurred to prevent defects. Amounts spent on quality training programs, researching customer needs, quality circles, and improved production equipment are considered in prevention costs. Expenditures made for prevention will minimize the costs that will be incurred for appraisal and failure. Appraisal costs are costs incurred for monitoring or inspection; these costs compensate for mistakes not eliminated through prevention. Failure costs may be internal (such as scrap and rework costs and reinspection) or external (such as product returns or recalls due to quality problems, warranty costs, and lost sales due to poor product performance). Quality cost reports can be used to point out the strengths and weaknesses of a quality system. Improvement teams can use them to describe the monetary benefits and ramifications of proposed changes.

2.7 QUALITY CONTROL TOOLS

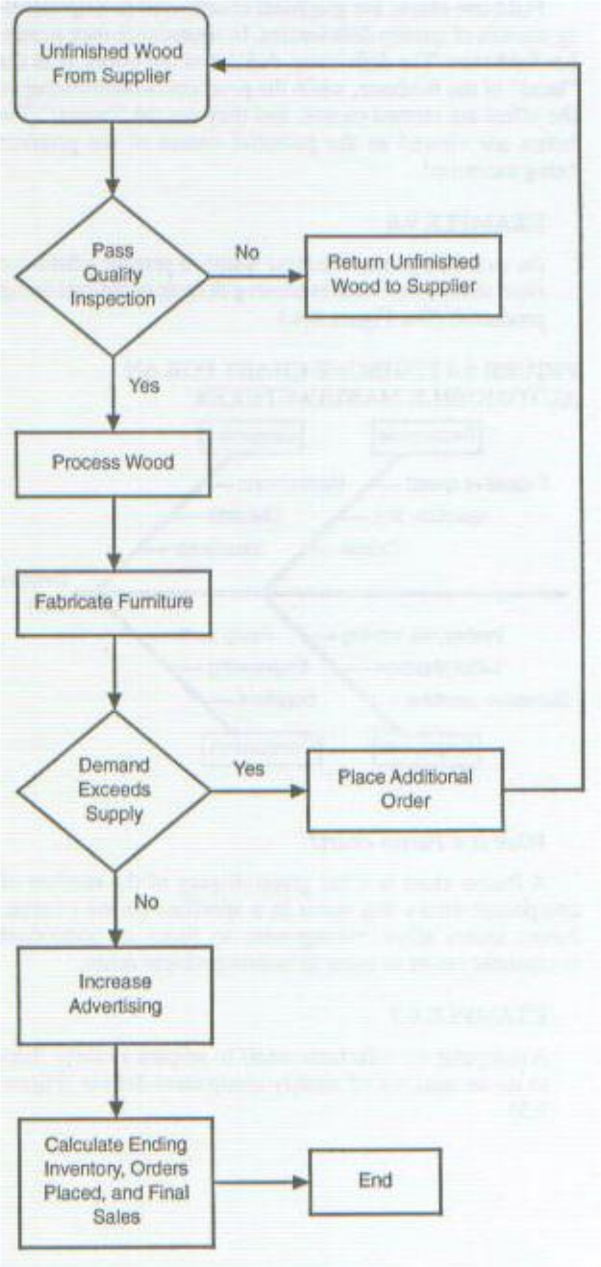
What is a flow chart and how is it used?

Flow charts are graphical depictions of a logical sequence of activities for a particular process. Management uses flow charts to understand the dynamics of an ongoing process. The objective analysis of the interrelationships of the parts of a process provided by a flow chart allow management to conceptualize alternative process configurations.

EXAMPLE 2.5

A furniture manufacturer wishes to draw a flow chart of the processes involved in the fabrication of its product from receiving the unfinished wood to final sales. (See Figure 2.3.)

FIGURE 2.3 FLOW CHART FOR A FURNITURE MANUFACTURER


Unfinished Wood From Supplier
Pass Quality Inspection
No
Return Unfinished Wood to Supplier
Yes
Process Wood
Fabricate Furniture
Demand Exceeds Supply
Yes
Place Additional Order
No
Increase Advertising
Calculate Ending Inventory, Orders Placed, and Final Sales
End

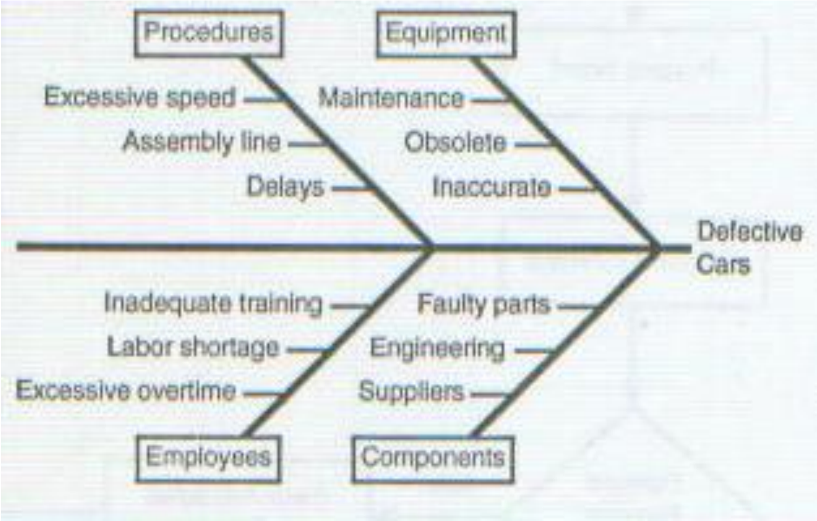
What are fishbone charts and how are they used?

Fishbone charts are graphical charts used to help identify sources of quality deficiencies. In appearance they resemble fishbones. The deficiency, defined as the effect, is at the "head" of the fishbone, while the procedures contributing to the effect are termed causes, and they are the "bones." The bones are viewed as the potential causes of the problem being examined.

EXAMPLE 2.6

An automobile manufacturer wants to prepare a fishbone chart to discover what is causing defects in the cars being produced. (See Figure 2.4.)

FIGURE 2.4 FISHBONE CHART FOR AN AUTOMOBILE MANUFACTURER


Procedures
Equipment
Excessive speed
Maintenance
Assembly line
Obsolete
Delays
Inaccurate
Defective Cars
Inadequate training
Faulty parts
Labor shortage
Engineering
Excessive overtime
Suppliers
Employees
Components

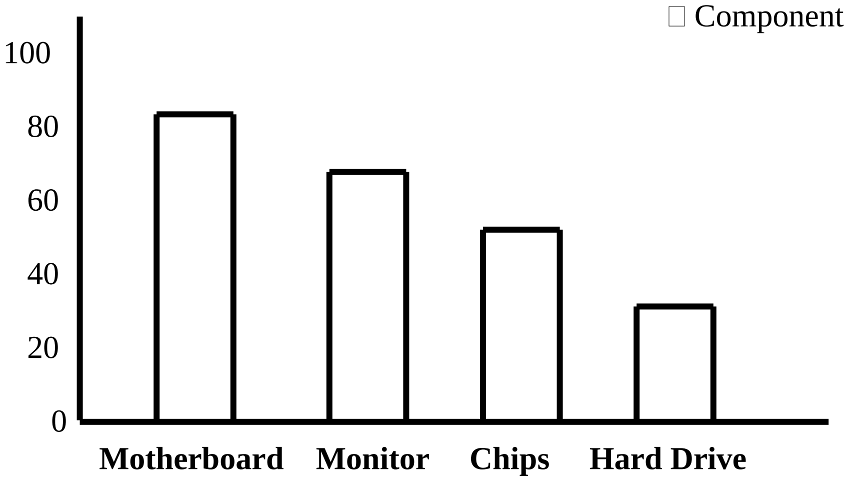
What is a Pareto chart?

A Pareto chart is a bar graph display of the number of component errors that occur in a specified period of time. Pareto charts allow management to focus on individual component errors in order to isolate problem areas.

EXAMPLE 2.7

A computer manufacturer wants to prepare a Pareto chart to do an analysis of weekly component defects (Figure 2.5)

FIGURE 2.5 WEEKLY COMPONENT DEFECTS



What is Pareto analysis?

PARETO ANALYSIS

Pareto analysis is used to differentiate between the vital few and the trivial many. It is based on the concept that about 80 percent of the problems come from 20 percent of the items.

We would expect to find a few vital sources that primarily contribute to costs, rather than the many trivial sources that contribute much less to costs. Quality costs are not uniformly distributed. Almost without exceptions, only a few of the sources account for the bulk of the costs. This "misdistribution" of quality costs is often referred to in quality diagnosis as a Pareto analysis.

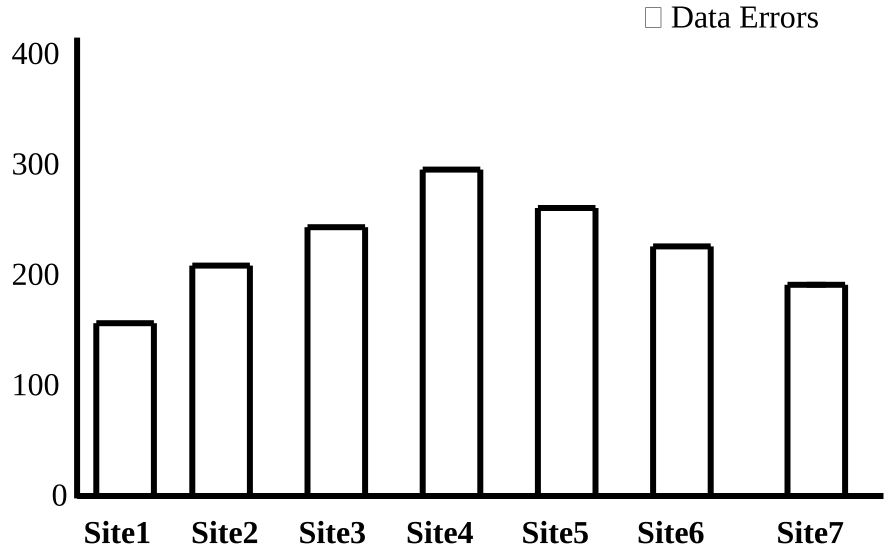
What is a histogram?

Histograms are bar graph displays of measurements of a particular component within a specified period of time. This allows management to observe the aspects of a particular component or process over time.

EXAMPLE 2.8

A firm wants to prepare a histogram in order to have a weekly breakdown of data errors at its various sites (Figure 2.6).

FIGURE 2.6 WEEKLY DATA ERRORS



2.8 GROUP DECISION MAKING

Group decision making involves the activities of two or more people working together to resolve a particular issue. The relative merits of group decision making versus individual decision making is a controversial issue. There is general agreement that group decision making is superior when nonprogrammed decisions are required; that is, when an unusual or unique set of events needs to be conceptualized involving several related elements of information.

What are the advantages and disadvantages of group decision making?

Advantages

1.Groups have greater knowledge and insight for evaluating group goals and objectives.

2. A group of organizational members brings broader knowledge for developing situational alternatives.

3. Groups bring greater knowledge and a wider breadth of experience for evaluating alternatives.

4. Groups bring more resources to bear when doing research for particular subjects of interest.

5. Those who participate in the forming of a group decision are highly motivated
to implement resulting decisions. Consensus is a strong motivator.

6. Group decisions can be much more creative than individual decisions since many points of view are considered.

Disadvantages

1. Group decisions may result in the risky shift phenomenon where groups will take greater risks than individuals will. However, individual managers have the responsibility for implementing group decisions.

2. Group scheduling difficulties can result in long delays between meeting times.

3. Group decisions are very costly since they take much longer to develop than individual decisions.

4. "Group think" can develop where conformity to the general consensus is more important than individual expression of ideas.

5. Groups can be used as scapegoats for managers seeking to avoid responsibility for implementing group decisions.

6. Dominant personalities or supervising managers can result in group members being reluctant to express their points of view and conforming to one individual's point of view.

What is brainstorming and how is it used?

Brainstorming is a group decision-making technique operating under the rules that no one's idea should be criticized no matter how outrageous it may appear. The basic purpose of the technique is to generate ideas and original thinking. Ideas generated through brainstorming can be discussed at a later period and may act as the genesis for new organizational policies.

What is the Delphi technique?

The Delphi technique is a process of soliciting ideas from a group of anonymous volunteers using a series of mailed questionnaires together with a summary of previous results. Using the summaries from earlier responses, the respondents are subsequently asked to further evaluate and focus their positions on the same range of issues. The basic concept is to reach a consensus among the respondents after at least two sets of questionnaires have been circulated. Normally, while many rounds of questionnaires can be circulated, after two responses a consensus begins to emerge.

What is the nominal group technique (NGT)?

In the nominal group technique a group of people initially discusses ideas in writing rather than having an open discussion. At a later point the group members individually express their ideas to a moderator who records them in full view, often using a flip chart.

After all of the ideas have been recorded, a vote is taken where they are prioritized. The rankings of the group members are then tallied to reach a final consensus on the relative priorities of the ideas discussed.

2.9 ORGANIZATIONAL STRUCTURE

Organizational structure consists of the methods used for disseminating power and authority throughout an organization. The rationale of an organization is that people work together more effectively than they do alone. This is the basis for synergy. However, an organization must be structured effectively to achieve synergy.

A traditional discussion in organizational theory is whether to centralize or decentralize an organizational structure.

What functions do centralization and decentralization perform?

The processes of centralization and decentralization determine who will have authority and power in an organization. In a centralized organization, authority and power are retained by just a few managers, whereas in a decentralized organization authority and power is disseminated to many managers through several levels.

Centralization allows high-level management to retain direct control over the organizational operations. Decentralization creates an environment where decisions are made by those having responsibility at the organization's operational level.

Centralization's advantage of direct control is offset by its distance from and possible misunderstanding of the organization's operations. This is particularly acute when the organization has geographically dispersed operations.

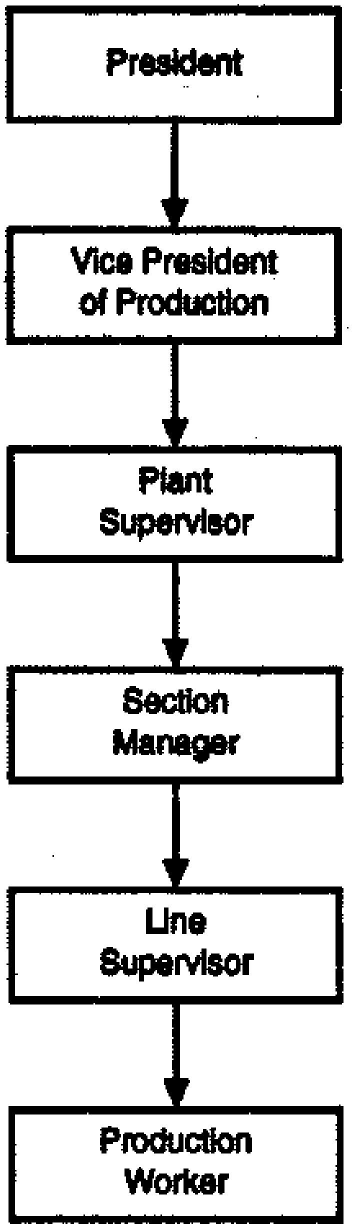
Decentralization's advantage of giving operational managers direct decision-making authority is offset by a lack of coordination at the organization's staff management levels. Some of these disadvantages can be offset through the implementation of a management information system which permits direct access to management staff levels.

In reality, organizations often are both centralized and decentralized in that certain functions, such as finance, are directed through a centralized management control system while other operational functions are decentralized. This permits an organization to have direct staff management control over certain designated functions, such as finance, while permitting flexible decentralized control where it is most functional.

What is the chain of command?

The chain of command is the line of authority that connects superior and subordinate positions in a hierarchical organization. Following the chain of command, subordinate positions must seek approval from the next immediately superior position prior to going to the next superior position for authorization. Similarly, superior positions must follow the chain of command going downward when passing instructions to lower levels of the organization (Figure 2.7). In flat organizations, the chain of command often has little relevance.

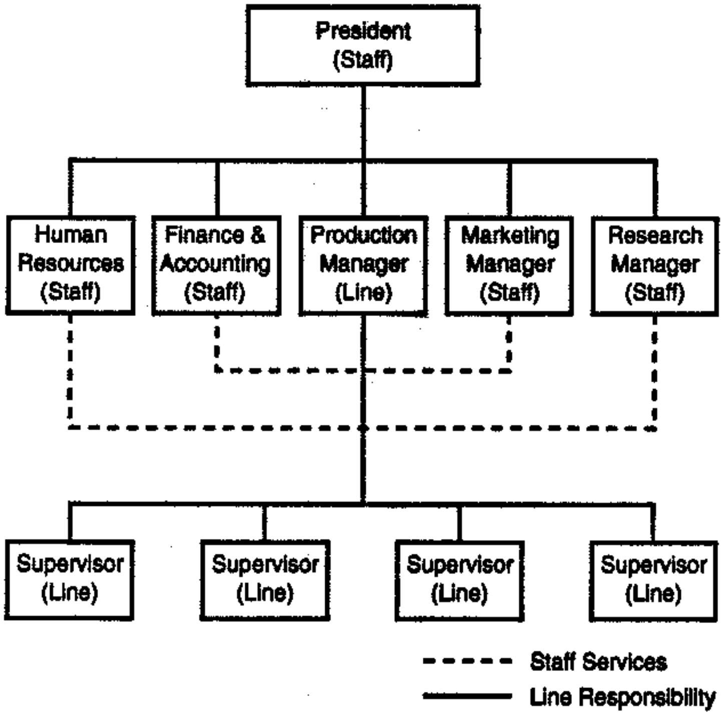
FIGURE 2.7 CHAIN OF COMMAND


President
Vice President of Production
Plant Supervisor
Section Manager
Line Supervisor
Production Worker

What is the line and staff division of authority?

Line and staff is a concept first developed by the military. Respectively, line and staff describe the direct functional roles and advisory relationships existing in an organization. In modern terms, line functions are those that have direct operational responsibilities such as production or customer service. Staff responsibilities are essential management services provided to line functions. Staff responsibilities include human resource management, strategic planning, quality control, and marketing (Figure 2.8).

FIGURE 2.8 LINE AND STAFF MANAGEMENT


President (Staff)
Human Resources (Staff)
Finance & Accounting (Staff)
Production Manager (Line)
Marketing Manager (Staff)
Research Manager (Staff)
Supervisor (Line)
Supervisor (Line)
Supervisor (Line)
Supervisor (Line)
Staff Services
Line Responsibility

2.10 DEPARTMENTATION

Departmentation is a method of grouping organizational activities in order to achieve organizational objectives. A primary purpose of departmentation is to provide an organization similar specialized services or activities. For example, a marketing department normally consists of people primarily concerned with developing markets for particular products and services an organization may offer. It is not concerned with production, although it may interface from time-to-time with the production department in order to better understand products as well as the department's functional capabilities.

Departments are created to fulfill the following objectives:

- *Functional.* A functional department performs a specific role. Functional departments would include accounting and finance, human resources, marketing, production, research, and development.
- *Product.* A product department is created to build or complete a specific product. Job duties are highly functional in nature, and have the completion of a particular product as its end goal. General Motors, for example, has organized according to automobile product divisions.
- *Customer.* These are departments created to serve specific customer needs. For example, a

department store may have the following customer departmentation: babies, boys and girls, teens, ladies and men's wear, maternity, etc. Customer departmentation allows an organization to group its activities to best serve specific customer requirements.

- *Geographic.* National or international organizations have specific geographic needs. It is unrealistic to have one central management center for an organization having large nationwide and/or international operations. The communication and logistical needs are simply too great. Geographic departmentation can be used to manage specific regional needs. For example, an organization may have southern, western, eastern, and northern divisions or Asian, European, and Latin American divisions.

9.11 PERFORMANCE EVALUATION

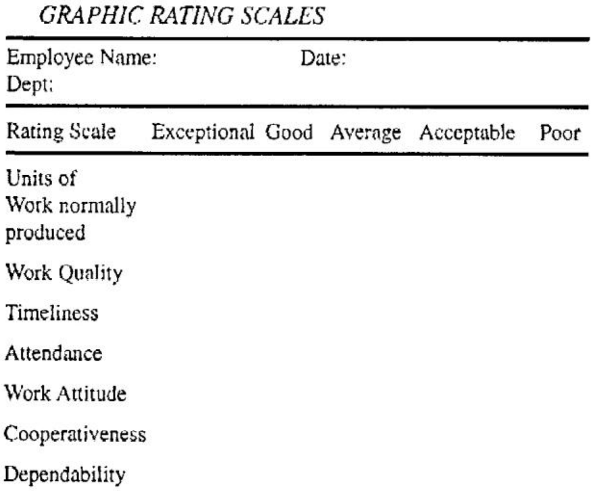
Performance evaluation is the appraisal of employee performance using a systematic method of analysis. The essential process of performance evaluation is predicated on observation and judgmental analysis. The judgmental nature of performance evaluation precludes the possibility of completely eliminating subjective evaluations. Therefore, rigorously following an objective methodology is essential to have creditable evaluations.

What is the graphic rating scales performance evaluation method?

Graphic rating scales show a number of employee performance rating factors on which a supervisor indicates an evaluation. Rating factors include quantity and quality of work, attendance, timeliness, behavior attitudes, willingness to learn new techniques, and other factors that management feels are important. These factors arc then rated using an evaluation scale. In a five-point rating system, the highest rating is usually given a value of 5 while the lowest rating is given a rating of 1. All the points are added up to form a total for each employee.

EXAMPLE 2.9

A manager wants to create a graphic rating scale for the purpose of rating the employees in a production environment. To do this the manager creates a form having a series of performance categories with rating criteria which are to be used by the production supervisors for rating their employees.



GRAPHIC RATING SCALES

Employee Name: Date:
Dept:

Rating Scale	Exceptional	Good	Average	Acceptable	Poor
Units of Work normally produced					
Work Quality					
Timeliness					
Attendance					
Work Attitude					
Cooperativeness					
Dependability					

What are behaviorally anchored rating scales (BARS)?

Behaviorally anchored rating scales are developed by rating specific job-related behaviors. Several scales can be developed covering various job-related behaviors, and BARS points can be given for various aspects of the job behavior. Figure 2.9 shows one area to be evaluated for a teacher:

FIGURE 2.9 BEHAVIORALLY ANCHORED RATING SCALES

Teaching Ability

(the ability to successfully interface with students and teach subject materials)

Above Average Outstanding teacher who is well rated by students.	___	4	Teacher is considered an expert in the field, communicates well, and has strong student acceptance. Teacher receives numerous student recommendations
	___	3.75	
	___	3.5	
	X	3.25	
	___	3	
Average Performance Enthusiastic teacher who is very familiar with the material.	___	2.75	This teacher can be relied upon to do a professional job and be well prepared.
	___	2.5	
	___	2.25	
	___	2	
	___	1.75	
	___	1.5	Teacher is not well prepared and has poor interaction with students. Frequent student complaints.
Poor Performance Teacher shows little professional interest.	___	1.25	
	___	1	

2.12 COMPENSATION

Compensation often is the largest organizational budgetary expense. It consists of the direct financial earnings an employee receives for work performed as well as associated employee benefits. Generally, direct financial earnings include one or more of the following: salary, commission, bonuses, and/or merit pay. Benefits, which can be an additional 40% of the total compensation package, may include health, life and other forms of insurance, subsidized pension plans, compensated time including vacations, personal and/or sick leave, stock options, and subsidized services including cafeterias and recreational facilities.

Is there a relationship between compensation and performance?

The relationship between compensation and performance is controversial. Some research indicates a direct and positive relationship between the compensation levels and the quantity and quality of production. Others argue that tying compensation to performance destroys intrinsic motivation. It does seem fair to say that some behaviors can be more effectively motivated by compensation than others.

What common compensation methods exist and how successful are they?

Generally management seeks to fairly compensate its employees. However, it also expects comparable output for its compensatory policies. In the final analysis, employee productivity is necessary to generate the profits essential to form the basis of a compensation plan.

A basic type of salary compensation is a straight-time compensation plan while others provide employee incentives:

- *Flat rates*. Wage rates are based on an established pay scale for a specified job in a straight-time compensation plan. Flat rate plans do not recognize seniority, performance, or other individual differences. For example, an assembler on a particular job gets paid a flat rate of $7.00 per hour irrespective of experience. Flat rates are often found in unionized environments where the union does not wish to distinguish between individual capabilities. Flat rates prevent management from creating employee performance incentives.
- *Incentive plans*. The piece rate system and commission plans are types of individual incentive plans. In a piece rate system the employee works from an established pay level with additional stated levels of compensation being paid for production exceeding a base quota. The base production level is established after production research is completed.

The commission plan is usually associated with sales personnel. It is an established rate that is paid on the basis of sales. The greater the sales, the greater the commission. It is probably one of the oldest forms of incentive plans.

A gainsharing plan is an incentive plan that shares compensation, normally in the form of cash bonuses, with a group's members based on their performance. It is probably one of the most successful forms of employee incentive plans.

2.13 MOTIVATING PERFORMANCE THROUGH JOB DESIGN

Job design is essential for the organizational process. Job design not only structures the way work is done in the organization, but is also a critical factor in determining how an employee is motivated to perform useful work. There are several forms of job design.

What is job specialization?

Job specialization is the process of dividing work into smaller processes for the purpose of simplification. Job specialization, originally alluded to by Adam Smith, was fully developed by Frederick W Taylor in *Principles of Scientific Managemen*t (New York: Harper Bros., 1911) for the purpose of increasing production efficiencies. Job specialization makes work so simple that workers become interchangeable. The disadvantage is that the lack of challenge in simplified work processes oftentimes leads to boredom and subsequent accidents.

What is job rotation?

Job rotation is a form of job design where employees are systematically moved, or rotated, from one job to another. An objective of job rotation is to diminish the boredom and accidents often associated with job specialization. One advantage of job rotation is that employees have an opportunity to experience a cross section of jobs in the work place and thus become familiar with them all.

Nonetheless, when each individual job is specialized, the objective of avoiding the boredom and accidents associated with job specialization is unrealistic.

What is job enlargement?

Job enlargement simply consists of expanding the number of job responsibilities an individual has without increasing his or her authority to decide how the work is to be accomplished or what priorities work should receive. The rationale for job enlargement is it increases worker motivation; however, the only change is that the employee has more to do than before the job was enlarged. If the work consists of specialized tasks, the rationale for work enlargement has little inherent justification.

What is job enrichment?

The concept of job enrichment was developed by Frederick Herzberg in the late 1960s. The essential component of job enrichment is increasing the extent of control an employee has over the work for which he or she is responsible. The assumption in job enrichment is that the work itself is the motivator. The employee controls the type of work, work methods, and the degree of freedom or autonomy he or she has in making decisions regarding these work issues.

What is flextime?

Flextime is a method of developing work schedules that reflect worker preferences and needs. Using a range established by management, employees can determine at what hours they will begin and end the workday. Flextime is particularly useful for employees who must balance family and work responsibilities. It has proven to be popular, useful, and productive for employees and organizations.

What is the quality of work life?

The quality of work life is the personal significance the work environment has for individual employees. A high quality work life is personally fulfilling and has a high degree of significance. A low quality work life will produce worker alienation.
A positive quality of work life is associated with lower absenteeism and tardiness as well as higher productivity.

2.14 EFFECTIVE LEADERSHIP

Leadership is an extremely important concept in organizational dynamics. Basically, leadership consists of the manipulation of power. Power is the leader's ability to get others to do what the leader wants. The way power is managed distinguishes one leader from another.

What are the sources of leader power?

There are several sources of leader power:

- *Legitimate power*. Legitimate power is conferred by the organization itself, not by the person who occupies a particular position. For example, the role of bank president confers an ability on the person occupying the role to manage the overall affairs of the bank as well as to have a certain level of conferred status.
- *Reward power*. Managers have the ability to grant financial, status, and promotional rewards to the organization's human resources. This is an important management source of power.
- *Coercive power.* Coercive power is the ability of the manager to force others to carry out functions they would not otherwise perform because of the manager's ability to impose sanctions.
- *Expert power.* Expert power is derived from particular knowledge and expertise an individual has. For example, a computer expert is one who has demonstrated accumulated insight into the functioning of computer and is able to make computers perform as desired.
- *Information power*. Information power is derived from access to sources of information that others do not have. Thus, those having information power have the ability to gain particular organizational and competitive advantages.
- *Referent power*. Referent power is power derived from the esteem in which one is regarded by others. It there fore enables those having referent power to more effectively lead an organization.

What skills do leaders need?

Effective leadership depends on the exercise of several skills:

- *Flexibility*. Flexibility is an essential skill for managers. Not only is the environment of business extremely dynamic, the workplace itself consists of great cultural diversity which requires constant modification of this organizational culture.
- *Communication*. The understanding, processing, and transferring of information is a central management function. The ability to interface with others in the organizational and business environment requires excellent communication skills.

- *Human resource management.* Organizations consist of people. A critical management role is managing the organization's human resources. This consists of developing and managing training programs, organizations development strategies, counseling, and other skills.
- *Conceptualization.* The ability to understand the implications of information and strategic developments required for managers to succeed in a progressive, evolving technological and internationally competitive environment.

CHAPTER 3
MARKETING

Upon completion of this chapter, you will be able to

- State the role of products and services in marketing.
- Discuss the 4P's of the marketing mix.
- List the steps following in marketing research.
- Explain marketing strategies including channels, branding, new product development, and advertising.
- Compare and contrast services and products in terms of marketing strategies.

Marketing is an essential business function. It is the process of planning and distributing the exchange of products and services using the concepts of pricing and promotion. In this sense, marketing is not only an essential function, it is also a creative process.

3.1 THE DEFINITION OF MARKETING

The basic concept of marketing is based on the concept of an exchange of equal market values for the purpose of satisfying human needs or wants. This definition raises several additional questions.

What is an exchange?

A marketing exchange occurs when an individual gives something of value for a sought-after product or service. The vehicle most often used for an exchange transaction is money. Barter is another form of exchange which does not require the use of money. Rather, in a barter system, there is an exchange of property or services. An example is marketing consulting services given in exchange for the purchase of a computer system.

What is market value?

Market value is established by actual or potential buyers and sellers. A marketplace can either be centralized, such as a stock market, or decentralized, as in a national marketplace. In the decentralized marketplace, advertising and mass communication inform the buyers and sellers as to market values.

What is a need?

A need is an unfulfilled desire that an individual has which acts as a strong motivator. The individual seeks to fulfill a need. Needs include physical, social and psychological desires.

Marketing can create individual needs.

What is a want?

A want is the process of satisfying an unfulfilled need. Wants are culturally based in the sense that when an individual has a need for shoes, he/she will think of a particular brand name to satisfy the need. Individuals who have a need for a chocolate bar state they want a "Hershey Bar" when any brand chocolate bar will suffice. Wants and needs are often confused. Some computer manufacturers emphasize the speed and power of a computer, when many consumers only need a simple word processor to type a letter. Thus, computer manufacturers who bundle word processing software with the computer can emphasize its simplicity and usefulness for word processing, rather than its technological features, and gain market share.

What is the role of products and services in marketing?

Marketable products and services are used to satisfy the wants and needs of consumers in the marketplace. An individual having a need to appear successful may want to purchase expensive clothing or a luxury car to satisfy the need.

3.2 DEFINING THE MARKET

A market is a group of individuals and/or organizations wanting a particular product or service who have the financial ability to acquire it. This group of people and/or organizations is termed the target market. However, in order to be considered part of the market, the target group must be actively willing to purchase the product or service in question, and have the authority to do so. Otherwise, they are out of the market.

What is mass marketing?

Organizations using mass marketing essentially assume "one size fits all"; i.e., one particular product mix will satisfy everyone in a particular market, and it is not necessary to identify and service different aspects of the overall market. The example that is usually cited to illustrate mass marketing is Henry Ford's marketing of the Model T where he said people could have any color they wanted "as long as it is black." The rationale for mass marketing is that the greatest learning curve and economies of scale result in the lowest unit costs and prices. Increasingly, however, companies are moving away from mass marketing to target marketing.

What is target marketing?

Target marketing consists of breaking a total market into market segments representing smaller homogeneous markets. Once this analysis is performed, it is possible to identify those market segments which can be targeted for a particular product or service based on the conformity of their homogeneous characteristics to the product or service specifications. Using market segmentation, target marketing allows marketing managers to develop more effective marketing strategies.

What is the marketing mix?

The marketing mix consists of four variables-the four Ps-which a marketing manager can control: product (P_1), place (P_2), promotion (P_3), and price (P_4).

TABLE 3.1 THE MARKETING MIX

Product

Quality
Type of features
Brand name
Kind of packaging
Design type
Product-related services (service, warranties, maintenance policies)

Place

Number and type of marketing intermediaries
Market location
Warehouse location
Distribution methods

Promotion

Developing promotion budget
Creating the advertising message
Types of advertising media
Developing a sales force
Types of direct marketing
Methods of sales promotion

Price

Choose pricing objective
Estimate product demand
Calculate costs
Maximize product mix pricing
Competitive factors

• *Product.* The most basic element of the marketing mix is a company's product or service. The product component includes quality, features, brand name, types of packaging and design, and product-related services including maintenance and warranties.
• *Place.* Place concerns the processes management uses to make products and services available to the target market. This includes developing marketing intermediaries in order to provide the

product or service to market locations. The methods used to distribute products and services are also an essential place component.

• *Promotion.* Promotion involves the methods used to transmit product information to the target market. This involves creating and using advertising, choosing the appropriate media, developing a sales force, utilizing direct marketing where appropriate, and using other promotion methods.

• *Price*. Pricing is an important element of marketing a product or service. Management must choose pricing objectives which are consistent with the target market's expectations as well as the estimated product demand and the costs in producing the product or service. Competitive factors also play an important role in achieving product or service pricing.

The marketing mix management chooses at any particular moment, therefore, is a combination of these four Ps. The total marketing mix combinations available at any particular time are the product, place, promotion and pricing alternatives available to management. Thus, marketing mix combinations = (P_1 x P_2 x P_3 x P_4).

EXAMPLE 3.1

A toy manufacturer wants to determine its possible marketing mix combinations available at a particular time. It has the following possible product, place, promotion and price combinations respectively: 5, 10, 8, 7.

marketing mix combinations = (P_1 x P_2 x P_3 x P_4)
marketing mix combinations = (5 x 10 x 8 x 7) = 2800

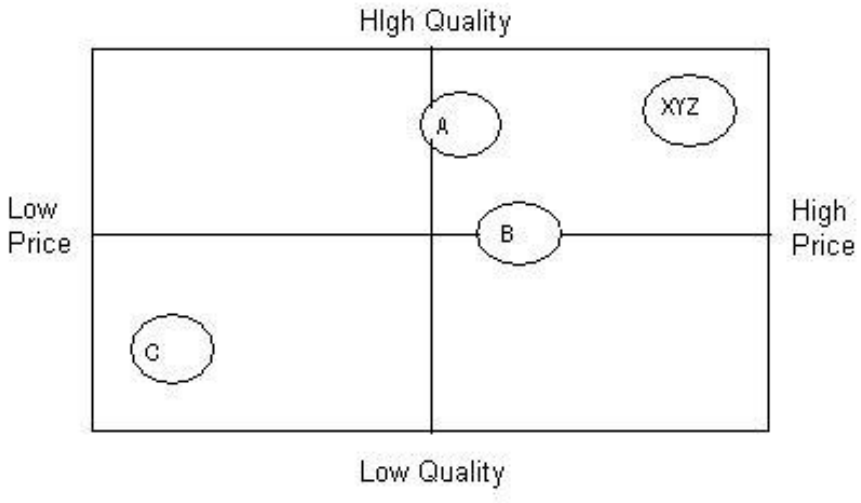
What is product positioning?

Product position is the perception consumers have regarding a market offering(s) relative to its competitors. Product positioning is the act of analyzing and managing consumer product position perceptions. Management develops product position maps to analyze how consumers position products relative to the competition. Product position maps can be developed prior to introducing a product or service or subsequent to introduction in order to obtain further market information.

EXAMPLE 3.2

XYZ Food Corporation is considering targeting the retail consumer food market by introducing packaged orange juice. The question the corporation must answer is whether to introduce a high-quality whole orange juice product packed fresh at the citrus grove, a lower quality concentrate also packed at the citrus grove, or a reprocessed concentrate packed locally. Company A has the high-quality whole orange juice medium price market, while company B has the medium-quality and price concentrate market while company C has the low-quality reprocessed concentrate low-price market. Corporation XYZ decides to offer a high-quality whole orange juice premium-priced orange juice product although there is room in the market to offer a low-quality reprocessed concentrate at a high price.

FIGURE 3.1 PRODUCT POSITIONING MAP FOR ORANGE JUICE



How is market demand determined?

Determining market demand is a critical management concern. Numerous variables ultimately determine market demand. These include demographics (such as age, sex composition, and per capita income of buyers), the state of the economy, past industry sales and others. Thus, market demand is dependent on the current environment. Three methods management can use to project current market demand are total market potential, total industry sales and market shares.

What is total market potential and how is it calculated?

Total market potential is a calculation of the potential market sales for an entire industry assuming a predetermined marketing effort under a given set of market conditions.

The formula for calculating total market potential is:

$$M = nap$$

where:

n = number of buyers in the particular product/ market assuming given market conditions

a = average quantity purchased by buyers

p = average unit price

EXAMPLE 3.3

Calculate the total market potential for ballpoint pens in the U.S. in any given year. Out of a population of approximately 250 million, it is necessary to calculate the estimated number of buyers of ballpoint pens. After researching the market, it is determined that the average age of ballpoint pen buyers range from ages 10 to 75. This eliminates approximately 55 million people from the pool. In addition, if another 30 million people are eliminated because they are institutionalized or are illiterate, then a total pool of potential buyers is (250 - 55 - 30) = 165 million. Additionally, market research tells us that annual per capita fountain pen purchases are 8, and that the average price is $1.50 per pen.

The total market potential for ballpoint pens is:

$M = nap$

M = (165,000,000 X 8 X \$1.50)= \$1,980,000,000

What is area market potential?

It is necessary for companies to choose the best marketing territories for their products and services. Being able to estimate the market potential of areas including cities and states is essential prior to committing a company’s financial resources. The methods primarily used for this are the market-buildup method and the multiple factor method.

How are industry sales and market shares determined?

Trade associations normally provide gross industry sales data. By tracking its own sales against those of the entire industry, a firm can accurately determine its market share and whether it is increasing or decreasing. Additionally, marketing research firms monitor product-category sales in various retail outlets. This data allows a company to compare its own sales with both the overall industry and to particular competitors.

3.3 MANAGING THE MARKETING PROCESS

Marketing management involves marketing analysis, planning, implementing and controlling a marketing strategy. It is involved with product and service development as well as supervising basic marketing functions such as promotion, pricing and distribution.

What is marketing planning?

Marketing planning consists of making decisions about the overall direction of a marketing effort and is a function of effective marketing research. Areas that have to be planned include the company's marketing mix, the marketing budget and the priority allocations, distribution methods, brand names, and packaging.

A marketing plan should have a brief executive summary giving the plan's highlights and major conclusions. It should also discuss the current market, product, competitive and distribution environment. All relevant variables and data are discussed with an analysis of how they impact the marketing plan. Analyses are provided of current opportunities, product market strengths and weaknesses, and of major issues needing attention. Financial and market objectives are also detailed. The marketing plan is used for developing an overall marketing strategy.

What is marketing strategy?

A marketing strategy is a comprehensive marketing methodology that is developed as a result of extensive marketing planning. A marketing strategy details the following factors: target markets, product line, product positioning, price, distribution channels, sales force, service procedures, advertising and promotion methodologies, product research and development expenditure targets, and marketing research.

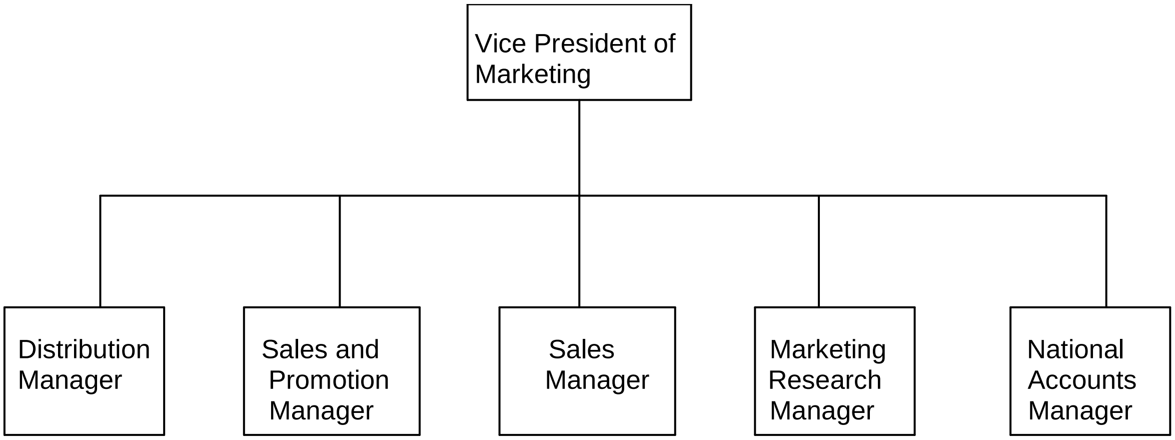
How are marketing departments organized?

Many types of marketing organizations currently exist. Companies often create various combinations of marketing organizations. The basic types of marketing organizations include the following: functional, geographical, product and brand management, and by markets.

What is a functional marketing organization?

A functional marketing organization consists of marketing personnel typically managed by a marketing vice president. It is the most widely used marketing organization. Since a functional marketing organization is not specialized, it is the simplest to manage. While this is a strength when a firm has relatively few products and services, it can also be a liability as a firm's market offerings become more diversified and specialized. Since a functional marketing organization has broad responsibilities, marketing personnel can compete with each other for specialized product or service resources. Figure 3.1 shows a typical functional marketing organization chart.

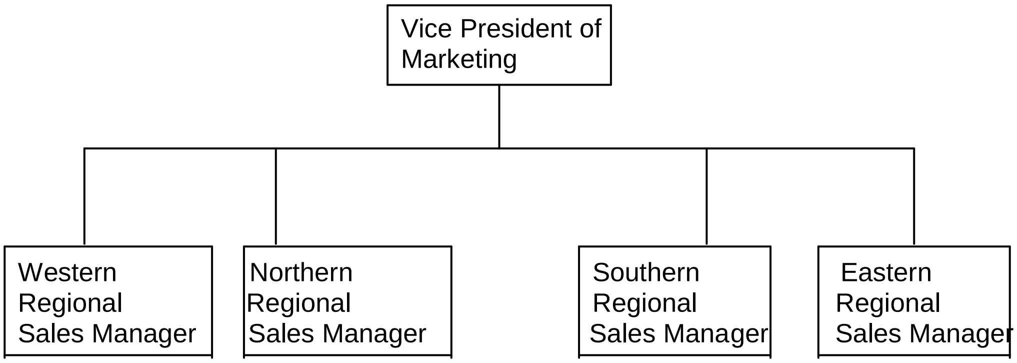
FIGURE 3.1 FUNCTIONAL MARKETING ORGANIZATION CHART


Vice President of Marketing
Distribution Manager
Sales and Promotion Manager
Sales Manager
Marketing Research Manager
National Accounts Manager

What is a geographical marketing organization?

National companies often find it is more effective having regional sales managers reporting to one national sales manager. The regional sales managers directly supervise a certain number of sales personnel. This facilitates regional market responses while freeing the national sales manager from excessive responsibility. Figure 3.2 shows a geographical marketing organization.

FIGURE 3.2 GEOGRAPHICAL MARKETING ORGANIZATION


Vice President of Marketing
Western Regional Sales Manager
Northern Regional Sales Manager
Southern Regional Sales Manager
Eastern Regional Sales Manager

What is a product and brand-directed marketing organization?

Product and brand-oriented marketing structures normally occur when organizations have experienced a large increase in products being offered to the market. Corporate management finds managing individual products and brands to be too time intensive and therefore choose individual managers who specialize in a particular product or brand. Product and brand organizations are essentially separate entities that interface with all elements of the larger organization. Thus, product and brand managers interface with the overall organization's production, promotion, advertising, legal, budgetary, research, purchasing and related functions.

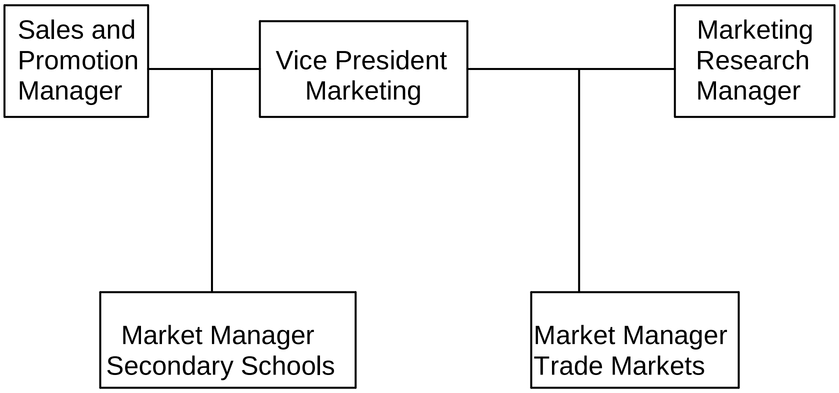
Product and brand managers become deeply knowledgeable about their product areas and can react quickly to market changes. However, product and brand management organizations often multiply to include even minor products. This imposes a large financial cost on the overall organization. Additionally, product and brand managers often compete with each other for organizational resources, creating a highly charged corporate environment.

What is a market organization?

Companies often deal with many different target markets. However, each target market has its own distinctive needs (example, some companies sell products or services to various industrial sectors as well as to federal, state and local governments). Often products are developed just for certain target markets (e.g., a book publisher will produce books for the primary, secondary, college and trade markets). When the market potential is great enough, companies often organize departments to coincide with those specific markets.

The market organization focuses attention on the marketing function. It allows for greater concentration of effort on the markets that are essential to the organization's success. Figure 3.3 shows a market organization for a publisher.

FIGURE 3.3 MARKET ORGANIZATION FOR A PUBLISHER


Sales and Promotion Manager
Vice President Marketing
Marketing Research Manager
Market Manager Secondary Schools
Market Manager Trade Markets

How are marketing plans implemented?

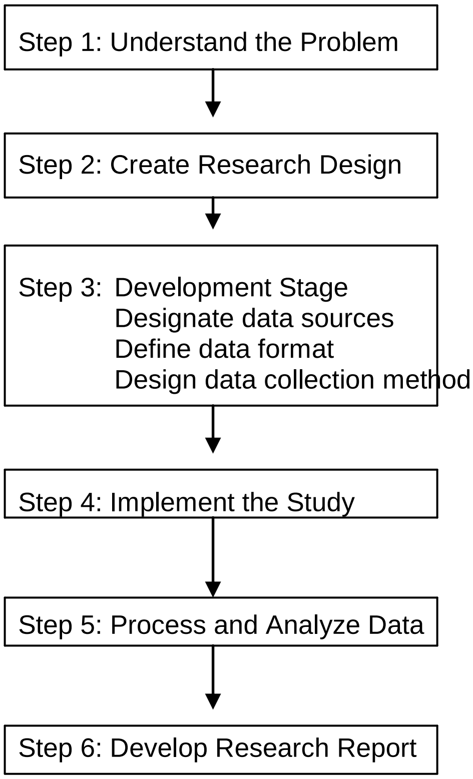
An organizational marketing plan has no values unless it is put into action. A close management interface with all aspects of the organization including production, promotion, marketing, research and design is essential to successfully implement the plan. Successful implementation requires creating a specific management plan to carry out elements of the marketing plan.

3.4 MARKET RESEARCH

Marketing research seeks to answer the question of what market needs exist, where they are located, what purchasing patterns exist, where they are located, and other factors such as its pattern of growth. Modern marketing research depends on the development of an extensive management information system normally having a large product and consumer database at its core. The research process is ongoing and data about products, manufacturers, customers and competitors is continually being collected and analyzed.

The market research process follows a series of steps which include understanding the problem to be researched, creating a research design for the problem, designing data sources including designing the data collection methods, implementing the study, analyzing and processing the collected data, and developing the research report. Figure 3.4 illustrates the market research process.

FIGURE 3.4 MARKET RESEARCH PROCESS


Step 1: Understand the Problem
Step 2: Create Research Design
Step 3: Development Stage
Designate data sources
Define data format
Design data collection method
Step 4: Implement the Study
Step 5: Process and Analyze Data
Step 6: Develop Research Report

Understanding the problem to be researched

A marketing manager, normally working with a marketing research group, must examine a problem carefully to understand its nature and complexity. A careful definition of the problem's parameters is crucial in developing the research project's goals.

There are various types of research problems. Some research is merely exploratory in nature which allows management to develop a clearer conceptualization of a problem. A more in-depth market study may be concerned with describing a particular problem in detail. A third type of research is interested in understanding the dynamics of a particular situation in terms of what causes it, or related issues, to occur. The objective of the research is the critical factor in determining the nature of the research design.

How is the research design created?

After developing an understanding of the problem to be researched, the next question to be answered is what potential market value the research has when launching a new product.

EXAMPLE 3.4

Management seeks to determine the market value when launching similar products in a market segment to form the basis for a research budget. It can be determined that other product launches had an average annual profit of $35 million when market research was conducted and only $15 million without market research.

market research value = average profits with market research
- average profits without market research

market research value = $35 million
-$15 million
20 million

In this example it would be possible to justify a $20 million-dollar research budget.

Once a budget can be determined for the research project, it is then necessary to determine what types of data will be used. Two types of research data, primary and secondary, may be used in market research. Primary data such as census data collected by the government is original data which is either collected directly or is provided by a source who collects it directly. Secondary data is data reported on by a secondary source such as another market report or a periodical which provides results of primary data used in preparing the report. For the most part, market research uses primary data, although secondary data can be a useful theoretical source as well as validating results obtained from primary data collection studies.

In the development stage, how is marketing research data collected?

Marketing data is obtained using four basic research approaches: observational, focus group, survey and experimental.

- *Observational.* This is the most unstructured method of collecting data. The data collection method will depend on the context of the situation (for example, if one were to collect data regarding the cruise ship industry, one observational approach would be to book a cruise on one or several selected cruise ships and observe the activities on board, and the food being served, as well as to listen to passengers' before and after comments during embarkation and disembarkation).
- *Focus group.* In the focus-group methodology, a small group of selected individuals are invited to discuss a certain topic. In the cruise ship example, questions would be focused on the group's overall impressions regarding the cruise ship industry, with special attention given to particular cruise lines. Data obtained from a focus group session can be very useful when designing a more in-depth research study.

• *Survey research.* Surveys are the most commonly used form of marketing research. A survey is a systematic research tool used to obtain descriptive data. The three basic types of surveys are mail surveys to specified geographical areas, systematic telephone surveys within a calling area, and one-on-one personal interviews with a single individual or a group.
• *Experimental research.* This type of research has the most methodological accuracy. In experimental research, measures of the affects of variation in independent variables on the subject dependent variable are taken. This is done using as controlled an environment as possible either in a laboratory or field setting. An example of experimental research is testing the impact of various types of advertising on resulting sales. Different types of advertising can be used in different regional markets for the same product to determine if there is any measurable difference in resulting sales. However, controls for inherent regional differences must be predetermined.

How is a sampling plan developed?

A sampling plan is developed for the purpose of ensuring that the data collected is valid and reliable for the selected population. A sampling plan addresses three issues: the sampling unit, the sampling method, and the sample size.

• *Sampling unit*. This is a definition of a particular target population. If a company wants to sample opinions of people using a particular product, then it is necessary to define who that target population actually is.
• *Sampling method.* Researchers can use either a probability or non-probability sample of the target population. A probability sample is a statistical calculation of the sampling error of a target population. At the 1% level of confidence, there is a 99% probability of being a valid and reliable sample of the target population, while 1% would be inaccurate. In a non-probability sample, the researcher makes a judgment about what portion of a target population should be included in a sample.
• *Sample size.* Since it usually is impractical to sample opinions of an entire target population, it becomes necessary to develop a representative sample of the target population. Of course, the larger the sample, the more reliable and valid are the results. Sample sizes, either at the 5% or 1% level of confidence, are chosen according to the scope of the study, the resources available, and the criticality of the need for reliability.

How is the market research study implemented?

In the implementation stage, the researcher actually collects the required data. This is the most expensive and error-prone stage of the marketing research process. Data collection methods include mechanical means, computers including bar coding and interactive data input, questionnaires and interviewing. The major concern here is that data collection methods insure valid and reliable data.

How is the data processed and analyzed?

The data processing and analysis stage involves the processes of reviewing, categorizing, and analyzing. First the data must be reviewed for collection errors and omissions to insure that all areas have been completed accurately. Then the data has to be placed in categories where similar data can be compared with each other. The analysis step is crucial for the study's final outcomes. Various statistical analysis methods are utilized for interpreting the results. This can involve using multivariate analysis and frequency distributions.

How is the research report developed?

Final reports should be succinctly written. Results should be interpreted and presented in an understandable format. Management requires report formats that are easily interpreted and conceptually coherent. The appropriate use of graphics can be helpful in explaining outcomes. Oral presentations by researchers often are used to further explain the study.

3.5 MARKET SEGMENTATION

Markets consist of buyers. Buyers have many different characteristics which are important in determining their willingness to purchase products and services. These differences are predicated on geography, demographics, buying power, occupation, education, and buying behavior. Markets can be divided into four clearly defined segments based on these characteristics: geographic, demographic, psychographic, and consumer behavior.

What is geographic segmentation?

Markets can be divided geographically by ZIP Codes, cities, states, regions, or countries. A company having a nationwide distribution system may detect differences in national demand depending on the region of the country. A particular product may sell better in certain regions than in others. The product may be sold, advertised and tailored only for certain designated geographic regions.

What is demographic segmentation?

Demographic segmentation uses various population measures including age, sex, income, nationality, education, and occupation as the basis for dividing people into specific markets. Demographic segmentation is easy to measure and is widely used.

- *Age.* This demographic variable is often used to divide markets (for example, a clothing department store divides departments chronologically: infants, girls, boys, young teens, young women and young men, ladies and men). For a clothing department store, demographic segmentation based on age works well. However, in other areas age may not be so effective, as everyone wants to be perceived as being young.
- *Sex*. Gender is a widely used method of demographic segmentation particularly in the clothing, hairdressing, health, hygiene and print markets. While gender is an easily measured demographic variable, market trends and applications may change quickly. The role of women is evolving rapidly in modern society. Automobile marketing, for one example, is now targeting the large numbers of female automobile owners using options and designs desired by women.
- *Occupation.* Market segmentation by occupations is also effective because of associated lifestyles (e.g., business people are targeted by the travel and clothing industries since they do more traveling and purchase more business clothing).

• *Education*. The level of education is an important demographic segmentation variable primarily because higher levels of education are associated with higher levels of income, and higher proportions of disposable income.
• *Nationality*. Nationality, racial and cultural groupings are important American demographic segmentation variables since the United States has such a diverse population. However, these variables can be difficult since it may be a mistake as well as a misrepresentation to believe that these demographic groupings all have the same desires and purchasing patterns.

What is psychographic segmentation?

Psychographic segmentation divides markets on the basis of social class, personality traits, and/or lifestyles.

• *Social class*. Dividing the population on the basis of social class primarily uses income as a determinant of the buying behavior and lifestyles people exhibit in the various groupings. Social class ranges from the lower class, to middle to the upper class. The classes can be further stratified into upper lower, upper middle and upper upper. Social class is a strong determinant of individual purchasing preferences in consumer goods as well as in services such as education, travel and tourism.
• *Personality traits.* This is a method of segmenting markets based on a perception of how differences in consumer personalities affect buying behavior. Products and services will be marketed in a manner which will appeal to these personality traits (for example, those who are considered more conservative are perceived as desiring products having darker colors and more reserved styles of dress). There is no clear evidence that personality trait market segmentation is successful in accurately identifying target markets and individual personalities.
• *Lifestyle.* A person's lifestyle can best be defined as how that person adapts to and interacts with the environment. Some people may be more artistic or entrepreneurial than others. Segmenting the market according to lifestyle attempts to identify common interests that a group of people has and to target this group for particular products and services (for example, those identified as having an adventurous lifestyle would be perceived as having a greater desire to go on a sailing vacation than to stay at a resort).
• *Consumer behavior*. An additional method of segmenting markets is based on consumer behavior relating to specified products and services. Categories included under consumer behavior would be the amount of usage of a particular product. Here consumers can be classified as heavy, moderate, or light users. Consumer profiles by usage category help determine the characteristics each group displays and how to appeal to them. It is also important to determine who does not use the product in order to determine whether a target marketing program would be justifiable.

Another market segment area of consumer behavior is brand loyalty. It is important to determine what the nature of consumer brand loyalty is for a specific product or service. By understanding which consumers are extremely loyal and which migrate, it may be possible to develop and implement strategies to increase or maintain consumer loyalty.

Still another method of segmenting consumer behavior is based on the benefits consumers seek by purchasing particular products and services. Some consumers may seek the speed of service associated with retail fast food. Others may seek hygienic qualities associated with certain consumable products such as toothpaste, household cleaners, paper tissues, etc.

After determining the benefits consumers actually seek from specified products, then the characteristics of the consumers must also be examined. Marketing strategies might be developed promoting new or expanded benefits to the consuming groups.

3.6 BRAND MARKETING DECISIONS

The objective of brand marketing is to increase consumer product or service awareness in order to generate increased and predictable demand leading to consumer willingness to buy and display loyalty. Brand marketing decisions involve a wide range of issues.

What is a brand?

A brand is a name, logo, sign or shape which singularly, or in combination, allow the consumer to differentiate the product or service from others in the marketplace.

What is a brand name?

A brand name is either a word or numbers in some combination which can be verbally expressed (for example, 3Com is a brand name).

What is a brand mark?

A brand mark is a symbol, graphic image, or shape, often used as a logo, which describes either a brand manufacturer or product.

What is brand loyalty?

Brand loyalty is repetitive consumer buying behavior resulting from consumer satisfaction with a particular brand.

What is brand recognition?

Brand recognition allows consumers to differentiate a branded product from other brands or those which are not branded.

What is brand acceptance?

At the minimum, marketers hope to generate brand acceptance where the consumer finds the brand meets their expectations. Therefore, they will purchase the product and not resist it.

What is brand preference?

Successful brand marketing causes brand preference where consumers prefer a particular brand over another.

What is brand insistence?

Extremely successful brand marketing may cause brand insistence where consumers insist on having one brand over another. True brand insistence is extremely difficult to generate.

What is brand rejection?

Brand rejection occurs when the consumer is familiar with a particular product but refuses to purchase it because of dissatisfaction with previous purchases. Brand rejection is extremely costly and difficult to reverse since the buyer's bias prevents him or her from considering any more purchases.

What is brand equity?

Brand equity is added value brought to a product by a brand name. This can be enhanced through the use of labels and logos. (Certain clothing and sports accessory manufacturers prominently display their name and/or logo on the product.) Brand equity often will allow the manufacturer to charge a premium price for its products.

How is branding useful?

Branding is an overwhelming market force. It gives the seller numerous advantages:

- Brands divide products into identifiable classes providing the ability to accurately measure sales and provide follow-up.
- Brands provide a methodology for market segmentation.
- Brands can be legally protected and trademarked preventing competitors from usurping products and their respective market share.
- Brands encourage consumer familiarity and loyalty.
- Brands help to create a company image.

How are branding decisions made?

Normally, a firm makes branding decisions only after extensive debate, research and discussion. Occasionally, companies even offer a public contest to choose a brand name (for instance, Ford Motor Company offered a national contest when it sought a brand name for the car that later became known as the Edsel). Companies often use marketing research firms as well as more specialized brand name consultants to choose a brand name.

What is brand strategy?

Brand strategy is the marketing objective sought by giving or associating products or services with a particular brand. There are at least four brand strategies that a firm can pursue: corporate blanket brand, family blanket brand, product range brand, and new product brand.

- *Corporate blanket brand.* A corporate blanket brand occurs when a company uses its name as the primary identifier of its products. The products, such as breakfast cereals, are usually in just

one market and the corporation seeks corporate brand identification.
• *Family blanket brand*. Family blanket brand is used to cover a series of products in a variety of markets. One brand name covers them all.
• *Product range brand.* Product range brands are used to describe a series of products having clear links in one market. An example would be a variety of shampoos having the same brand name but formulated for differing hair conditions.
• *New product brand*. A new product brand is used when a firm introduces a new product in a totally different market that has no relationship to previous products the firm has on the market. If the firm expects the product will have a long product life cycle, and that it will generate sufficient profits to warrant a separate launch, a new product brand may be justified.

How do you measure the worth of a brand?

Corporate Branding, a U.S. consulting firm, measures the worth of a brand by tracking business people's perceptions of a company name—which for many businesses is its brand—and rating this as a percentage of its market capitalization. According to the survey, 3M, the large Minnesota-based manufacturer, owns the most valuable brand of any broad-based industrial company in the U.S. 3M has several thousand products, ranging from sticky tape for the home to specialist optical film for industry, sold by the company's 45 business divisions. The 2004 annual survey of 10,000 business people, gives the brand value attached to the 3M name as $7.3 billion. Tyco comes in the distant second as $4.8 billion. This shows that companies that put a lot of effort into building up their brands across a number of product divisions. They can also use a system of "multiple" brands to create a variety of messages for consumers and industrial buyers. Leveraging the value of brands across a company is where the magic in brand management happened.

3.7 SERVICE FIRM MARKETING STRATEGIES

As of 2005 over 70% of all U.S. employment was in the service producing sector. Additionally, services account for over 70% of the gross domestic product and will produce 90% of all new jobs in the next ten years.

What are the characteristics of the services industry?

• *Intangibility*. Marketing services are intangible since they cannot be seen, tasted, felt or sensed. Services are unknown until they are performed (for example, a woman seeking a new hairdo from the hairstylist does not know what it will be like until it is actually done). Because of the unknown nature of services, marketers must create an image of quality, reliability and value for the consumer.
• *Immediate production and consumption.* Services are consumed as fast as they are produced. A lawn service leaves a trimmed lawn as soon as it is finished. Therefore, developing a strong relationship with the consumer is critical for the marketer's success.
• *Perishability*. Services cannot be saved or stored. It is difficult for service firms to provide the ideal level of service at all times. During periods of peak demand, resources may be overtaxed, while during periods of low demand, resources are underutilized. Organizations providing mass transit often find that trains or buses are overloaded taking passengers to the urban area during

the morning rush while they are empty on the return ride.
• *Inconsistency.* There is no standard in services. The level of quality varies depending on who provides the service as well as when and where it is provided. Resume writers provide a wide variety of resumes depending on who is writing it, what their industry depth of knowledge is, how well they write and what level of interest they have in the consumer.

How is marketing performed for the service sector?

Marketing for the service sector is more complex than tangible products primarily because of the difficulty of defining quality service, and managing productivity.

• *Service market differentiation*. The greatest challenge for service marketers is differentiating between service providers. If consumers perceive that service providers have indistinguishable offerings, then price competition becomes the only differentiating feature. A method of differentiating services from the competition is to add innovative features. Thus, the marketer adds to the primary service package by offering a secondary service package (for instance, an automotive lubrication service provider adds a secondary service package of automotive manufacturer certification, speed of service, and a consumer comfort facility to distinguish its service from the traditional service station or automotive dealership).
• *Service productivity.* The service industry is experiencing a need to increase its productivity to remain competitive. However, the service industry is highly labor intensive. Increasing productivity, therefore, is extremely challenging. The following methods can be utilized in the service industry to increase productivity.

Better utilization of labor. Management can research and develop more effective service procedures. Employee skills can be upgraded through training to make their service activities more effective.

Trade off quality for quantity. In order to improve productivity, organizational procedures are developed whereby less time is spent per service unit. This may require changing the nature of the service as well as how services are delivered (e.g., using an automatic phone router which screens and routes phone calls).

Automate the provision of services. The implementation of technology often can reduce the need for labor while increasing consumer satisfaction (such as, installing a fax back system which immediately provides consumers with requested information).

Update current employees. Utilizing training and certification programs, It may be possible to upgrade lower paid employees to perform specified services performed by professional (for example, nurses are now performing many medical services previously performed by doctors).

Allow consumers to perform self-service. Increasingly consumers are substituting their own labor for procedures formerly performed by employees (as in, self-service gas stations).

How can service delivery differentiation be achieved?

Service delivery can be differentiated with the “3P’s” of service marketing: people, physical environment and process. Having better trained and more competent people can be extremely important in the service delivery process itself. Improving the physical environment of the service delivery environment is also extremely important (for example, having a clean and cheerful waiting room can be crucial in improving the overall image of an organization). Finally, improvements and innovations in the process can also make a critical difference in service market differentiation (e.g., the installation of bar code scanners in supermarket expedites the check-out process with improved accuracy while enabling management in maintain a real-time management information system).

3.8 PRODUCT LINE DECISIONS

A product line is a group of products related on the basis of similar customers, marketing methods or product characteristics. The range of product lines establishes a product mix. The two types of product lines are those having complementary and substitute products.

What are complementary products?

In a product line, complementary products are those designed to add to the original product. For example, a company producing computers would also manufacture other items such as a mouse, printers, and software.

What are substitute products?

Substitute products are those that appeal to the same basic market segment, but have different specific characteristics. For example, a soup company has a full line of soups including chicken, tomato, turkey, pea, etc. Each soup can easily be substituted for the other.

How long should a product line be?

Product line length is determined by the number of products supported in a particular product line. Companies seeking high market share and growth have longer product lines.

Profitability is also affected by product line length. A product line has too many products if adding to the line reduces profits, while it has too few if profits can be increased by adding products.

Increasing product length tends to increase associated costs including engineering, inventory, ordering and transportation costs. Companies having successful products often tend to increase product line length in order to increase profits. However, overextended product lines can cause diminishing returns.

Lines can be extended by stretching and filling.

What is product line stretching?

Product line stretching develops when a firm adds additional products to a product line. Product lines can be stretched downward, upward, or both.

What is downward product line stretching?

A company producing "high end" products, in the more expensive range of the market segment, stretches downward by offering lower priced products in the market segment. Offering lower priced products will appeal to a wider range of consumers who may upgrade upon seeing the feature differences between the low and high end products. Using the "downward stretch" can be a competitive marketing strategy to challenge competitors either at the high or low end of the market segment.

What is upward product line stretching?

A company producing "low end" products, in the least expensive range of the market segment, stretches upward by offering higher priced products in the market segment. Companies may consider the "upward stretch" for a number of reasons. They may be well entrenched at the lower end of the market segment, but desire greater unit margins by moving upward in the market (for instance, the Japanese automotive companies implemented an "upward stretch" by successfully introducing luxury cars only after becoming well established in the lower end of the market with compact cars). The company may also be interested in experiencing a faster growth rate at the upper end of the market when those conditions exist.

What is two-way market stretching?

Two-way market stretching applies to companies in the middle of a market that want to expand their product line upward and downward. The basic objective is to become competitive in markets it did not previously serve by introducing products into those respective markets.

3.9 NEW-PRODUCT DEVELOPMENT AND MARKETING STRATEGIES

New-product development is essential for a company to remain competitive in today's rapidly changing markets. Marketing plays an important role in new-product development. Analyses of the selected market segments and the targeted consumer groups are performed, and decisions are made regarding the development of appropriate products. Yet, the introduction of new products is extremely risky. New product failures are estimated to be 80% of all new-product launches in certain markets. There are various levels of failure. A complete product failure is a dead loss and provides no cost recovery. Partial product failures allow the recovery of some variable and fixed costs, while a comparative product failure actually provides some profit, but is relatively less profitable when compared with other products.

Why is there such a high failure rate with new products?

New-product failures occur for a number of reasons:

- *New products may not have significant advantages.*
Certain markets may be saturated, and it is very difficult to develop truly innovative product ideas (e.g., the chocolate candy bar market is fairly well saturated, and it is difficult to improve upon the offerings already provided by the chocolate bar market leaders).
- *Divided markets.* Intense international competition is fragmenting markets into smaller segments. Focusing on smaller market segments increases the risks of failure.

• *Increasing product development costs.* As the technology becomes more complex, the cost of developing new products increases.
• *Shorter product life cycles and product development times*. Technological change is occurring at exponentially increasing rates that significantly reduces product life cycles as well as mandating shorter product development times. The risk of failure increases because of greater likelihood of product development mistakes and misjudgments. Shorter product life cycles also mean a shorter period of time in which to recoup product development costs.

What are the major stages in new product development?

• *Idea generation*. New-product ideas come from many sources. Customers are one of the best sources of new ideas (software companies rely extensively on their installed user base to provide feedback about how products should be improved). Consumers can be surveyed to identify needs and problems that are otherwise unknown to management. Competitors often introduce new product and service innovations which provide a rich area of product improvement. Employees who work closely with products can also provide significant insight into new product innovations and improvements. Brainstorming can be used by a marketing team where members give ideas in a free flow manner. In the final analysis, new-product ideas are the result of inspiration, imagination and deep experience.
• *Idea screening*. After numerous ideas have been generated, screening is utilized to evaluate the ideas in terms of practicality, cost, profit potential and strategic fit. Not only must new products have significant profit potential, but they must also be consistent with the firm's marketing plan and strategy. Most companies have product evaluation forms where the products are described and rated according to market potential. Subsequently, these forms are screened by a new-product organizational structure.
There are two significant risks in the idea screening stage. One risk is that a product is rejected because management underestimates its market and profit potential. The other risk is that a firm will approve a product not having good market potential or strategic fit because it received inadequate idea screening.
• *Concept development and testing*. If a product idea survives the idea screening stage, it is developed into a product concept. A product concept is an idea that is developed into an expression of the advantages offered by a new product or service and the target market to which it will be offered. This is termed a product category concept.

EXAMPLE 3.5

A company wants to develop a line of nutritional snacks. It then converts this product idea into several product concepts within the product category. One product concept consists of a candy made out of dried fruit. Another is an all natural cracker using dried fruit to add taste. A third product concept is a dried meat product made out of prepared soy beans.

• *Business analysis.* Having developed the product concept, a preliminary marketing strategy is then developed. This will enable management to evaluate the product concept's business potential. In order to do this, management must perform an extensive cost analysis on product development costs including research and design, marketing and production. Product demand estimates are then combined with cost estimates to develop short- to intermediate-term profit estimates.

- *Product development*. Assuming the business analysis determines the product is worthwhile, it then goes to the product development stage where R&D develops a prototype. Normally, product development represents a substantial financial investment over an extended period of time. Additionally, product development must be sensitive to expressed consumer desires. The use of technology, particularly computer aided design and computer aided manufacturing (CAD/CAM), can help to shorten development time. When the prototype is actually developed, it must be subjected to rigorous functional testing to insure the product is viable, safe, and meets expectations. Assuming the product passes the functional testing stage of the product development process, it must then be subjected to consumer testing to determine whether or not the product would be appropriate for the target market.
- *Market testing*. The market testing process subjects the developed product to actual target market conditions. The product is packaged and branded and introduced using a controlled marketing program. The purpose of market testing is to determine consumer acceptance, the success of various marketing strategies, how large the market actually is, and how competitive it will be. There are several methods used in the market testing process:
- *Traditional test marketing*. In traditional test marketing, the product is introduced into a selected group of cities. When determining the test market strategy, management must determine in how many and in which cities the test marketing should be performed, the length of the test marketing process, and what factors should be evaluated. Traditional test marketing also allows a variety of promotional methods to be used to introduce the product in order to determine which method works most effectively. The negative side of the traditional test marketing process is that it is costly and time consuming.
- *Research firm test marketing.* The firm introducing a new product may decide to conduct test marketing by contracting with a research firm which directs market research in a group of commercial outlets. Various marketing strategies are carefully controlled and evaluated. Product sales are monitored using scanners and bar codes. Research firm test marketing is performed more quickly and cheaply than traditional test marketing.
- *Simulated test marketing*. In simulated test marketing, a selected group of shoppers is exposed to advertising for the new product as well as advertising for competitive products. They are then given a predetermined amount of money and allowed to shop in a simulated store carrying the new product as well as existing competitive products. Observations and measures are made of the products purchased, and the consumers are then asked why they purchased their chosen products. Follow-up questions are also asked of the selected consumers after a period of time has elapsed. Simulated test marketing can be conducted quickly and much more economically than either traditional test marketing or research firm test marketing.
- *Commercialization*. If the product successfully passes the market testing process, then the marketer is ready to implement a full commercial introduction. The firm now must make its greatest investment in the entire product development process. Manufacturing facilities have to be acquired, a promotional advertising program needs to be developed, sales personnel have to be employed and trained, and administrative support systems have to be put in place. Many activities have to be coordinated. Additionally, evaluations have to be performed concerning the timing, geographical selection of launch sites and the targeting of product launch prospects.

What is the product life cycle?

The product life cycle consists of the product development, introduction, growth, maturity, and decline stages. In the product development stage, the company incurs investment costs but makes no sales. In the introduction stage, sales are slow because the product is being introduced, profits and cash are negative, and investment in marketing is high. In the growth stage, profits are at their highest, although cash flow may because of high investment. In the maturity stage, sales decrease and profits level off or begin to decline. In the decline stage, sales and profits drop.

When is market-skimming pricing used?

Market-skimming pricing is used when a new product is introduced at the highest price possible given the benefits of the product. For market skimming to work, the product must appear to be worth its price, the costs of producing a small volume cannot be so high that they eliminate the advantage of charging more, and competitors cannot enter the market and undercut the price.

3.10 MARKETING CHANNEL DESIGN DECISIONS

Marketing channel (also termed channels of distribution) design decisions are critical for successful product distribution. Marketing channels consist of intermediaries who contribute to the product distribution process according to consumer demand. They consist of merchant middlemen, agent middlemen, and facilitators. Companies rely on market intermediaries because of their effectiveness in distributing products as well as their capitalization. A company's chosen channel members develop long-term relationships built on trust, and directly affect the marketing process including price. Marketing channels always have a producer and a final consumer.

Who are merchant middlemen?

Merchant middlemen consist of wholesalers and retailers who actually purchase the product and resell it. Wholesalers buy in large lots and sell in smaller quantities to retailers who in turn sell individual units to the consumer. Wholesalers and retailers assume the risk of ownership in return for a profit markup when selling the merchandise to others.

Who are agent middlemen?

Agent middlemen are sales intermediaries such as brokers, product representatives and sales representatives who seek others to purchase merchandise. They do not actually purchase any merchandise and are compensated on the basis of a percentage of sales and/or salary depending on whether they are independent business people or employees of companies wishing to sell products.

Who are facilitators?

Facilitators are intermediaries who directly assist in the distribution function without taking title to the goods. They consist of a range of organizations including advertising agencies, financial lending organizations, shipping companies, and storage warehouses.

What is channel length?

Channel length describes the number of intermediary levels existing between the producer and the consumer. A direct, or zero, channel is one where there is a direct relationship between the producer and the consumer (e.g., a neighborhood bakery may be considered a direct channel since the retail consumer purchases the finished baked goods directly with no intermediaries). A one-level channel has one intermediary which is usually a retailer (e.g., a regional bakery goods operation utilizes local food stores to distribute the product to the consumer). A two-level channel has two intermediaries to distribute products to the consumer (e.g., a candy manufacturer sells the product to a wholesaler who in turn sells to the retailer). A three-level channel has three intermediaries normally consisting of an agent middleman who sells to a wholesaler who then sells to a retailer.

How are channels developed?

Developing channels of distribution requires many decisions. Channel distribution needs grow and develop as companies grow and markets change. Increased channel utilization increases costs which are passed on to the consumer. The design of channel development begins by studying the buying patterns of the target customers.

What are consumer buying patterns?

Consumer buying patterns affect a channel's characteristics and are classified in the following ways:

- *Units purchased.* Different customers have different purchasing needs. Commercial customers normally purchase larger lot sizes than do the household consumer. Channel modifications have to be made to meet these different needs.
- *Turnaround times*. Some industries, such as fast foods, use rapid turnaround times as an inherent part of the business, while other businesses may have longer turnaround times. Industries having customers needing rapid turnaround times require more direct channels of distribution than those with slower turnaround times.
- *Product assortment*. Industries, particularly retail, offering large product assortments have a need for deeper channels of distribution in order to provide product variety.
- *Services.* High levels of services, including repair, delivery, installation and others, require more intensive channel utilization.

How many intermediaries should be used in a channel?

Determining the number of intermediaries will affect the marketing of a product. Longer channels have more intermediaries and higher costs. On the other hand, intermediary expertise may be essential for successfully marketing a particular product. Thus, a manufacturer may try and limit the number of intermediaries in order to contain costs. The tradeoff in having fewer intermediaries is limited distribution.

As manufacturers continue to penetrate markets, greater distribution is desired involving more intermediaries. While this will increase distribution, it will also increase costs while sacrificing some degree of marketing control. This may result in having the product incorrectly positioned.

Finally, not all intermediaries are the same. The marketer wants only those intermediaries who most effectively work with the company to distribute the product.

How do company characteristics affect channel development?

Generally, the companies having the largest array of retail products, particularly product consumables, have the least need for intermediaries. They are well-enough positioned in the market to deal directly with retail outlets. Smaller companies with smaller product lines have a greater need for the market distribution strengths of intermediaries.

How do product characteristics affect channel development?

Products that are perishable, time sensitive (such as fashions), heavy and bulky, or are highly unique in nature (such as those requiring specialized training) generally have short channels of distribution. On the other hand, standardized products often move through several intermediaries in the distribution process.

How are channel alternatives evaluated?

There are several issues in evaluating channel alternatives. One issue is choosing the most economically effective channel alternative. Companies must evaluate channel intermediaries based on those that have the largest level of sales per unit of selling cost. Other issues concern the extent to which marketing management control will be lost by including a sales agency or other sales broker in the marketing channel. A final variable is choosing a channel intermediary that will still allow the producer to maintain maximum marketing flexibility in fast moving markets.

What are the challenges in managing market channel intermediaries?

Several issues are important in channel management.

- *Choosing the most effective channel alternatives.* Management must determine what the characteristics are the most effective channel intermediaries. Having done this, management must develop strategies for attracting these channel intermediaries to the marketing channel.
- *Maximizing channel member effectiveness.* Management must motivate channel members to create the most cost-effective market distribution system for the company.
- *Evaluating the effectiveness of intermediaries.* Management must develop channel member evaluation systems. While seeking the cooperation of channel members, it is still essential to determine what profit standards must be used as the basis for evaluation.

3.11 DEVELOPING THE PROMOTION BUDGET

One of the most challenging marketing management functions is developing the company's promotion budget. Promotional advertising is extremely expensive, and establishing an acceptable figure is difficult at best. While companies use many different methods, we will describe four widely used methods:

- *Funds available method.* This is the simplest promotion budget allocation method. The marketing manager simply establishes the budget at the amount established by the company's management. It does not require any research and makes long-term planning impractical.
- *Percentage of current sales method*. This method is calculated from last year's or the current year's forecasted sales for various product or service categories. It can be justified in that the promotion budget will increase or decrease proportionally to sales and that it establishes linkage between the sales of a product or service category and the amount budgeted for its promotion. However, it encourages more spending during growth periods when less may be indicated, and spends less during periods of contraction when more may be appropriate.
- *Matching the competition.* A firm allocates an amount to its promotion budget that matches the competition's. This allows a product or service to maintain an amount of advertising equal to that of its competitors. It can also be justified by maintaining that this level of promotion represents an industry consensus. However, it assumes that other companies know the appropriate amount to allocate to the promotion budget when in fact there may be no justification for this assumption.
- *Objective and task method.* The promotion budget is established based on clear marketing goals, defined tasks needed to achieve the stated goals, and defined expenditure estimates. This method depends on estimating the promotional productivity of the resources allocated in each category. However, developing accurate estimates of the effectiveness of promotional expenditures is difficult at best.

3.12 THE PROMOTIONAL MIX

The promotional mix is the blending of five promotional areas of advertising, sales promotion, public relations, direct marketing and personal selling.

- *Advertising.* Advertising is any form of paid public and impersonal communication utilizing the mass media. The purpose of advertising is to emphasize the benefits and characteristics of products or services, often using special effects including graphics, color, sound, music, famous personalities, testimonials and related methods.
- *Sales promotion*. Sales promotions consist of various types of incentives including discounts, rebates, contests, etc., intended to induce a positive response from consumers. Although they are short-term in nature, promotions are designed to induce a rapid increase in sales.
- *Public relations*. Public relations is communication to an organization's public that extends beyond its immediate target market. The purpose of public relations is to create a positive image of the organization by providing and explaining information. One of the outcomes of public relations is the creation of publicity for all forms of the mass media. Publicity is advantageous since it normally appears as a news story and there is no cost to the organization.

• *Direct marketing.* Direct marketing consists of various types of marketing intended to solicit a direct consumer response. Forms of direct marketing include direct mail, telemarketing, and electronic marketing. Direct marketing is aimed at specific individuals in the target market rather than being broadly disseminated.

• *Personal selling.* Personal selling is the oldest and most successful form of sales promotion. Personal selling is contingent on developing personal long-term one-on-one relationships. Personal selling depends on the development of an organizational sales force.

3.13 ADVERTISING

Advertising is any form of paid non-personal communication of messages designed to promote products and services to target markets utilizing the mass media.

What are the objectives of advertising?

The objectives of advertising are to educate, convince, and remind target markets.

• *Educate.* Educational advertising is essential in the early stages of product or service introduction. Education advertising informs the target consumer about the advantages of a particular product or service and how it can be useful.

• *Convince.* In competitive markets it becomes essential to convince consumers about why one product or service is more advantageous than another in terms of features, services, price, or status.

• *Remind.* In mature markets it is necessary to continuously remind consumers to use a particular brand or service. It is also useful for overcoming buyer's remorse, and consumer second thoughts about a purchase, by reminding them of the strengths of a particular product or service.

How is the advertising message developed?

Developing advertising is a creative process. The basic purpose of an advertising message is to stress the positive aspects of a product or service. This is done by collecting and analyzing consumer responses and consumer data. Several advertising variations should be developed and tested; however, the reality is that the costs for doing this are prohibitive.

Nonetheless, an advertisement serves several functions. First, it catches the consumer's attention by using a catchy introduction or headline. Here is where effective headlines make a difference. Once the advertisement has the consumer's attention, the copy should make its message clear.

Which media should be chosen?

The major media markets include newspapers, television, radio, direct response, magazines and outdoor media which include billboards, buildings, buses, and other outside advertising space. The marketing manager seeks to have the best fit between the media and the target market. The basic objective is get the maximum impact for each advertising dollar. This is based on the effectiveness of the ad and the audience size provided by the media for the products and services. Impact can be given a numerical value to rate the specific exposures in a particular medium. Additionally, outcomes have to be continuously evaluated to determine if effectiveness is changing over time.

Other variables include the media's effectiveness in targeting specific geographic areas. The reach of the media is the number of consumers who are exposed to the advertising, while the frequency is the number of times the audience is exposed to the advertising message. The total number of exposures can be calculated as follows:

Total Number of Exposures (E) = Reach (R) x Frequency (F)

The total number of exposures is known as the gross rating points (GRP) which is used as a measure for rating the media. This figure is usually calculated for an estimate of the percent of the target market that specific media actually reaches.

EXAMPLE 3.6

A marketing manager wants to know what the gross rating points will be for a television ad when its reach is 75% of the target market with an average frequency of 5.

GRP =75 x 5
GRP = 375

What is the cost-per-thousand media index?

The cost-per-thousand index is a method of evaluating the cost effectiveness of the media based on its reach in thousands and the cost of an exposure. The formula for calculating the cost-per-thousand index is:

$$\text{Cost Per Thousand (CPM)} = \frac{\text{Exposure Cost x 1000}}{\text{Reach}}$$

EXAMPLE 3.7

A marketing manager wants to compare the CPM for a 30-second advertisement of instant decaffeinated coffee in two different nonprime TV network shows serving the same target market.

Network Show A has 3,825,000 viewers who regularly drink decaffeinated coffee and charges $45,500 for the advertisement. Network Show B has 2,785,000 viewers who regularly drink decaffeinated coffee and charges $37,500 for the advertisement.

$$\text{Network Show A CPM} = \frac{\$45{,}500 \text{ x } 1000}{3{,}825{,}000} = \$11.90$$

$$\text{Network Show B CPM} = \frac{\$37.500 \text{ x } 1000}{2{,}785{,}000} = \$13.46$$

In this example, Network Show B charges a higher price per thousand viewers for the advertisement.

How is media timing decided?

Marketing managers have to decide between long-term and short-term media timing schedules. In long-term timing the marketer considers such factors as seasonally, competitive factors and product characteristics including repeat buying patterns. Short-term timing considers such factors as the availability of financial resources, the launching of a new product or service, and unique market situations requiring rapid response advertising.

How is advertising impact measured?

Because of its extremely expensive nature, it is essential to measure the impact of advertising to ascertain its effectiveness. Advertising effectiveness is measured using pre and post-testing methodologies.

What is advertising pre-testing?

Pre-testing is an extremely cost-effective method to measure the ability of advertising to get its message to the target market group prior to actually launching a full campaign. Direct consumer group evaluations are a pretesting method where consumers rate various types of advertisements. Other types are evaluation scales that measure consumer responses including their ability to recall information from advertisements. Laboratory tests measure physiological responses such as pulse, blood pressure, respiration, etc., as a result of using different types of advertisements.

What is advertising post-testing?

Post-testing is normally used to measure the changes in brand familiarity and preference. Advertisers hope to have a substantial increase in brand awareness as the result of advertising, and post-testing attempts to measure the extent to which the advertiser has been successful. In post-testing the consumer's readership is tested to determine what advertisements were actually read, while recall tests are performed to determine what respondents recall about advertisements they read or saw.

CHAPTER 4
BUSINESS LAW

Upon completion of this chapter, you will be able to

- Outline the elements of a legally binding contract.
- List some remedies available if there is a breach of contract.
- Define bankruptcy and demonstrate how it works.
- Discuss what consumer credit protections are available.
- Describe how rules under the U.C.C. differ from common law.
- Define a negotiable instrument.
- Explain the types of protections available with respect to ongoing employer/employee relationships.
- Outline employment labor laws.

Business executives need to be familiar with the legal concepts that impact their business operations and decisions. This chapter provides an overview of the areas that managers and owners are most likely to encounter in the business environment. The law discussed in this chapter consists of basic principles which are generally uniform throughout the states; however, for specific provisions or variations within a particular state, you must consult an attorney.

4.1 CONTRACT LAW

4.1.1 The Importance of Contracts

Contracts are the basis for our commercial activities. A contract is essentially a promise that is enforceable at law, thereby ensuring that society can rely on the promises of others in the conduct of its business.

What constitutes a legally binding contract?

The following are the essential elements of a contract:

- Agreement
- Consideration
- Contractual capacity
- Legality of purpose
- Genuine assent
- Compliance with law as to form

How do we know if there is agreement?

An agreement is manifested by an offer followed by an acceptance which “mirrors” the terms of the offer (prior to revocation). If the acceptance varies any terms of the offer, the acceptance becomes a counter-offer which in turn must be accepted by the original offeror.

EXAMPLE 4.1

X offers to sell Y 400 units of product at $100/unit. To be an acceptance, Y must agree to pay $100/unit. If Y agrees to purchase 400 units at $99/unit, Y has made a counteroffer and there is no agreement unless X accepts Y’s counter-offer, agreeing to sell at $99/unit.

Unilateral offers may be accepted by performing in accordance with the terms of the offer prior to its revocation.

What is consideration?

Consideration is the fair exchange of something of value to induce the other party to enter into a legally binding contract. Consideration must be bargained for; that is, it must be sought by the parties to the contract. To be legally sufficient to support an enforceable contract, consideration must be beneficial to the promisor (party making the promise) or detrimental to the promisee (party receiving the promise). If something is beneficial to one party, it is usually detrimental to the other.

EXAMPLE 4.2

X pays Y $400 for Y’s promise to deliver goods. The payment of $400 is to X’s detriment and to Y’s benefit.

What form can consideration take?

Consideration can be:

- money, property or rights
- undertaking to do an act or performance of an act that a party was not previously obligated to undertake
- forbearance: refraining from doing something you are legally entitled to do, such as starting legal action to collect a debt
- creating a legal relationship that did not previously exist, modifying or terminating a legal relationship

Agreeing to comply with a pre-existing duty is not legally sufficient consideration because doing what one is already obligated to do creates no legal benefit received or detriment given.

What if one side thinks the consideration is not fair?

The law requires that the consideration be “adequate,” or fair, in order to make a contract enforceable. Courts generally do not question the adequacy of consideration where there is no question of the capacity of the parties or unfair circumstances indicating that one of the parties was not free to bargain.

What if there are disputes as to consideration due?

Sometimes, a party agrees to pay—and the other party agrees to accept—something less than what one of them might have thought the proper consideration should be. This is especially so when the parties settle claims. The following are the most common forms of settling claims or resolving disputes:

- Accord and satisfaction: The parties make an agreement (the accord) where the amount necessary to satisfy an unliquidated debt, that is, one in which the amount due is disputed, is usually less than the amount claimed. There can be no accord and satisfaction if the claim is fixed (liquidated).
- Creditor’s composition agreement: A debtor agrees to forego the right to file a bankruptcy petition in return for the agreement of two or more creditors to accept part payment.
- Release: A release is given and obtained in good faith, is in writing, and there is consideration; the releasor cannot recover more than the amount set forth in the release.

Are there any types of agreements that *are* ***enforceable without consideration?***

The following types of contracts are enforceable even where no consideration is given:

- Promises to pay a debt that has been barred by the Statute of Limitations
- Promises to pay debts that have been legally discharged in bankruptcy
- Detrimental reliance or estoppel: Where one party has reasonably relied on the promise to his detriment, the promisor may not deny the contract

What is legal capacity?

Legal capacity is the ability in the eyes of the law for a party to enter into a binding contract. It is not the same as actual capacity.

Who has legal capacity?

The law generally assumes that the parties to a contract have the capacity to enter into a contract; this includes legal entities such as corporations, partnerships, estates, and trusts as well as individuals. However, certain individuals may have no legal capacity or limited legal capacity to enter into a binding contract. Many cases turn on the ability of the individual to understand the nature and subject matter of the contract and its consequences. This will determine whether the contract is void or voidable. The most common instances are cases of incompetent persons, intoxicated persons, and minors.

What is a void contract?

A void contract is one with no force and effect, and is not enforceable from the outset.

What is a voidable contract?

A voidable contract is one that is valid until voided, usually based upon the inability of one of the contracting parties to actually, or in the eyes of the law, understand the nature, substance, and consequences of a contract.

Generally, a party may be released from a voidable contract that has not been executed, if he is able to make restitution, by restoring or returning the money or goods. A voidable contract may also be ratified under certain circumstances, making the contract accepted and legally binding.

Who is considered incompetent and under *what* ***circumstances might a contract be binding on him?***

Generally, an individual who is declared incompetent by a Court and for whom a guardian has been appointed is considered without legal capacity to enter into a contract, and the contract is null and void.

If an individual is actually incompetent, but there has been no Court declaration of incompetence, the contract is voidable once it is shown that the individual lacked the ability to comprehend the nature, subject matter, and consequences of the contract at the time he entered into it.

If a contract is voidable, the contract can be ratified, by the appointed guardian of the incompetent, or by the incompetent himself, once he is no longer adjudged incompetent.

Who is considered an intoxicated person and under what circumstances might a contract be binding on him?

A contract entered into by an intoxicated person is generally voidable. The courts generally try to use objective criteria to determine whether the party was intoxicated instead of delving into the subjective question of the ability to comprehend.

What is the law relating to contracts entered into by minors?

Contracts entered into by minors, persons who have not reached legal maturity, are voidable, and can be disaffirmed any time during the party's minority or within a reasonable time after reaching adulthood, provided that the minor can make restitution. However, in the case of "necessaries" (food, clothing), even though the minor may disaffirm the contract, he is obligated to pay the value of the goods received. If parents or a guardian are responsible for providing for the minor, there are states in which the parent or guardian may be liable. This is to encourage parties not to turn away a person who is in need because of the ability to disaffirm the agreement if he is a minor.

What is meant by legality of purpose?

The subject matter or transaction contracted for must not violate any laws (such as the purchase and sale of contraband) or public policy (such as an agreement not to sell based on race, color, or creed).

EXAMPLE 4.3

A contract for the purchase and sale of contraband is void and not enforceable.

What factors establish genuineness of assent?

Genuine assent exists where there has been a true “meeting of the minds.” The decision to enter into the agreement cannot be based on mistakes, misrepresentation, undue influence, or duress.

What types of mistakes evidence the lack of genuine assent?

Generally a unilateral mistake as to a material fact will not release the mistaken party from the contract. However, if there is a mutual mistake of fact, then the contract may be rescinded.

Where there is a mistake as to value, there is no ground to rescind the contract. The parties are each deemed to assume the risk that the value will change. This, however, must be distinguished from a mistake in fact that affects the value.

EXAMPLE 4.4

X agrees to sell and Y agrees to pay one million dollars for a painting they both believe to be an authentic Picasso. If the painting is a counterfeit, then the issue is not one of value; it is one of material fact.

When will a misrepresentation result in lack of genuine assent?

Fraudulent misrepresentation, in which there is an intentional misrepresentation of material fact by one party, will allow the innocent party **to** rescind. If the innocent party has reasonably relied on the misrepresentation and has been injured, he may also elect to enforce the contract and sue for damages.

Can silence constitute misrepresentation?

Generally, silence is not misrepresentation because there is no legal duty to disclose unless there is a fiduciary relationship.

What if the misrepresentation is innocent or made negligently?

The majority of jurisdictions permit rescission of a contract where there is a misrepresentation of a material fact made innocently or negligently (failure to exercise reasonable care).

What is the difference between undue influence and duress?

Undue influence generally involves a fiduciary relationship in which there is trust placed in the other party to the extent that his own free will can be overcome (such as a client executing a contract on his attorney's advice which is not beneficial). Where a contract is entered into because of undue influence, the contract is voidable.

Duress requires coercion based upon threatening of the innocent party with a wrongful or illegal act such as blackmail or physical harm. Threatening to exercise a legal right to sue does not constitute duress because the act threatened is not wrongful. A contract entered into under legal duress is void.

4.1.2 Establishing the Contract

How is a contract formed?

An express contract exists if the terms are set forth either orally or in writing. The Statute of Frauds requires some types of contracts to be in writing in order to be enforceable. A contract can also be implied by the conduct of the parties.

What types of contracts must be in writing?

- Contracts creating or transferring an interest in land including property affixed to the land, e.g., contracts to sell land, or to mortgage
- Contracts which by their terms cannot be performed within one year, such as a contract calling for a two-year shipping contract
- Contracts involving the sale of goods in excess of $500
- Promises to pay the debt of another
- Promises in consideration of marriage

Are there exceptions to the Statute of Frauds?

Yes, even though the subject matter of a contract may fall within the Statute of Frauds, it may still be enforceable, although not in writing in the following situations:

- Goods made specifically to the buyer's order that cannot be easily resold
- Admissions in court that a contract was made
- Where performance is complete; problems arise where there is partial performance

4.1.3 Violation of a Contract

What remedies are available if there is a breach of contract?

A breach of contract occurs when a party fails to perform in accordance with the contract. The nonbreaching party is entitled to damages.

- *Compensatory damages.* Compensation for the amount the nonbreaching party would have made if there was no breach, e.g., the contract price

- *Consequential damages.* Reasonably foreseeable damages which flow directly from the breach (e.g., lost profits from resale of goods)
- *Punitive damages.* Rarely awarded in a breach of contract action; meant as a penalty or deterrent to wrongdoing
- *Nominal damages.* Where there is no significant loss or damage; may be awarded simply to indicate that the breaching party was wrong
- *Specific performance.* A breaching party may be required to specifically perform pursuant to the terms of the contract where money damages would not adequately compensate or substitute (e.g., a contract to sell a Picasso painting)

4.2 SECURED TRANSACTIONS

The area of secured transactions is important because it provides the means by which credit can be extended to businesses by securing the party extending credit of payment. Secured transactions are governed primarily by Article 9 of the Uniform Commercial Code.

4.2.1 Security Interest

What is a security interest?

Under the UCC, it is an interest "in personal property or fixtures which secure payment or performance of an obligation." The property which secures the interest is the collateral (tangible—physical property and non-tangible—non-physical property, i.e., trademarks, copyrights).

How is a security interest created?

- By taking possession of the collateral or an agreement in writing
- The creditor must give something of value to the debtor
- The debtor has to have rights in the collateral

How can a creditor protect against claims of other creditors to the same property?

Generally, a secured creditor takes priority over unsecured creditors and judgment creditors who have not begun to execute on the judgment. To establish priority, a creditor must "perfect" his security interest. The methods of perfection are:

- Filing of a financing statement signed by the debtor, stating the debtor and creditor's names and addresses and describing the collateral, with the secretary of state, a local official (e.g., county clerk) or both, depending on the type of collateral
- A "pledge" whereby the secured creditor takes possession of the collateral
- Automatic perfection that attaches when the secured interest is created—i.e., purchase money security interest where the creditor provided funds to the debtor to secure the collateral (mortgage) or retains or takes an interest in the collateral to secure the purchase price; assignment of accounts receivable to a collection agent under certain circumstances

What are the secured creditor's rights if the debtor defaults?

A creditor may repossess the collateral if he can do so without a "breach of the peace" (e.g., towing a vehicle without confrontation); otherwise, he must seek a court order. The creditor may retain the collateral in full satisfaction of the debt (upon notice to the debtor) or dispose of it in a reasonable commercial manner (provided notice of time, place and manner of sale is given). The debtor is entitled to notice except where the goods are fungible.

Where consumer goods are the collateral for a purchase money security interest, and the debtor has paid 60% of the cash price or loan, the creditor must dispose of the collateral within 90 days.

What rights, if any, does the debtor have?

The proceeds from the disposition is first applied to expenses incurred in the disposition, then to the balance of the debt. If there is still a surplus, subordinate secured parties who have served written notice before all proceeds are distributed will be paid, and any further surplus will be given to the debtor. If the proceeds are insufficient to pay the costs of disposition and balance due, the creditor may enter and collect a deficiency judgment.

At any time prior to the creditor disposing of the collateral or declaring the debt satisfied by his retention of the collateral, the debtor may "redeem" the collateral by paying the balance due and the reasonable costs of repossession.

4.3 BANKRUPTCY

4.3.1The Mechanics of Bankruptcy

What is bankruptcy and how does it work?

Bankruptcy is a procedure under federal and state law allowing an honest debtor to "discharge" (to be relieved) of certain debts so that a fresh start can be made. The federal bankruptcy law preempts (takes priority over) state bankruptcy laws. Upon filing the bankruptcy petition in the United States Bankruptcy Court, an automatic stay is imposed prohibiting the continuation of collection activities by creditors. The stay preserves the status quo until a court-appointed trustee can begin a procedure supervised by the court, or the debtor can devise a plan that attempts to pay as much as possible to the creditors. The rights of creditors often depend on whether they are secured or unsecured.

What debts can be discharged?

The bankruptcy law provides for the release of the debtor from most unpaid portions of debt balances. Some items such as alimony, child support and the taxes that are held by the debtor as a "trustee" (i.e., sales taxes and employment withholding taxes which the debtor has failed to pay to the relevant government entities) may not be discharged.

Among the debts that cannot be discharged are those that may involve fraud or wrongful conduct on the part of the debtor. The law will not allow the debtor to use the law for protection against claims arising from this conduct. Among them are:

- Claims out of money or property obtained by false pretenses
- Claims based on willful or malicious conduct against another
- Claims based on embezzlement, larceny, misappropriation or breach of a fiduciary duty

The debtor must be careful to list all creditors so that they will be notified. A creditor who is not listed on the schedules and receives no notice of the bankruptcy will not have his debt discharged.

How are the creditors paid?

This depends on the specific section of the bankruptcy law under which the debtor seeks protection.

What are the various provisions for protection under the bankruptcy law?

The provisions available to individuals and businesses under the bankruptcy law are:

- *Chapter* 7: Sometimes known as a "liquidation plan." The bankruptcy trustee under this section marshals and liquidates all of the nonexempt assets and pays off the debts. Certain property of the debtor is exempt from liquidation so that the debtor will not be destitute after liquidation. *Note:* The new 2005 bankruptcy legislation, however, would make it difficult to file for Chapter 7 if their income is greater than the median for their state. As a result, more individuals are expected to file for Chapter 13.
- *Chapter 11**:*** Known also as a "reorganization" or "debtor-in-possession plan." This section is available to a viable business provided that it is given enough breathing room to devise a plan for the payment of the business's debt. This may include renegotiating installments, interest rates, and sale of some assets. The debtor stays in possession of the business and continues its operations; the debts accrued prior to the filing of the bankruptcy petition is generally stayed. Post bankruptcy petition debts must generally be paid as accrued. If the debtor cannot come up with a plan to pay off the pre-petition debt in a manner acceptable to the creditors, and provide for the likelihood that the business will survive, the Court may order that the business be liquidated.
- *Chapter 13**:*** This section is available for individuals who have a regular source of income, including sole proprietors whose unsecured debts are less than $100,000 and secured debts do not exceed $350,000. The Court will allow the debtor to devise a plan for the full or partial payment of creditors over a three- to five-year period. The plan will normally be approved by the Court if the creditors will get at least what they would if the debtor had filed Chapter 7.

What typically happens in a Chapter 7 bankruptcy?

The first step is usually the filing of a petition by the debtor. The filing triggers the automatic stay against collections by creditors of pre-petition debts. The debtor normally files a list of its creditors and amounts owed, along with a schedule of the debtor's assets. However, the debtor has up to 10 days after the filing of the petition to submit these schedules, along with income and expense information.

The clerk of the Court will mail out notices of the bankruptcy filing to the creditors and the debtor, along with the notice of a Section 341 meeting of creditors. The debtor will generally contact and notify the creditors prior to the Court. Once on notice, a creditor may be held in contempt of Court if it makes an attempt to collect its debt.

An interim trustee is appointed until the Section 341 meeting, when the interim trustee will be confirmed or a new one voted on by the creditors. The debtor must be present at this meeting to answer (under oath) any questions from the creditors and the trustee about assets or recent transfers of assets, and material contained in the petition or schedules.

The creditors have 180 days after the first Section 341 meeting to file their “proof of claim” which states the amount of debt owed by the debtor. Failure to file a proof of claim may result in a waiver of any right to share in the proceeds from the liquidation of the debtor’s assets.

How does the treatment of a secured creditor differ from that of an unsecured creditor?

A secured creditor will normally be permitted to apply to the Court for a “lift” of the automatic stay so that it can proceed to liquidate the security (collateral) by, for example, foreclosing on the property securing a mortgage. Any deficiency not covered by the liquidation of the collateral is treated as unsecured debt. Unsecured creditors must generally wait to share in a portion of the proceeds from the liquidation of the debtor’s assets.

What if the debtor has transferred assets prior to the filing of his bankruptcy petition?

The bankruptcy laws seek to ensure that creditors are treated equally, and will not allow a debtor to favor a specific creditor. The trustee is vested with the power to void certain transfers. Among them are:

- Preferential transfers made within 90 days of the filing that are in excess of $600
- Preferential liens obtained within 90 days prior to filing based on a pre-petition debt. A lien by an insider (party related to the debtor) within one year can be voided by the trustee
- Fraudulent transfers made within a year prior to the filing of the petition where it can be shown that the transfer was to hinder, delay, hide assets or to defraud creditors, where the transfer was made without adequate consideration, or left the debtor with little or no assets to pay creditors.

The creditors and trustee will normally consult on the assets of the debtor. The creditors will assist the trustee by informing him of any known assets of the debtor, and may even go as far as taking action to uncover the assets.

What is the procedure in a Chapter 11 bankruptcy?

After a petition is filed, the Court will appoint one or more committees of unsecured creditors to examine records and financial structure, and to assist the debtor in formulating a plan. The committee is authorized to engage accountants, attorneys and other professionals. A trustee may also be appointed if there are assets to be sold, allegations of gross mismanagement in the operation, or if the court deems it in the best interest of the debtor's estate.

Within 120 days after the court enters an order granting relief, the debtor must submit a plan. The plan will contain the following:

- The classes of claims and interests of the creditors
- How each class is to be treated
- Provisions for the execution of the plan

If the debtor fails to file the plan or get creditor approval within 180 days after the court's order of relief, the creditors may submit a plan.

The plan is submitted ***to*** each class of creditors and requires the approval of two-thirds of the total claim of each class. The approval of the plan by a class is not necessary where the Court deems the plan not adverse to that class interests. In fact if one class approves, the Court may "cram-down" the plan and confirm it. Once a plan is confirmed by the Court, all creditors are bound.

How does a Chapter 13 bankruptcy work?

After the debtor files his petition, a trustee is appointed. The automatic stay, however, applies only to consumer debt and not to business debt (of a sole proprietor).

The debtor submits a plan in which he will pay all or part of the debt over not more than three years. The Court in its discretion may extend the period to up to five years. The essential elements of the plan are:

- Statement of the amount of the debtor's future income to be turned over to the trustee at regular intervals
- Provide for the full payment of priority claims in installments
- Provide that all members of each class of creditors be treated the same

The Court will confirm the plan if the secured creditors accept it, creditors' liens are retained, and if the amount creditors receive under the plan at least equals the secured portion of their claim or the debtor surrenders the collateral to the secured creditors.

Prior to the full execution of the plan, the Court may allow it to be modified at the request of the trustee, debtor or creditor.

What happens at the end of these procedures?

When the debtor is discharged in bankruptcy, all pre-petition judgments are voided and all rights to collect those debts are enjoined. In Chapter 7, a debtor maybe discharged before all of the distributions are made to the creditors from the liquidated assets. In Chapters 11 and 13, the discharge takes place when the plans are executed.

Can creditors force a debtor into bankruptcy?

Yes. The filing of a petition may be voluntary (by the debtor) or involuntary. Creditors will normally file an involuntary petition to force the debtor into bankruptcy in order to have its assets distributed.

What are the requirements for filing an involuntary petition?

If the debtor has 12 or more creditors, at least 3 having unsecured debt totaling $5,000 must join the petition. In the event that there are less than 12 creditors, then one creditor with a debt of $5,000 may file.

The Court will generally allow the involuntary petition to go forward over the debtor's objection if:

- The debtor is not paying debts when due
- 120 days prior to the filing, a receiver, assignee or a custodian has taken control of substantially all of the debtor's assets

How often can a debtor file for bankruptcy?

In Chapter 7, a debtor may be discharged only once every six years.

4.4 CONSUMER LAWS

There is a great deal of government regulation regarding the protection of consumers who can generally be described as individuals acquiring goods, services, credit or land for personal or family use. There are a number of federal statutes dealing with each of these areas as well as health and safety issues.

4.4.1 Consumer Relationships

What are some of the major laws concerning the purchase and sale of goods to consumers?

There are several major laws concerning advertising, labeling and packaging, sales tactics in general, and sales of specific items such as real estate.

What controls are there on advertising?

The Federal Trade Commission (FTC) Act prohibits unfair and deceptive advertising that may mislead or deceive a consumer when it goes beyond mere "puffing" (obvious exaggerations or generalizations) about a product.

The law prohibits the practice of "bait and switch" in which a less expensive item is advertised but is not made available to the consumer who is then encouraged to buy another more expensive substitute. This unlawful tactic may be evidenced by the refusal of the seller to make the advertised item available, understocking the item, encouraging employees to sell the more expensive item, or inability to deliver the goods advertised within a reasonable time.

In cases of established deceptive advertising, the Federal Trade Commission may issue a cease and desist order, or require affirmative steps on the part of the advertiser to use accurate advertising, advertise admitting the prior misleading ads, or seek penalties.

What labeling and packaging regulations govern consumer goods?

There are a number of labeling and packaging requirements to inform consumers about contents and safety concerns. The Fair Packaging and Labeling Act requires that labels state specifically the product, quantity, number of servings, and the names of the manufacturer and distributor. This law also gives the agency the right to impose further requirements with respect to claims made by a company, as to nutritional content, packing standards, and the like.

What provisions govern sales tactics to consumers?

Most of the regulations governing sales are supervised by the FTC. In the case of door-to-door sales where the selling entity is not located in the community and there is a greater likelihood of pressure tactics, the law gives consumers the right to rescind their decision to purchase for up to three days ("cooling off period"), and longer if the state law provides for a longer period to reconsider. The seller is required to inform the consumer of this right.

With respect to mail order or telephone sales, the regulation is primarily through the laws against mail and wire fraud.

What laws apply to the sale of land?

There are two major laws governing the sale of land. The Interstate Land Sales Full Disclosure Act requires that sellers or lessors of 100 or more lots of vacant land as part of a common promotion, file a "statement of record" and obtain approval of the Department of Housing and Urban Development before beginning sales or leases. This also applies where land is sold interstate, and imposes civil and criminal penalties for fraud or other violations of the statute. Under the law, the consumer has a right of rescission similar to the "cooling off period."

The other major statute is the Real Estate Settlement Procedures Act (RESPA). This law informs the consumer of the costs of settlement for the purchase of real estate when a lender is involved. Within three days of the application for a loan, the lender must send a copy of a HUD booklet that explains the settlement procedures and the costs involved (e.g., appraisal fees, title insurance, lender's charges, and attorneys' fees). The lender must within those three days provide an estimate of the costs, clearly identify the parties the lender will require the borrower to use, and provide a truth-in-lending statement when the loan is approved.

RESPA expressly prohibits the taking of kickbacks for referrals by the lender, or others in the transaction.

What consumer credit protections are available?

Consumer credit is an area in which the consumer is especially vulnerable to unfair practices. Therefore, the law requires certain disclosures and heavily regulates collection practices both on the federal and state levels.

The Truth-in-Lending Act (TILA) requires disclosure of credit or loan terms by sellers and lenders who arrange or extend credit in the ordinary course of their businesses. Individuals are covered under this act, but corporations are not.

The Fair Credit Billing Act is part of TILA which allows a consumer to refuse payment of a credit card charge where the purchased product is defective, providing that the consumer has tried to resolve the matter with the seller in good faith. The debtor also may challenge an error in billing by the credit card company. The company is required to resolve the matter within 90 days of the complaint without additional finance charges or cancellation of the account.

TILA provides that a consumer is responsible only to extent of $50 for unauthorized credit card purchases on a lost or stolen card prior to notification of the theft or loss.

The Equal Credit Opportunity Act prohibits the denial of credit because of a person's race, religion, color, sex, marital status or age.

Under the Fair Credit Reporting Act, consumers are given the right to correct any information on their credit reports. The law requires that the consumer be notified when a party extending credit will obtain credit reports and they must be given the opportunity to correct any information that might affect their ability to get credit, insurance or employment.

With respect to collection practices, the Fair Debt Collection Practices Act prohibits a collection agency from:

- Contacting the debtor at his place of employment where the employer objects
- Calling the debtor at inconvenient times
- Contacting the debtor directly where he is represented by an attorney
- Contacting third parties about the debt without court authorization (except spouse, parents or financial counselor)
- Harassing or intimidating the debtor
- Continuing to communicate with the debtor once the debtor has stated his refusal to pay the debt (except to notify debtor of further action being taken)

There are specific provisions regarding the collection of a debt by garnishing wages (based on state law) in which the creditor seizes or attaches part of the debtor's wages. State law dictates the percentage of the wages which may be garnished (usually not more than 25% of after-tax wages) and provides for notice and an opportunity for the debtor to object.

4.5 SALES

Contracts involving the sale of goods are governed by Article 2 of the Uniform Commercial Code (U.C.C.), although common law contracts apply. The rights of the parties in a sale under the U.C.C. is determined by whether either or both are merchants.

4.5.1 Selling Goods or Services

What is a sale?

The U.C.C. defines a sale as "the passing of title from the seller to the buyer for a price." The price may be paid in the form of money, other goods, services or real estate.

What are goods?

Goods are tangible and movable property (e.g., clothing, furniture, appliances). They do not include intangible property (e.g., stocks, bonds, copyrights, trademarks) or real estate and fixtures.

Who qualifies as a merchant?

Per the U.C.C. a merchant is:

- A person who deals in goods of the kind involved in the contract (e.g., retailer, wholesaler or manufacturer), or
- A person who by occupation holds himself out as having skill or knowledge peculiar to the practices or goods involved, or
- A person who employs a merchant, broker, agent or other intermediary who holds himself out as having the skill or knowledge peculiar to the goods.

When does title pass from the seller to the buyer?

Goods must exist and be identified as those covered by the contract before title can pass to the buyer. When title actually passes is determined either by the agreement of the parties or if not specified, then at the time and place that the seller makes delivery.

How do rules under the U.C.C. differ from common law?

There are numerous differences between the rules as set forth under the U.C.C. and common law. Among them are the areas of offer and acceptance, consideration, and the Statute of Frauds. This section will cover only some of the salient points. The reader is referred to U.C.C. Art. 2 for more thorough coverage.

How are offers dealt with under the U.C.C.?

The terms of an offer under common law must be definite and certain at the time of its acceptance. Under the U.C.C., an offer may be accepted and bind the offeror even where certain terms are left out, as long as a court can establish that the parties intended to enter into a contract and that there is a reasonably certain basis for filling in the missing terms. The following are common situations:

- Failure to state a price: The court may set a reasonable price at the time of delivery unless the failure to set the price is the fault of either party in which case the contract may be rescinded or the parties may set the price.
- Failure to state shipping arrangements: The shipper must exercise good faith and use a commercially reasonable manner of shipment.
- Failure to state quantity: A court will generally have no basis to grant relief, and the contract will generally not be viable.

How is an acceptance dealt with under the U.C.C.?

Unlike common law where an acceptance must be by the means specified, or if by an unauthorized method, must be received before the expiration of the offer, the U.C.C. permits any form of acceptance which is “reasonable under the circumstances” if no method of acceptance is specified.

Under common law, delivery of conforming goods to a carrier constitutes acceptance. Under the U.C.C., acceptance is effective if there is prompt shipment of the goods or a promise to ship (sent in a commercially reasonable manner).

Under common law, a unilateral offer may be accepted by performance without notification to the offeror of the acceptance. The U.C.C. provides that if notice of acceptance is not given within a reasonable time, the offeror may treat the offer as expired.

An acceptance must “mirror” the terms of the offer under common law, otherwise it is a counteroffer. The U.C.C. states that if there are different or additional terms in the acceptance, the acceptance is binding unless the acceptance is conditional on the offeror agreeing to the different or additional terms. However, whether the additional or different terms become part of the contract will depend on whether the parties are merchants. If one of the parties is not a merchant, the terms are merely proposals. If both parties are merchants, the terms are included if:

- They do not materially alter the terms (e.g., present hardships), or
- The offer had stated that no terms except those stated in the offer are acceptable, or
- The additional or different terms are objected to within a reasonable time.

How does the U.C.C. differ from common law on consideration?

No consideration is required under the U.C.C. for modification of a contract sought in good faith. However, the parties may provide that no modification may be permitted under the contract unless it is made in writing.

What does the U.C.C. say about the Statute of Frauds?

Sales of goods priced at $500 or more must be in writing to be enforceable, and must be signed by the party against whom enforcement is sought. A written confirmation between merchants is sufficient to enforce a contract against the merchant receiving the confirmation if it contains the terms, he fails to object within 10 days of receipt, and he knew or had reason to know of the contents of the confirmation. Under UCC 2-209, if the modification of a contract brings it within the statute of frauds, both the contract and the modification must meet the statute's requirements even though not originally required. For example, if the original price was $400 and the modification raises it to $500, the contract as modified falls within the statute of frauds and must be written.

Other exceptions to the Statute of Frauds are included in the section on Contract Law.

What other areas are covered under Article 2 of the U.C.C.?

Article 2 also deals with the issues of risk of loss, when an interest is created so that a party has an insurable interest in goods, the obligations of the seller and buyer with respect to delivery and payment, remedies in case of breach of contract and warranties related to the goods. The subject matter is too voluminous to cover here, so the reader is referred to Article 2 for more thorough coverage. The following are a few additional concepts which may be helpful to the reader.

What are the rules on risk of loss where there is no specific contract pro vision?

Risk of loss does not always pass with the title to the goods, but may vary depending on manner of shipment or delivery.

- Free on Board (F.O.B.): The goods are delivered at the seller’s expense to a specific location. Once the goods are put into the hands of the carrier or party at the designated location, risk of loss passes to the buyer.
- Free Along Side (EA.S.): The goods are transported by the seller at his expense and risk until the goods are delivered along side the ship which will carry the goods, at which time the risk of loss passes to the buyer.
- Cost, Insurance & Freight (C.I.F. or C. & F. for Cost and Freight): The risk of loss passes to the buyer once the goods are “put in possession of a carrier.”
- Delivery Ex-Ship: Risk of loss passes when the goods leave the carrier or are properly unloaded.

What warranties are made about goods under Article 2?

Under the U.C.C., there are several types of warranties made regarding goods sold; they include warranties of title, express warranties, and implied warranties.

What are the warranties of title?

- Warranty of good title: The seller represents that he has good title to the goods and can rightfully transfer the goods.
- Warranty of no liens: The seller represents that there are no encumbrances (e.g., claims, security interests) at the time of delivery that have not been disclosed to the buyer.
- Warranty of no infringements: This applies to a merchant who represents that the goods sold do not infringe upon any copyrights, trademarks, or patents of third parties. No warranty is made if the goods are manufactured according to specifications provided by the buyer.

A breach of these warranties will result in liability against the seller.

What are express warranties made under Article 2?

Representations about quality, condition, description or performance of goods are express warranties. These warranties are made by specific statements of facts, providing a sample or model, or on the basis of labeling information.

What are implied warranties made under Article 2?

Representations that the goods are “reasonably fit for the ordinary purposes for which such goods are used” are implied warranties. The goods must be of average, fair or medium grade, without objection within the trade or market for said types of goods, be properly and adequately labeled, conform to the representations made on the label or container, and represent an even quality and quantity among all such units.

4.6 NEGOTIABLE INSTRUMENTS

Negotiable instruments are part of commercial paper that allow transactions to be facilitated conveniently by acting as cash substitutes or credit instruments.

Commercial paper can be negotiable (governed by Article 3 of the U.C.C.) or nonnegotiable (governed by contract law on assignments). This section covers negotiable instruments.

4.6.1 Issues Surrounding Negotiable Instruments

What is a negotiable instrument?

A negotiable instrument is commercial paper that can be assigned or negotiated. It is defined as an instrument that is:

- Signed by the maker or drawer
- Contains an unconditional promise or order to pay, a sum certain in money, and no other promise
- Payable on demand or at a time certain
- Payable to order or bearer

Who are the maker and the drawer?

A maker issues a promissory note or a certificate of deposit promising to pay a certain sum to a specific payee or to the bearer of the instrument. To be liable, the maker’s signature must appear on the face of the instrument.

The drawer is the one who issues a draft or check, and who writes and signs the instrument.

What does “payable to order” mean?

The instrument specifies a payee (party to receive payment), or as the payee directs (by endorsing and delivering the instrument to another).

Who is a bearer?

A bearer is one in possession of an instrument that does not have a specific payee or one that has been endorsed by a specific payee “in blank” (payee’s signature only).

What are the most common negotiable instruments?

The most common instruments are:

- Draft: An order by one person (drawer) to another (drawee) to pay money to a third party (payee) or to the bearer

- Check: A special type of draft drawn on a bank and payable on demand
- Promissory note: A promise by one person (maker) to pay money to another (payee) or to the bearer
- Certificate of deposit: A note made by a bank acknowledging that funds were deposited and made payable to the holder of the note

What is negotiation?

Negotiation is the process in which an instrument is transferred to another (transferee) in such a way that the transferee becomes a "holder."

Order paper on which there is a named payee can be transferred by the payee through endorsement (writing "pay to the order of X" and signing it). Bearer paper on which the payee is "bearer" or which was endorsed by a specific payee without an "order" can be negotiated by delivering the instrument to another party.

What is the significance of being a holder?

Whether a party is a holder and how he became a holder determines his right to collect the payments represented by the instrument even though there may be certain defenses which would defeat the collection efforts of an ordinary "holder." There is a specific category of "holder" who is given special protection by the U.C.C., known as the "holder in due course" (HDC). An HDC is one who acquires an instrument for value (consideration), in good faith and without notice that the instrument is defective or overdue, or that a person may have a claim or defense against the collection under that instrument.

For the specific defenses good against an HDC, see Article 3 of the U.C.C.

4.7 AGENCY LAW

In the operation of a business, one is not able to do all tasks and must have the ability to delegate. The law of agency allows a principal (one who authorizes another) to appoint an agent to act on his behalf. A third party may deal with the agent as if he is dealing with the principal himself and hold the principal liable.

Whether a party is liable for the acts of another often turns on whether the party was acting as an agent or an independent contractor.

4.7.1 How Agencies Work

How is an agency created?

An agency is created when a principal authorizes another, called the agent, to act on his behalf, and the agent consents to do so.

What is the extent of the agent's authority?

The scope of the agent's authority is based on express authority (oral or written) given by the principal, or implied in law (e.g., based on the position of the agent, those acts reasonably necessary to carry Out the principal's instructions).

The Equal Dignity Rule requires that where the underlying subject matter of the agency is required to be in writing to be enforceable under the Statute of Frauds (e.g., authorizing an agent to transfer an interest in land), the agency agreement must also be in writing.

What are the duties of the agent?

The duties of an agent are to:

- Perform the authorized duties in a reasonable and diligent manner based on the skills and the knowledge he possesses (i.e., the agent can be liable for negligence).
- Notify the principal of all material developments. Since the principal will be bound by the agent's acts, he must be informed as to the points on which he may be liable.
- Act with loyalty by acting solely for the principal's benefit, and not in his own or another party's interest.
- Follow instructions which are lawful and clearly stated.
- Account to the principal for all money or property received or paid on behalf of the principal in carrying out his duties as agent. A constructive trust may be imposed on an agent who retains or takes benefits which belong to the principal.

What are the duties of the principal to the agent?

The principal owes certain duties to the agent provided the agent acts within the scope of the authority granted. The principal may not be obligated to fulfill these duties if the agent has violated one of the duties owed to the principal (breach of contract). Among the duties owed by the principal to the agent are to:

- Cooperate so as to allow the agent to carry out his duties.
- Compensate the agent for work done when the parties have agreed upon compensation.
- Reimburse the agent for authorized expenses or reasonable expenses necessary to carry out his duties as agent.
- Indemnify the agent against claims that arise out of his carrying out his duties as agent.
- Provide a safe work place or to warn the agent of possible dangers.

Distinguishing between an independent contractor and an agent

An independent contractor is one who is asked to perform a task for the "employer," but over whom the employer has no control as to how the contractor physically performs the task (for example, a plumber who is asked to repair a pipe). Among the parameters used to determine whether a party is an independent contractor are:

- The employer does not exercise control over work details.
- The contractor has an occupation, skills, or a business operation separate from the employer's.

- The work is not supervised by the employer or is executed based upon the skills and knowledge of the contractor.
- The contractor supplies the tools, facilities or means of accomplishing the work.
- The period of hire is short-term or based on the completion of a particular project.
- Method of payment is based on completion.
- The contractor has special skills (is a specialist). The greater the number of parameters, the more likely that the party will be deemed an independent contractor.

What is the significance of being an agent or an independent contractor?

An independent contractor is responsible for his own acts, and the employer will not be held liable in the event of negligence or intentional wrongdoing on the part of the independent contractor. The employer (principal), however, may be liable for the acts of its agents (including that of an employee) within the scope of his employment.

4.8 PROPERTY LAW

Property law deals with the legally protected rights and interests in anything that has an ascertainable value. Property is classified as personal property or real property.

4.8.1How Property Is Treated

What is personal property?

Personal property is either tangible or intangible. Tangible property has physical substance, such as furniture, equipment, and vehicles. Intangible property has no physical substance but represents rights and interest in property (e.g., stock certificates represent the percentage interest of a shareholder in a corporation and all of the rights flowing from ownership).

How is ownership of personal property acquired?

Ownership in personal property is acquired by:

- Purchase: Transfer of title from a seller to a buyer for a price (consideration).
- Possession: Taking possession of something that is not owned by anyone (e.g., capture of a wild animal not in violation of any laws).
- Production: Made through the labor of a party (e.g., painting or writing or manufacture of furniture from raw materials).
- Gift: Voluntary transfer of title to property by a donor (giver) exhibiting delivery, donative intent, and acceptance by the donee (recipient).
- Will or inheritance: Title to property transferred at the death of another by will or under state law governing estates of decedents.

Can title be acquired in personal property that has not been transferred?

Title can be acquired in some instances where the property is found as set forth below:

- Abandoned property: The owner has intentionally discarded the property (e.g., throwing a chair away). The finder who takes possession with an intent to claim ownership becomes the owner (rights are superior to the original owner).
- Lost property: The owner did not intentionally part with the property (e.g., unbeknownst to the owner, a book falls out of his bag). The true owner can reclaim the property from the finder. If the finder knows the true owner's identity, he must return the property.
- Mislaid property: The true owner intentionally places property in a place and without intent to relinquish title, leaves it. The finder has no rights in the property and is deemed to hold the property for the true owner.

Can there be a transfer of possession without transfer of title?

Transfer of possession of personal property without transfer of title is known as bailment.

Bailments are common in the business world and include such activities as leaving a car at a repair shop or a parking garage, or leaving clothes at the cleaners. A bailment is created when:

- The bailor owns or has possessory right to property (e.g., is the owner of a car).
- The bailor delivers possession of the property to the bailee (e.g., brings his car to the mechanic for repair).
- The bailee accepts the property knowing that he has a duty to return the property at the bailor's direction (e.g., the mechanic must return the car to the owner when the repairs are complete and the bill paid).

What if the property is damaged while in the bailee's possession?

The rights and liabilities of a bailee are determined by the nature of the bailment created:

- Bailment for the sole benefit of the bailor: The bailee receives no benefit (e.g., the bailor is permitted to store goods without charge). The bailee is liable only if he is grossly negligent and has a duty to return the goods at the bailor's direction.
- Bailment for the sole benefit of the bailee: The bailor receives no benefit (e.g., the bailor lends the bailee his book so the bailee can study). The bailee must exercise great care, and must compensate the bailor if the property is lost or damaged.
- Bailment for mutual benefit: Both the bailor and bailee receive benefits (e.g., the bailor's clothing is cleaned and the cleaner is paid for the task). The bailee must exercise reasonable care of the property and return the property as directed. The bailor has a duty to disclose known defects that cannot be easily discovered on inspection).

What is real property?

Real property is land or anything permanently attached to it (called fixtures), which includes crops and minerals. Once the crops are harvested or the minerals are mined, they become personal property. Personal property that becomes affixed to the land becomes a fixture (for example, an unattached sink is personal property, but once it is affixed to the structure on the land, it becomes real property).

What rights does a party have in real property?

Rights in real property can generally be described as possessory and non-possessory. Below is a list of some types of rights in real estate, beginning with the most complete.

- Fee simple absolute: The most comprehensive form of ownership in which the owner may use or transfer all, or part of his rights to the property. Upon the owner's death, the property will pass to his successors by will or by the inheritance laws of the state.
- Fee simple defeasible: Ownership is conditioned upon a state of facts and can be terminated if the facts change (for instance, X continues to own the property "so long as it is used for charity").
- Life estate: The party has ownership of the property for his life. Upon death, the property reverts (returns) to the original owner or passes to another if so directed by the owner.
- Easement: A non-possessory right in which a party has the right to use real property for a specific purpose (for example, the right to drive through part of a neighbor's property in a common driveway).
- Profit: Non-possessory right to enter upon the land of another to remove products of the land (for example, the right to harvest timber).
- License: Non-possessory right to enter another property for a specific purpose that can be revoked (as in the right to enter a theater for a show).
- Leasehold estates: The conveyance by the owner of property (landlord) to another (tenant) of a right to use and possess property for a specified period of time (lease/tenancy). The tenancy may be:

  — "For years": for the time expressly stated in the lease contract
  — Periodic: for a period based on the frequency of rent payments (rent paid on a monthly basis creates a month-to-month tenancy)
  — At will: for as long as both parties agree
  — At sufferance: continued possession of property without the landlord's consent

How are rights in real property acquired?

Except for leasehold estates, all of the rights listed above are generally acquired by deed. The rights under a leasehold estate are acquired by lease (that is, by a contract that may be written or oral, express or implied. See section on Contracts for Statute of Frauds).

Sometimes rights in real property may be acquired without delivery of a deed when a party openly and notoriously occupies or uses land for a period specified by law, without challenge by the real owner (called adverse possession).

What is a deed?

A deed is a document used to transfer possession and title to land. The deed must contain the following:

- Names of the grantor (transferor) and the grantee (transferee)
- Words evidencing intent to transfer
- Legally sufficient description of the land
- The signature of the grantor that has been witnessed and acknowledged before a notary or commissioner of deeds

The deed must be delivered to the grantee. For his protection, the grantee should make sure the deed is recorded.

4.9 INSURANCE

Insurance is a risk-management tool in which an insurance company (insurer) agrees to compensate another (the insured) for a loss or injury. Sometimes the compensation is paid to a third party (beneficiary). The agreement between the insurer and insured is the insurance policy. Insurance covers loss of life, injury, damage to property, liability to others, loss of profits and many other business interests.

4.9.1 Insurance Protection for the Business

Who is entitled to obtain insurance?

Insurance may be obtained by a party who has an insurable interest, which is an interest in the well being or life of a person (including himself) or a substantial interest in real or personal property. Without this insurable interest, the purchase of insurance amounts to wagering and may result in acts which violate public policy or encourage unsavory acts. For example, a spouse may buy insurance on the life of a spouse and is generally interested in the well-being of the spouse. However, one has no interest in the well-being of a stranger, and the desire to collect insurance proceeds may result in acts which endanger the life of the stranger.

To be compensated under a policy for loss or injury of another person, an insurable interest must exist at the time the policy was obtained. Compensation for the loss or damage of property will be paid only if the insured has an insurable interest at the time of the loss or damage.

What is "key person" insurance?

This is a policy covering the life of a person important to the enterprise or organization. The enterprise is usually the beneficiary because it expects to suffer a loss in the event of the death or injury of the key person whose contributions to the business are crucial.

When is the insurance effective?

The effective date of insurance is usually when the "binder" (a temporary contract) is issued, when the actual policy is issued, or when a certain time has passed indicating that the insurer has accepted the offer of the party desiring to obtain the insurance.

For an insurance contract to be valid and binding, there must be:

- An offer to purchase insurance
- An acceptance by the insurer
- Consideration paid for the policy
- Legal purpose for insurance
- Capacity on the part of the parties making the contract

What would allow an insurer to cancel a policy?

Some of the reasons an insurer may cancel a policy are:

- Insurance premiums are not paid after proper notice of intent to cancel is given to the insured.
- Discovery of fraud or misstatements by the insured on an application.
- Gross negligence on the part of the insured.
- The insured no longer has an insurable interest (he has sold the insured property).

In the case of life insurance, certain representations made by an applicant may become incontestable, and the policy may not be canceled after the requisite time has passed.

4.10 LABOR AND EMPLOYMENT LAWS

Businesses must be aware of federal and state laws governing their interactions with and responsibilities toward workers and the work place. Laws in the labor/employment field generally deal with protections against employee injuries, maintenance of income or benefits after employment termination, fair wages, hours and terms of employment, preventing discrimination, employee privacy, and enhancing job security.

4.10.1 Employee Relationships

What legislation governs safety and injury to workers?

Many states have enacted statutes mandating work place safety, and compensation for workers who are injured on the job (Workers’ Compensation). The federal government has enacted the Occupational Safety and Health Act of 1970.

What is workers’ compensation?

Workers’ compensation provides for benefits to be paid to an employee in “work related” injuries, which arise out of and during the course of employment. Adjudication of the claim and administration of payments are handled by the state. Funding is provided by requiring employers to buy private insurance, to self-insure (maintaining an adequate fund), or to contribute to a state insurance fund.

The worker does not have to prove negligence on the part of the employer, the award is based on “strict liability,” or liability regardless of fault. However, the workers’ compensation award is exclusive and the employee may not seek other tort recovery against the employer. The employee is not limited in seeking recovery against a third party.

What may an employee recover under workers’ compensation?

- hospital and medical expenses
- certain vocational rehabilitation
- disability benefits
- set recoveries for loss of body parts
- survivor/dependent death benefits

How does OSHA work?

The Act is administered by the Occupational Safety and Health Administration (OSHA), and mandates that employers provide workers with employment and work places free of conditions likely to cause death or serious physical injury.

OSHA may inspect work places and issue citations for violations. The employer is required to remedy the violation with “reasonable promptness,” not to exceed six months. Failure to comply may result in civil, criminal and injunctive relief.

Employers are required to maintain records and submit periodic reports of work-related deaths, serious injuries, and exposure to certain toxic and hazardous substances. Employees are protected against employer retaliation for reporting violations to OSHA.

What rights does an employee have after employment is terminated?

There are a number of state and federal provisions for workers after employment is terminated or after retirement.

What is unemployment compensation?

Where employment is terminated due to layoffs, plant closings and the like, a worker may be entitled to unemployment compensation administered on the federal and state levels. An employee who voluntarily terminates his employment, is terminated for cause (such as bad conduct), refuses to seek new employment or accept new employment may not be entitled to benefits. Funding is provided by subjecting employers to unemployment tax payments. The payments received by the employee are usually based on his salary during employment and are for a limited period.

What about health insurance coverage?

The continuation of health insurance coverage after employment termination is a major concern for employees and their families. Under the Consolidated Omnibus Budget Reconciliation Act (COBRA), employers with 20 or more employees must continue group insurance coverage for terminated employees and their families for 18 to 36 months. However, the employee must now pay the entire premium. Protection is effective when there is a "qualifying event," which makes an employee, spouse or dependent no longer eligible for coverage under the employer's group plan, such as termination of employment, reduction of work hours, death of an employee, Medicare coverage for the employee, divorce or separation from the covered employee, end of a child's dependent status, or bankruptcy of the employer.

COBRA sets up specific requirements for notice to the affected parties and guidelines as to time of payments and rates.

What entitlements are there for retired employees?

Retirees are generally entitled to Social Security which provides income benefits, certain insurance coverage (Medicare), and survivor and death benefits to those who have contributed under the Federal Insurance Contributions Act (RCA) during their working years. Under RCA, a mandatory percentage of an employee's income (up to a maximum set by the regulations) is paid into the system, and matched by the employer.

Under the Employee Retirement Security Act of 1974 (ERISA), employers who voluntarily set up retirement systems for their employees are subject to certain rules in order to protect the plan which the employees have come to rely on as part of their retirement, and which was perhaps an inducement to their employment to begin with.

Under ERISA, stringent requirements are set up to insure the solvency of the plan such as diversification of investments of the pension funds, imposing certain fiduciary duties (loyalty, no self-interest, disclosure) on the pension fund managers, setting time frames for employees' participation, and providing for the enforcement of rights by the participants in the plan.

What protections are there with respect to ongoing employer/employee relationships?

There are a number of provisions that govern the exercise of the rights of workers to organize and negotiate with their employers.

Among the major pieces of legislation are:

- *Norris-LaGuardia Act of 1932* which protects the rights of workers to peacefully strike, boycott and picket; and limits the interference of federal courts in the peaceful exercise of these rights.
- *National Labor Relations Act of 1935* (NLRA) created the National Labor Relations Board (NLRB) whose function is to curb unfair labor practices, such as interfering with the right of workers to organize or participate in a union, controlling or manipulating a labor organization, making contributions to the union, discrimination against union members or members who file charges with the NLRB, and refusing to bargain with the chosen representative of employees ("collective bargaining").
- *Labor Management Relations Act of 1947,* also called the Taft-Hartley Act, curbs certain powers of unions by making it illegal for the offer of employment to be conditioned upon union membership ("closed shop"). Although union membership may be required after the employee has worked for a prescribed period ("union shop"), state laws may make it illegal to do so. The Act permits the President of the United States to seek and obtain an injunction against a strike for 80 days where a strike may cause a national emergency.
- *Labor Management Reporting and Disclosure Act of 1959,* also known as the Landrum-

Griffin Act, sets forth the rights of union members to attend meetings, nominate and vote for officers, and regulates the business operations of unions by requiring reports and disclosure. It also provides for accountability by union officials for union funds and property, and makes it illegal for ex-convicts or communists to hold union office. The Act makes it illegal for unions to require that employers deal only with union-produced goods.

What expectations may employees have with respect to privacy?

In the age of concerns over societal problems such as crime and substance abuse in the work force which affect performance and subject the employer to liabilities (e.g., for accidental injuries), monitoring by employers and the expectations of privacy of the employee have become major issues.

There are laws that prohibit certain employers from requiring, suggesting, or causing employees to take lie-detector tests and drawing conclusions from such tests or from the refusal to take them. However, employers are often permitted to use lie-detector tests where a theft has occurred.

Drug testing is generally considered an invasion of privacy except in government positions where there is reason to suspect drug use, or there are health, safety, and welfare issues. Drug testing, however, may be permitted or prohibited by union negotiations or agreement.

If an employer is monitoring employees' telephone calls, he may be in violation of a federal or state statute unless the employee is informed that he is subject to monitoring. The law must often balance the employer's need for surveillance against the employee's right to privacy, and will often examine whether less intrusive methods were available to the employer.

What constitutes employment discrimination?

Title VII of the Civil Rights Act of 1964 bans discrimination by employers and unions based on race, color, national origin, religion, nationality, age or sex. The Equal Employment Opportunity Commission (EEOC) is charged with investigating and resolving complaints filed by employees. If the matter cannot be resolved, the EEOC may bring legal action, or if it does not, the employee may do so for reinstatement, back pay, retroactive promotions, and even an injunction to prevent future violations once discrimination is proved.

Among the actions that would constitute discrimination are:

Disparate treatment: An employer continued to seek candidates or filled a position with someone who was not a member of a protected class when the plaintiff/applicant was a qualified member of the protected class. If the employer can show a legitimate reason for not hiring the applicant (such as lack of experience), the employer will not be liable.

Disparate impact: An employer's practices result in a work force that does not reflect the composition of protected classes in the local labor market; proof of intent to discriminate is not needed.

Sexual harassment: Promotions, raises, or assignments are given out for sexual favors, or workers are subjected to sexually offensive conduct or comments in the work place. An employer may be liable for the acts of a worker where the employer knew or should have known of the conduct and failed to correct the action. The act of a supervisory employee may be imputed to the employer and result in liability.

Affirmative action: Preferential treatment is given to minorities and women to make up for past discriminatory actions. This area is presently under intense Court and legislative review, and has been heavily criticized for creating "reverse discrimination" in which otherwise qualified applicants who are not members of minorities or women are effectively excluded from obtaining the positions offered.

Pregnancy discrimination: Pregnant women must be treated in the same manner as others with similar ability to work. Equal treatment is required with respect to disability benefits and leave.

Age discrimination: Individuals who are 40 years or older are protected by the Age Discrimination in Employment Act of 1967 (ADEA) from discrimination on the basis of age where the employer has 20 or more employees and whose businesses have an impact on interstate commerce. Among the provisions is a prohibition of a mandatory retirement age for non-managerial workers.

Disabilities: Under the Americans with Disabilities Act of 1990 (ADA) an employer may not discriminate against "differently abled" persons whose physical or mental impairments (including blindness, AIDS, cancer, and learning disabilities) substantially limits "one or more major life activities," if a "reasonable accommodation" (without "undue hardship" as assessed by the size of the company, finances, and the like) could be made to enable the person to do his job (e.g., installing a ramp for wheelchairs).

What right does an employer have to discharge an employee?

Generally, employers can discharge an employee "at will," (i.e., without cause) as long as it is not based upon discrimination or unfair employment practices.

However, there may be protections under state or federal law if the employee is a "whistleblower," who has reported hazardous or illegal practices of the employer to the government or the media. In addition, an implied employment contract may exist where there are employee handbooks, personnel materials or representations made that the employee will be discharged only "for cause."

Examples: Unacceptable Reasons for Firing (thus constituting an Abusive Discharge)

1. A worker asks his superiors to obey securities or environmental laws
2. An employee is about to become entitled to a bonus.
3. A worker exercises a statutory right (e.g., files a workers' compensation claim).
4. An employee refuses to participate in antirust violations.
5. A worker seeks to have his/her employer comply with consumer protection laws.
6. An employee reports criminal activity by his/her employer (the whistleblower exception to at-will employment).

Thus, while many employment relationships remain at will, (with the employee always free to quit and the employer usually free to fire), there are now some expectations to the employer's freedom: broad statutory schemes and case-law requirements that employers obey the law and common notions of public policy. (Apart from this tort doctrine, at-will employment has also been restricted by finding implied contracts of good faith and fair dealing—e.g., implied or even express contracts based on statements in a company's Employee Handbook.)

4.10.2 Fair Labor Standards Act

The Fair Labor Standards Act (FLSA) was enacted in 1938. The FLSA:

1. Establishes a minimum wage. The minimum wage may be reduced by equivalent rewards in the form of food or lodging. Employers also may count as salary up to one-half of the tip share when it exceeds $20 in a month.
2. Mandates payment of "time and a half" (150% of the normal wage rate) for overtime work, with a regular work week being 40 hours. Travel time to and from work generally is not compensable time unless it is part of preliminary or postliminary activities (e.g., employer transportation of workers to or from the work site). Compensable activities include preparatory actions, such as readying tools and equipment at the beginning of the work day, and post-work actions, such as winding down operations and cleaning up the work site.
3. Exempts from coverage professionals, executives, and administrative or outside sales personnel, as well as workers at very small and/or seasonal businesses, such as agriculture and fishing. Many states, though, have their own state version of the FLSA that applies to some employees not protected under the federal laws.
4. Generally forbids any employment of children under 14 years old.
5. Prohibits employment of persons under age 18 in hazardous occupations (e.g., logging or mining), and further restricts the employment of 14-and 15-year olds to non-school hours in nonhazardous, nonmanufacturing jobs, such as retail stores, food service establishments, and gas stations.

The Secretary of Labor can sue for back wages, an equal amount as civil penalty, and injunctions. Private parties also can seek back pay, the civil penalty, and attorney's fees. Willful FLSA violations can lead to fines and imprisonment.

An Update on FLSA

The Fair Labor Standards Act (FLSA) is the main law affecting worker's pay, hours and the special rules that apply to younger workers. This Act has been in the headlines lately, facing its first major overhaul in more than 50 years.

According to the multitude of proposed changes unveiled in March 2003, some low-paid salaried workers would be guaranteed overtime pay, while others with greater responsibility may lose it. The laws of white-collar exemptions that keep employees labeled executives, professionals or administrators from receiving over-time also could be revamped. As a result, labor union leaders are furious.

The Labor Department is now sifting through some 78,000 comments received in the ensuing months, hoping to release a finalized version of the proposal in early 2004.

The Fair Labor Standards Act was introduced in 1938 as a part of President Franklin Roosevelt's New Deal that established the 40-hour workweek and divided employees into hourly and salaried workers. Unfortunately, the FLSA has the dubious distinction of being the law most often violated by employers. The key components of the law are listed below. You can also check out "Avoid Employee Lawsuits" by Barbara Kate Repa, (Nob Press, 1999).

Who is covered under the FLSA?
The FLSA applies to a company if it has more than $500,000 in sales or is engaged in interstate commerce.

What does FLSA have to say about wages?
The current federal minimum wage is $5.15, although some state laws have set it higher. Hourly workers must be paid at least this wage and all fixed-rate or commission salespeople must average at least this amount.

What does the FLSA have to say about hours?
Overtime could be considered the Employment Lawyers Relief Act because it generates such a high level of litigation. People who don't currently qualify for time-and-a-half pay include exempt employees, independent contractors, outside salespeople and white-collar workers.

Do employees need to be paid for every minute they work?
It depends on your definition of the word "work," For example, many workers have time when they are "on call," meaning they can be called into service on short notice. If the employees control this time, then they don't have to be paid. If the employer controls it, then the workers should be paid.

What else is covered under the FLSA?
Child labor is another key component. The law limits the hours that people under 18 years of age can work, and it limits the type of work they can do.

4.11 BUSINESS TORTS, WHITE-COLLAR CRIMES, AND ETHICS

Substantial civil and criminal liability can arise out of business transactions because of tortious conduct (intentional or unintentional wrongs), criminal acts, or violations of ethical duties.

4.11.1 Criminal Acts and Ethical Violations

What kinds of acts constitute business torts?

Business torts are civil wrongs committed within the business context. They include:

- *Interference with a contractual relationship:* Intentionally and knowingly inducing a party to breach a valid and enforceable contract and entering into a contract with the inducing party (Mr. X induces a buyer to breach a contract to purchase from another supplier, and to purchase from Mr. X instead).
- *Interference with a business relationship:* Soliciting customers who specifically already have a relationship or interest in a competitor's product. This exceeds normal, competitive attempts to attract customers.
- *Appropriation:* Unauthorized use of another's name or likeness for the user's benefit.
- *Defamation:* Making a false statement injuring another's reputation. In business, a

defamatory statement is one that injures a party in his credit, professional, business or trade reputation.

- *Disparagement of product:* Making false statements about the quality or nature of another's product.

What are some common white-collar crimes?

Crimes related to business are often referred to as white-collar crimes. Among them are:

- *Bribery:* Tendering something of value to a public official in return for a favor.
- *Money laundering:* Processing illegally earned money through a legitimate business enterprise. In an attempt to prevent this, the law imposes reporting requirements for currency (cash) in excess of $10,000.
- *Insider trading:* Violation of certain Securities and Exchange laws by "insiders" (officers, directors, or parties related to them). This involves making a profit from information not generally available to the public.
- *RICO:* The Racketeer-Influenced and Corrupt Organizations Act prevents participation by organized crime in legitimate enterprises by prohibiting using funds from racketeering to acquire, maintain, or participate in legitimate businesses.

Why is ethics important in business?

Ethics has to do with fairness, duty owed to others, and honesty in one's business. Ethical conduct generally results in better business in that it promotes good will. However, there are legal mandates in the area of ethics, the violation of which can lead to liability. This is especially so where there is a breach of a fiduciary duty in which there is a relationship based upon trust with another party (for example, a doctor, lawyer or accountant has a relationship based upon trust and confidence of their clients). In a fiduciary relationship, there is a duty to act in the interest of the beneficiary and not for one's own interest, and to perform in a diligent and careful manner in carrying out tasks on behalf of the beneficiary.

Almost all of us are either manager or employees, and we've all thought about or experienced situations in the workplace that raise legal issues. Issues like whether an employee could be legally fired, or whether certain behavior would be considered sexual harassment, or even whether a boss can legally read an employee's e-mail.

Laws regulating employment have undergone rapid and dramatic change from the early 20th century when employment law issues were regulated primarily by the Common Law of Contract and Torts. Employees had few legal rights, except those they were able to bargain for individually in contracts. The right of employees to form labor unions and collectively bargain for employment contracts was not even established until the 1930's.

Today, the employment relationship is increasingly covered by federal and state statutes and regulations, as well as tort concepts that have been developed to protect employees. For example, all states have workers' compensation statutes, and many states have minimum wage and maximum hour laws that mirror or approximate federal statutes (e.g., the Fair Labor

Standards Act) and cover employees not protected by federal laws. In addition, sometimes state laws cause analogous federal laws to be developed: e.g., following much sate legislation prohibiting the use of lie detector tests (polygraphs), Congress enacted the Employee Polygraph Protection Act (EPPA) prohibiting most private employers from using polygraph, but not prohibiting paper and pencil honesty questionnaires—civil penalties, injunctions, and private lawsuits are all authorized remedies for EPPA violations.

PART II
ECONOMICS AND MULTINATIONAL ISSUES

CHAPTER 5
ECONOMICS

Upon completion of this chapter, you will be able to

- Differentiate between microeconomics and macroeconomics.
- Keep track of the economy with economic and monetary indicators.
- Distinguish between easy money policy and tight money policy.
- Summarize some problems surrounding the federal deficit and the unfavorable balance of payments.
- List the pros and cons of a strong dollar (appreciation in foreign exchange rate) and a weak dollar (depreciation in foreign exchange rate).

MBAs must keep abreast of the economic trend and direction and attempt to see how they affect their businesses. Unfortunately, there are too many economic indicators and variables to be analyzed. Each has its own significance. In many cases, these variables could give mixed signals about the future of the economy.

5.1 MAJOR ECONOMIC AREAS: MICROECONOMICS AND MACROECONOMICS

What is microeconomics?

Microeconomics is the study of the individual units of the economy—individuals, households, companies, and industries. Microeconomics focuses on economic variables such as the prices and outputs of specific firms and industries, the expenditures of consumers or households, wage rates, competition, and markets. Questions that arise in the study of microeconomics include: What determines the price and output of individual goods and services? What factors determine supply and demand of a product? How do government policies such as price controls, subsidies, and excise taxes impact the price and output levels of individual markets?

What is macroeconomics?

Macroeconomics is the study of the whole national economy, or of its major sectors. It takes into account such areas as output, employment, national price, inflation, and exports. It looks at the forest instead of the trees. Questions to consider in macroeconomics include: What may be done to combat recession? What may be done to minimize inflationary effects? Why is the inflation rate so high? What are the important variables to national income and employment?

5.1.1 Economic indicators

Various government agencies and private firms tabulate the appropriate economic data and calculate various indices. Sources for these indicators are easily subscribed at an affordable price or can be found in your local public and college libraries. They include daily local newspapers and national newspapers such as *USA Today, Wall Street Journal, Investor's Business Daily, Los Angeles Times*, and *New York Times* and periodicals such as *Business Week*, *Forbes*, *Fortune*, *Money*, *Worth*, *Barron's*, *Smart Money*, *Nation's Business*, and *U.S. News and World Report*. Internet users can look at the White House Web site's Economic Statistics Briefing Room that provides easy access to current Federal economic indicators. The Briefing Room is at www.whitehouse.gov/fsbr/esbr.html.

How can you keep track of the economy with economic and monetary indicators?

To sort out the confusing mix of statistics that flow almost daily from the government and to help you keep track of what is going on in the economy, we examine various economic and monetary indicators. Economic and monetary indicators reflect where the economy seems to be headed and where it's been. Each month government agencies, including the Federal Reserve Board, and several economic institutions publish various indicators. These may be broken down into six broad categories:

5.2. MEASURES OF OVERALL ECONOMIC PERFORMANCE

These measures include gross domestic products, industrial production, personal income, housing starts, unemployment rate, and retail sales.

Gross Domestic Product (GDP)

Gross Domestic Product (GDP) measures the value of all goods and services produced by the economy within its boundaries and is the nation's broadest gauge of economic health. GDP is normally stated in annual terms, though data are compiled and released quarterly. The Department of Commerce compiles GDP. It is reported as a "real" figure, that is, economic growth minus the impact of inflation. The figure is tabulated on a quarterly basis, coming out in the month after a quarter has ended. It is then revised at least twice, with those revisions being reported once in each of the months following the original release.

GDP reports appear in most daily newspapers and online at services like America Online. Also visit the Federal Government Statistics Web site on the Internet at http://www.fedstats.gov/
GDP is often a measure of the state of the economy. For example, many economists speak of recession when there has been a decline in GDP for two consecutive quarters. The GDP in dollar and real terms is a useful economic indicator. An expected growth rate of 3 percent in real terms would be very attractive for long-term investment and would affect the stock market positively. Since inflation and price increases are detrimental to equity prices, a real growth of GDP without inflation is favorable and desirable.

The following diagram charts a series of events leading from a rising GDP to higher security prices.

GDP up ------> Corporate profits up -------> Dividends up -------> Security prices up.

A WORD OF CAUTION: GDP fails the timely release criterion for useful economic indicators. Unfortunately, there is no way of measuring whether we are in a recession or prosperity currently, based on the GDP measure. Only after the quarter is over can it be determined if there was growth or decline. Experts look upon other measures such as unemployment rate, industrial production, durable orders, corporate profits, retail sales, and housing activity to look for a sign of recession.

Note: GDP may be measured using an expenditures approach or an income approach. Under the income approach, GDP equals all income derived from the production of the year's output, with an adjustment for net income earned abroad (a positive or negative amount in theory). Two types of nonincome charges or allocations must be added to incomes (wages, rents, interest, and profits). Depreciation reflects the consumption of fixed capital during the period. It is the part of the year's receipts that must be allocated to replace the machinery, plant, etc., used up in the production of GDP. Indirect business taxes, such as sales, excise, and property taxes, are treated by businesses as a cost of production and form part of the total price of goods and services. Thus, they are not paid as wages, rents, interest, and profits. Accordingly, GDP may be measured as the sum of consumption of fixed capital, indirect business taxes, wages, rents, interest, and profits (proprietors' income, corporate taxes, dividends, and undistributed corporate profits), with an adjustment for net income earned abroad.

Industrial Production

This index shows changes in the output of U.S. plants, mines, and utilities. Detailed breakdowns of the index provide a reading on how individual industries are faring. The index is issued monthly by the Federal Reserve Board.

Personal Income

This shows the before-tax income received by individuals and unincorporated businesses such as wages and salaries, rents, and interest and dividends, and other payments such as unemployment and Social Security. They represent consumers' spending power. When personal income rises, it usually means that consumers will increase their purchases, which will in turn affect favorably the economic climate. Disposable income equals personal income minus personal taxes. It is the portion of income that can be spent as the consumer desires. *Note:* Consumer spending makes a major contribution (67%) to the nation's GDP. Personal income data are released monthly by the Commerce Department.

Housing Starts

Housing starts is an important economic indicator that offers an estimate of the number of dwelling units on which construction has begun. The figures are issued monthly by the Bureau of Census. When an economy is going to take a downturn, the housing sector (and companies within it) is the first to decline. This indicates the future strength of the housing sector of the economy. At the same time, it is closely related to interest rates and other basic economic factors.

Unemployment Rate, Initial Jobless Claims, and Help-Wanted Index

Unemployment is the nonavailability of jobs for people able and willing to work at the prevailing wage rate. It is an important measure of economic health, since full employment is generally construed as a desired goal. When the various economic indicators are mixed, many analysts look to the unemployment rate as being the most important. Weekly initial claims for unemployment benefits are another closely watched indicator along with the unemployment rate to judge the jobless situation in the economy. The help-wanted advertising index tracks employers' advertisements for job openings in the classified section of newspapers in 50 or so labor market areas. The index represents job vacancies resulting from turnover in exiting positions such as workers changing jobs or retiring and from the creation of new jobs. The help-wanted figures are seasonally adjusted.

The unemployment rate is the number of unemployed workers divided by total employed and unemployed who constitute the labor force. Both statistics are released by the Department of Labor. The help-wanted advertising figures are obtained from classified advertisement in newspapers in major labor markets.

They are frequently reported in daily newspapers, business dailies, business TV shows and through online services. Labor Department releases can be found at www.stats.bls.gov for computer users.

The effect of unemployment on the economy is summarized below.

UNEMPLOYMENT EFFECTS

1. *Less Tax Revenue*: Fewer jobs means less income tax to the state and nation, which means a bigger U.S government deficit and forces states to make cuts in programs to balance their budgets.

2. *Higher Government Costs*: When people lose jobs they often must turn to the government for benefits.

3. *Less Consumer Spending*: Without a job, individuals can't afford to buy cars, computers, houses, or vacations.

4. *Empty Stores*: Retailers and homebuilders can't absorb lower sales for long. Soon they have to lay off workers and, and in more serious shortfalls, file for bankruptcy.

5. *Manufacturing Cuts*: The companies that make consumer products or housing materials are forced to cut jobs, too, as sales of their goods fall.

6. *Real Estate Pain*: As companies fail and as individuals struggle, mortgages and other bank loans go unpaid. That causes real estate values to go down and pummels lenders.

A WORD OF CAUTION: No one economic indicator is able to point to the direction to which an economy is heading. It is common that many indicators give mixed signals regarding, for example, the possibility of a recession.

But perhaps the best example of economic theory being turned on its head is the low unemployment figures in 1998 not creating inflationary pressures. Investors, and shoppers, can thank increased productivity and cheap foreign goods for that change.

Retail Sales

Retail sales is the estimate of total sales at the retail level. It includes everything from groceries to durable goods. It is used as a measure of future economic conditions: A long slowdown in sales could spell cuts in production. Retail sales are a major concern because they represent about half of overall consumer spending. NOTE: Consumer spending accounts for about two-thirds of the nation's GNP. The amount of retail sales depends heavily on consumer confidence. The data are issued monthly by the Commerce Department.

5.3. PRICE INDICES

Price indices are designed to measure the rate of inflation. Various price indices are used to measure living costs, price level changes, and inflation. They are:

Consumer Price Index: The Consumer Price Index (CPI), the most well-known inflation gauge, is used as the cost-of-living index, which labor contracts and social security are tied to. The CPI measures the cost of buying a fixed bundle of goods (some 400 consumer goods and services), representative of the purchase of the typical working-class urban family. The fixed basket is divided into the following categories: food and beverages, housing, apparel, transportation, medical care, entertainment, and other. Generally referred to as a "cost-of-living index," it is published by the Bureau of Labor Statistics of the U.S. Department of Labor. The CPI is widely used for escalation clauses. The base year for the CPI index was 1982-84 at which time it was assigned 100.

Producer Price Index: Like the CPI, the PPI is a measure of the cost of a given basket of goods priced in wholesale markets, including raw materials, semifinished goods, and finished goods at the early stage of the distribution system. The PPI is published monthly by the Bureau of Labor Statistics of the Department of Commerce. The PPI signals changes in the general price level, or the CPI, some time before they actually materialize. (Since the PPI does not include services, caution should be exercised when the principal cause of inflation is service prices). For this reason, the PPI and especially some of its subindexes, such as the index of sensitive materials, serve as one of the leading indicators that are closely watched by policy makers. It is the one that signals changes in the general price level, or the CPI, some time before they actually materialize.

GDP Deflator: The index of inflation used to separate price changes in GDP calculations from real changes in economic activity. The Deflator is a weighted average of the price indexes used to deflate GDP so true economic growth can be separated from inflationary growth. Thus, it reflects price changes for goods and services bought by consumers, businesses, and governments. Because it covers a broader group of goods and services than the CPI and PPI, the GDP Deflator is a very widely used price index that is frequently used to measure inflation. The GDP deflator, unlike the CPI and PPI, is available only quarterly -- not monthly. It is published also by the U.S. Department of Commerce.

Employment Cost Index: The most comprehensive and refined measure of underlying trends in employee compensation as a cost of production. Measures the cost of labor and includes changes in wages and salaries and employer costs for employee benefits. ECI tracks wages and bonuses, sick and vacation pay plus benefits such as insurance, pension and Social Security and unemployment taxes from a survey of 18,300 occupations at 4,500 sample establishments in private industry and 4,200 occupations within about 800 state and local governments.

Price indices get major coverage appearing in daily newspapers and business dailies, on business TV programs like Bloomberg and *CNBC* and on Internet financial news services. Government Internet Web sites www.stats.bls.gov and www.census.gov/econ/www/ also provide this data.

Check to see whether the inflation rate has been rising -- a negative, or bearish, sign for stock and bond investors -- or falling, which is bullish.

Rising prices is public enemy No.1 for stocks and bonds. Inflation usually hurts stock prices since higher consumer prices lessen the value of future corporate earnings, which make shares of those companies less appealing to investors. By contrast, when prices rocket ahead, investors often flock to long-term inflation hedges such as real estate.

See how a chain of events might lead from lower rates of inflation to increased consumer spending and possibly, to an up stock market:

Inflation is down *so* real personal income is up *so* consumer confidence jumps *so* consumer spending is up *so* retail sales surge *as* housing starts rise *as* auto sales jump *so* the stock market goes up.

NOTE: Former Federal Reserve Chairman Alan Greenspan was a big fan of the ECI as a good measure to see if wage pressures are sparking inflation.

A Word of Caution: Of course, if inflation disappears, that's no good in the long run, too. Deflation, that is, sharp falling prices is a disastrous event. Think of Texas real estate in the 1980s or California's property woes of the early 1990s. A broader example is the Great depression of the 1930s.

When demand for goods is so weak that merchants have to brutally slash prices just to stay in business, that's deflation. It leads to layoffs and recession. That is bad for stock investors as profits shrink, but it is good for bond holders – as long as they own a bond backed by an issuer who can pay it back.

5.4 OTHER IMPORTANT ECONOMIC INDICATORS

5.4.1 INDICES OF LABOR MARKET CONDITIONS

Indicators covering labor market conditions are unemployment rate, average workweek of production workers, applications for unemployment compensation, and hourly wage rates.

5.4.2 MONEY AND CREDIT MARKET INDICATORS

Most widely reported in the media are money supply, consumer credit, the Dow Jones Industrial Average (DJIA), and the Treasury bill rate.

5.4.3 INDEX OF LEADING INDICATORS

This most widely publicized signal caller is made up of 11 data series. They are money supply, stock prices, vendor performance, average workweek, new orders, contracts, building permits, inventory change, consumer confidence, change in sensitive prices, and change in total liquid assets. They monitor certain business activities that can signal a change in the economy. A more detailed discussion will follow shortly.

5.4.4 MEASURES FOR MAJOR PRODUCT MARKETS

These measures are designed to be indicators for segments of the economy such as housing, retail sales, steel, and automobile. Examples are 10-day auto sales, advance retail sales, housing starts and construction permits.

NOTE: Indicators are only signals, telling the CEO something about the economic conditions in the country, a particular area, and industry and, over time, the trends that seem to be shaping up.

5.5 INDICES OF LEADING, COINCIDENT, AND LAGGING ECONOMIC NDICATORS

The Index of Leading Economic Indicators is the economic series of indicators that tend to predict future changes in economic activity; officially called *Composite Index of 11 Leading Indicators*. This index reveals the direction of the economy in the next six to nine months. NOTE: If the index is rising, even only slightly, the economy is chugging along and a setback is unlikely. If the indicator drops for three or more consecutive months, look for an economic slowdown and possibly a recession in the next year or so.

This series is the government's main barometer for forecasting business trends. Each of the series has shown a tendency to change before the economy makes a major turn--hence, the term "leading indicators." The index is designed to forecast economic activity six to nine months ahead (1982=100). The series is published monthly by the U.S. Department of Commerce, consisting of:

1. Average workweek of production workers in manufacturing

Employers find it a lot easier to increase the number of hours worked in a week than to hire more employees.

2. Initial claims for unemployment insurance

The number of people who sign up for unemployment benefits signals changes in present and future economic activity.

3. Change in consumer confidence

It is based on the University of Michigan's survey of consumer expectations. The index measures consumers' optimism regarding the present and future state of the economy and is based on an index of 100 in 1966. NOTE: Consumer spending buys two-thirds of GNP (all goods and services produced in the economy), so any sharp change could be an important factor in an overall turnaround.

4. Percent change in prices of sensitive crude materials

Rises in prices of such critical materials as steel usually mean factory demands are going up, which means factories plan to step up production.

5. Contracts and orders for plant and equipment

Heavier contracting and ordering usually lead economic upswings.

6. Vendor performance

Vendor performance represents the percentage of companies reporting slower deliveries. As the economy grows, firms have more trouble filling orders.

7. Stock prices

A rise in the common stock index indicates expected profits and lower interest rates. Stock market advances usually precede business upturns by three to eight months.

8. Money supply

A rising money supply means easy money that sparks brisk economic activity. This usually leads recoveries by as much as fourteen months.

9. New orders for manufacturers of consumer goods and materials

New orders mean more workers hired, more materials and supplies purchased and increased output. Gains in this series usually lead recoveries by as much as four months.

10. Residential building permits for private housing

Gains in building permits signal business upturns.

11. Factory backlogs of unfilled durable goods orders

Backlogs signify business upswings.

NOTE: These 11 components of the index are adjusted for inflation. Rarely do these components of the index all go in the same direction at once. Each factor is weighted. The composite figure is designed to tell only in which direction business will go. It is not intended to forecast the magnitude of future ups and downs.

What are coincident indicators?

Coincident indicators are the types of economic indicator series that tend to move up and down in line with the aggregate economy and therefore are measures of current economic activity. They are intended to gauge current economic conditions. Examples are Gross Domestic Product (GDP), employment, retail sales, and industrial production.

What are lagging indicators?

Lagging indicators are the ones that follow or trail behind aggregate economic activity. There are currently six lagging indicators published by the government, including unemployment rate, labor cost per unit, loans outstanding, average prime rate charged by banks, ratio of consumer installment credit outstanding to personal income, and ratio of manufacturing and trade inventories to sales.

5.6 OTHER IMPORTANT ECONOMIC INDICES

There are other important indices with which the CFO should be familiar. Some widely watched indices are given below.

What is the Dodge Index?

The Dodge Index (www.mag.fwdodge.com/graph.htm) prepared by the F.W. Dodge Division of McGraw-Hill is a monthly market index (1996=100) that assesses the building industry in terms of the value of new construction projects.

What is the Forbes Index?

Forbes publishes The Forbes Index. This index (1976=100) is a measure of U.S. economic activity composed of 8 equally weighted elements: total industrial production, new claims for unemployment, cost of services relative to all consumer prices, housing starts, retail sales, the level of new orders for durable goods compared with manufactures' inventories, personal income, and total consumer installment credit.

What is the Institute for Supply Management's Index?

The index, based on a survey of 375 companies in 17 industries, measures new orders, inventories, exports, and employment in the service sector. Services account for five-sixths of the $10-trillion U.S. economy and include industries such as entertainment, utilities, health care, farming, insurance, retail, restaurants and zoos.

What is the Purchasing Index?

The National Association of Purchasing Management releases its monthly Purchasing Index which tells about buying intentions of corporate purchasing agents.

What is the Help-Wanted Index?

The Conference Board of New York, an industry-sponsored, non-profit economic research institute, publishes two indices: The *Help-Wanted Advertising Index* and *Consumer Confidence Index*. The Help-Wanted Index measures the amount of help-wanted advertising in 51 newspapers and tells about the change in labor market conditions.

What are two major consumer confidence indices?

The Consumer Confidence Index measures consumer optimism and pessimism about general business conditions, jobs, and total family income.

The University of Michigan Survey Research Center is another research organization that compiles its own index called the Index of Consumer Sentiment. It measures consumers' personal financial circumstances and their outlook for the future. The survey is compiled through a telephone survey of 500 households. The index is used by the Commerce Department in its monthly Index of Leading Economic Indicators and regularly charted in the Department's Business Conditions Digest.

What is the Optimism Index?

The National Federation of Independent Business, a Washington-based advocacy group, publishes the Optimism Index which is based on small-business owners' expectations for the economy. The benchmark year is 1978.

What is the Job Opportunity Index (JOI)? (http://flipdog.monster.com/joi/)

The JOI measures the supply of job openings relative to the size of the labor force for national, regional, state and municipal markets. JOI reports compare this data with the most recent non-adjusted unemployment data released by the Bureau of Labor Statistics. This combination is useful for calculating the demand for labor within a particular market or comparing demand across multiple markets. The JOI is defined as the number of Internet job postings (JO) in a region divided by the region's labor force (LF), weighted by an arbitrary index scalar(ß).

A more complete description of each of these variables is provided below.

$$JOI_{NEW} = \frac{JO_{AVE} \cdot \beta}{LF}$$

The number of job opportunities in any given area is derived from FlipDog.com's vast directory of job listings found on the existing employers' Web sites. The FlipDog.com database is assembled using advanced information extraction tools and currently includes more than 550,000 jobs from approximately 55,000 employers.

The number of job openings for each region is calculated as the average of four, weekly data readings. This method is employed to obtain a more accurate, less volatile count of job openings for any given month.

$$JO_{AVE} = \frac{1}{4}\sum_{i=1}^{4} JO_i$$

The JOI includes labor force data provided by the Bureau of Labor Statistics (BLS). The JOI is released approximately three weeks prior to final BLS data for the same month. For this reason, the JOI is calculated using labor force data from the previous month. For additional information about how the government calculates labor force, visit the BLS Web site at: www.bls.gov/cps_faq.htm

5.7 MONETARY INDICATORS AND HOW THEY IMPACT THE ECONOIMY

What are monetary indices?

Monetary indicators apply to Federal Reserve actions and the demand for credit. These are of particular importance to financial officers because they greatly impact the firms in terms of the costs of debt and equity financing and security prices. They involve consideration of long-term interest rates, which are important since bond yields compete with stock yields. Monetary and credit indicators are often the first signs of market direction. If monetary indicators move favorable, this is an indication that a decline in stock prices may be over. A stock market top may be ready for a contraction if the Federal Reserve tightens credit, making consumer buying and corporate expansion more costly and difficult.

Monetary indicators that are regularly watched are:

.Dow Jones twenty-bond index
.Dow Jones utility average
.NYSE utility average
.T-Bill yield

Bonds and utilities are yield instruments and therefore money-sensitive. They are impacted by changing interest rates. If the above monetary indicators are active and pointing higher, it is a sign the stock market will start to take off. In other words, an upward movement in these indicators take place in advance of a stock market increase.

The following is a brief description of monetary and economic variables that should be carefully watched by MBAs.

What is the money supply?

This is the level of funds available at a given time for conducting transactions in an economy, as reported by the Federal Reserve Board. The Federal Reserve System can influence money supply through its monetary policy measures. There are several definitions of the money supply: M1 (which is currency in circulation, demand deposits, traveler's checks, and those in interest-bearing NOW accounts), M2 (the most widely followed measure, it equals M1 plus savings deposits, money market deposit accounts, and money market funds), and M3 (which is M2 plus large CDs). Moderate growth is thought to have a positive impact on the economy. A rapid growth is viewed as inflationary; in contrast, a sharp drop in the money supply is considered recessionary. The Fed controls the money supply primarily in three ways: (1) by raising or lowering the reserve requirement; (2) by setting the discount rate for loans to commercial banks; and (3) by purchasing and selling the government securities, mainly three month bills and notes issued by the U.S. Treasury.

What are interest rates?

Interest rates represent the costs to borrow money and come in many forms. There are long-term and short-term interest rates, depending on the length of the loan; there are interest rates on super-safe securities (such as U.S. T-bills) and there are interest rates on "junk bonds" of financially troubled companies; there are nominal (coupon) interest rates, real (inflation-adjusted) or risk adjusted interest rates, and effective interest rates (or yields). Interest rates depend upon the maturity of the security. The longer the period, the higher the interest rate because of the greater uncertainty.

Some of the more important interest rates are briefly explained below.

Prime rate -- the rate banks charge their best customers for short-term loans. This is a bellwether rate in that it is construed as a sign of rising or falling loan demand and economic activity. When the prime rate is climbing, it means companies are borrowing heavily and the economy is still on an upward swing.

Federal funds rate -- the rate on short-term loans among commercial banks for overnight use. The Fed influences this rate by open market operations and by changing the bank's required reserve.

Discount rate -- the charge on loans to depository institutions by the Federal Reserve Board. A change in the discount rate is considered a major economic event and is expected to have an impact on security prices, especially bonds. A change in the prime rate usually follows the change in the discount rate.

90-day Treasury bills -- This yield represents the direction of short-term rates, a closely watched indicator. When yields on 90-day bills rise sharply, this may signal a resurgence of inflation. Subsequently, the economy could slow down.

10-Year Treasury Bonds The most widely watched interest rate in the world, the security known as the "T-bond" is seen as the daily barometer of how the bond market is performing. The 10-year Treasury bond is a fixed-rate direct obligation of the U.S. government. There are no call provisions on Treasury bonds. Traders watch the price of the U.S. Treasury's most recently issued 10-year bond, often called the "bellwether." The price is decided by a series of dealers who own the exclusive right to make markets in the bonds in U.S. markets. (The bond trades around the clock in foreign markets.) Bond yields are derived from the current trading price and its fixed coupon rate. Because of its long-term nature, the T-bond is extra sensitive to inflation that could ravage the buying power of its fixed-rate payouts. Thus, the T-bond market also is watched as an indicator of where inflation may be headed. Also, T-bond rates somewhat impact fixed-rate mortgages. Still, the T-bond yield is also seen as a barometer for the housing industry, a key leading indicator for the economy.

Interest rates are controlled by the Fed's monetary policy. The Fed's monetary policy tools involve: (1) changes in the required reserve ratio; (2) changes in the discount rate; and (3) open market operations--that is, purchase and sale of government securities. Cuts in the discount rate are aimed at stimulating the economy--a positive development for stocks. The effect of cutting the discount rate on the economy is presented next.

5.8 WHAT ARE THE EFFECTS OF LOWERING THE DISCOUNT RATE?

- **The players:** The Federal Reserve is nation's central bank. It regulates the flow of money through the economy.

- **The action:** Discount rate is what the Federal Reserve charges on short-terms loans to member banks. When the Fed cuts the discount rate, it means banks can get cash cheaper and thus charge less on loans.

- **The first effect:** Within a few days, banks are likely to start passing on the discounts by cutting their prime rate, which is what banks charge on loans to their best corporate customers.

- **Impact:** Businesses are more likely to borrow. Second, adjustable consumer loans are tied to the prime, such as credit card rates. These become cheaper, stimulating spending.

- **The second effect:** Within a few weeks, rates on mortgage, auto and construction loans drop.

- **The third effect:** The lower rates go, the more investors move their cash to stocks, creating new wealth.

- **The goal:** To kick start the economy. If lower interest rates cause businesses to start growing again, laid-off workers get jobs, retailers start selling and the economy starts to roll again.

The following diagram summarizes the impact of open market operations on the money supply, level of interest rates, and loan demand.

Easy Money Policy:

Fed buys securities ---> Bank reserve up ---> Bank lending up ---> Money supply up -----> Interest rates down ----> Loan demand up

Tight Money Policy:

Fed sells securities ---> Bank reserve down ---> Bank lending down ---> Money supply down -----> Interest rates up ----> Loan demand down

5.8.1 Inflation

What is inflation?

Inflation is the general rise in prices of consumer goods and services. The federal government measures inflation by comparing prices today--measured in terms of the CPI, PPI, and/or GNP Deflator--to a two-year period, 1982-84. As prices increase, lenders and investors will demand greater returns to compensate for the decline in purchasing power. Companies may reduce borrowing because of higher interest rates. This leads to less capital expenditures for property, plant and equipment. As a result, output may decrease resulting in employee layoffs. During inflation, selling prices may increase to keep pace with rising price levels but the company's sales in real dollars remain the same. You still lose out since your company's tax liability will increase.

Most likely, the Federal Reserve will tighten the money supply and raise interest rates (such as discount rate or federal fund rate). It would be too expensive to borrow money. Therefore, there is less demand for products, which in turn pushes prices down. The following diagram shows how inflation affects the prices of products.

Inflation-->Fed raises discount rate --> Interest rates up ----> Demand for money down ---> Demand for products down ---> Prices down

Interest rates are no more than a reflection of what expectations are for inflation. Inflation therefore means higher interest rates and thus higher borrowing cost to the company.

5.8.2 Productivity and Unit Labor Costs

The data on productivity and unit labor costs is released by the Labor Department. Increased productivity, or getting more worker output per hour on the job, is considered vital to increasing the nation's standard of living without inflation. Meanwhile, unit labor costs is a key gauge of future price inflation along with the CPI, PPI, and GNP Deflator.

5.8.3 Recession

What is recession?

Recession means a sinking economy. Unfortunately, there is no consensus definition and measure of recession. Three or more straight monthly drops of the Index of Leading Economic Indicators are generally considered a sign of recession. Or, two consecutive quarterly drops of GNP signals recession. Or, consecutive monthly drops of durable goods orders which most likely results in less production and increasing layoffs in the factory sector. Recession tends to dampen the spirits of consumers and thus depress prices of products and services.

To kick start the economy the Fed will loosen the money supply and lower interest rates such as the discount rate. When the Fed cuts the discount rate, it means banks can get cash cheaper and thus charge less on loans. NOTE: The size of the cut is a critical consideration. For example, a half-point discount rate cut itself is not strong enough to get the economy moving fast. External

political conditions (such as the crisis in the Middle East), the federal deficit and problems in the bank and S & L industry would make companies hesitant to start expanding again and also make consumers nervous for a longer time than the Fed would anticipate.
Note: A government might wish to use fiscal policy to stimulate the economy from a recession. Fiscal policy is the overall program for directing government spending and taxation for the purpose of keeping the actual GDP close to the potential full employment GDP, but without overreaching that potential and causing inflation; simultaneously, fiscal policy endeavors to avoid excessive unemployment and idle production capability and to create conditions whereby the economy can achieve a growth rate that is neither too rapid nor too slow.

5.8.4 Federal Deficit

What is the federal deficit?

The national debt is the sum of all money the government has borrowed to finance budget deficits. The only way for a government to reduce its debt is to run a budget surplus, to obtain more money than it spends. The surplus must then be used to pay off maturing debt (bonds, notes, etc.) rather than replacing them (rolling them over) with more debt. This federal deficit affects the economy as a whole.

Economists generally believe that larger federal deficits result in higher interest rates for two reasons. First, increased budget deficits raise the demand for the loanable funds resulting in higher interest rates. Second, larger deficits are apt to lead to higher inflation. This may be true either because the sources of the increased deficits—larger government spending and/or lower taxes—result in greater pressure for loan demand and hence inflation, or because the deficit will induce the Fed to expand the money supply to help finance the deficit, thus causing inflation. In any case, if the increased deficit elevate the public's expectation of inflation, it will tend to raise the level of interest rates. Furthermore, the financing of the deficit by issuance of government debt securities will compete for funds to be raised by companies and will deter economic expansion. It also forces companies to borrow at higher interest rates. This is called the "crowding-out effect."

5.8.5 The U.S. Balance of Payments

What is the balance of payments?

A balance of payments is a systematic record of a country's receipts from, or payments to, other countries. The "balance of trade" usually refers to goods within the goods and services category. It also known as merchandise or "visible" trade because it consists of tangibles like foodstuffs, manufactured goods, and raw materials. "Services," the other part of the category, is known as "invisible" trade and consists of intangibles such as interest or dividends, technology transfers, services (like insurance, transportation, financial), and so forth.

When the net result of both the current account and the capital account yields more credits than debits, the country is said to have a surplus in its balance of payments. When there are more debits than credits, the country has a deficit in the balance of payments. *Note*: When deficits persist, this generally depresses the value of the dollar and can boost inflation. The reason is a weak dollar makes foreign goods relatively expensive, often allowing U.S. makers of similar products to raise prices as well. It is necessary for a CFO to know the condition of a country's balance of payments, since its resulting inflation and value of the dollar will affect the company's product demand.

In a freely floating exchange rate system, exchange rates automatically adjust so as to eliminate balance of payments surpluses or deficits. For example, if U.S. demand for country X's currency increases, the result is a U.S. deficit at the existing exchange rate because demand now exceeds the supply of X's currency at that rate. However, the system of floating exchange rates allows the change in the relative strength of the currencies to be reflected in their exchange rate. The appreciation of X's currency against the U.S. dollar, that is, the increase in the amount of U.S. dollars exchangeable for a unit of X's, currency, makes U.S. products cheaper to buyers in country X. Furthermore, X's products are more expensive to U.S. buyers. Consequently, U.S. imports will fall, U.S. exports will rise, and the balance of payments deficit will decrease.

The United States is running a trade deficit. The deficit is primarily financed by borrowing, which increases the demand for funds, causing higher interest rates. Foreigners are willing to finance the rest of the U.S. debt only if interest rates are competitive. Thus, the Federal Reserve is hindered from combating a recession by lowering the interest rate because, if interest rates are lowered, foreigners will sell U.S. bonds, decreasing their prices and causing higher interest rates.

5.8.6 The Value of the Dollar

What is better, a strong dollar (appreciation in foreign exchange rate) or a weak dollar (depreciation in foreign exchange rate)?

The answer is, unfortunately, it depends. This is a matter of concern particularly to the CEOs and CFOs of multinational corporations. A strong dollar makes Americans' cash go further overseas and reduces import prices -- generally good for U.S. consumers and for foreign manufacturers. If the dollar is overvalued, U.S. products are harder to sell abroad and at home, where they compete with low-cost imports.

A weak dollar can restore competitiveness to American products by making foreign goods comparatively more expensive. But too weak a dollar can spawn inflation, first through higher import prices and then through spiraling prices for all goods. Even worse, a falling dollar can drive foreign investors away from U.S. securities, which lose value along with the dollar. A strong dollar can be induced by interest rates. Relatively higher domestic interest rates than abroad will attract money dollar-denominated investments which will raise the value of the dollar. Figure 5.1 summarizes the impacts of changes in foreign exchange rates on the company's products and services.

FIGURE 5.1
THE IMPACTS OF CHANGES IN FOREIGN EXCHANGE RATES

	Weak Currency (Depreciation /devaluation)	*Strong Currency (Appreciation /revaluation)*
Imports	More expensive	Cheaper

Exports	Cheaper	More expensive
Payables	More expensive	Cheaper
Receivables	Cheaper	More expensive
Inflation	Fuel inflation by making imports more costly	Low inflation
Foreign investment	Discourage foreign investment. Lower return on investments by international investors.	High interest rates could attract foreign investors.
The effect	Raising interests could slow down the economy.	Reduced exports could trigger a trade deficit.

CHAPTER 6
MULTINATIONAL BUSINESS AND FINANCE

Upon completion of this chapter, you will be able to

- What is unique about the financial management of a multinational corporation (MNC)?
- List popular financial goals of MNCs.
- Determine what types of foreign operations are right for you.
- Outline three different types of foreign exchange exposure.
- Identify some ways to reduce exchange risk.
- Analyze foreign investments?
- Explain the methods for dealing with political risk?
- Identify international sources of financing.

Many companies are multinational corporations (MNCs) that have significant foreign operations deriving a high percentage of their sales overseas. The managers of MNCs require an understanding of the complexities of international finance to make sound financial and investment decisions. International business and finance involves consideration of managing working capital, financing the business, control of foreign exchange and political risks, and foreign direct investments. Most importantly, the financial manager has to consider the value of the U.S. dollar relative to the value of the currency of the foreign country in which business activities are being conducted. Currency exchange rates may materially affect receivables and payables, and imports and exports of the U.S. company in its multinational operations. The effect is more pronounced with increasing activities abroad.

6.1 FOREIGN OPERATIONS

What is unique about the financial management of a multinational corporation (MNC)?

- *Multiple-currency problem*. Sales revenues may be collected in one currency, assets denominated in another, and profits measured in a third.
- *Various legal, institutional, and economic constraints*. There are variations in such things as tax laws, labor practices, balance of payment policies, and government controls with respect to the types and sizes of investments, types and amount of capital raised, and repatriation of profits.
- *Internal control problem*. When the parent office of a MNC and its affiliates are widely located, internal organizational difficulties arise.

What are popular financial goals of MNCs?

The financial goals of MNCs are identified in the following order of importance:

1. Maximize growth in corporate earnings, whether total earnings, earnings before interest and taxes (EBIT), or earnings per share (EPS).
2. Maximize return on equity.
3. Guarantee that funds are always available when needed.

What types of foreign operations are right for you?

When strong competition exists in the U.S., a company may look to enter or expand its foreign base. However, if a company is unsuccessful in the domestic market, it is likely to have problems overseas as well. Further, the manager must be cognizant of local customs and risks in the international markets.

A large, well-established company with much international experience may eventually have wholly-owned subsidiaries. However, a small company with limited foreign experience operating in "risky areas" may be restricted to export and import activity.

If the company's sales force has minimal experience in export sales, it is advisable to use foreign brokers when specialized knowledge of foreign markets is needed. When sufficient volume exists, the company may establish a foreign branch sales office including sales people and technical service staff. As the operation matures, production facilities may be located in the foreign market. However, some foreign countries require licensing before foreign sales and production can take place. In this case, a foreign licensee sells and produces the product. A problem with this is that confidential information and knowledge are passed on to the licensees who can then become a competitor at the expiration of the agreement.

A joint venture with a foreign company is another way to proceed internationally and share the risk. Some foreign governments require this to be the path to follow to operate in their countries. The foreign company may have local goodwill to assure success. A drawback is less control over activities and a conflict of interest.

In evaluating the impact that foreign operations have on the entity's financial health, the controller should consider the extent of intercountry transactions, foreign restrictions and laws, tax structure of the foreign country, and the economic and political stability of the country. If a subsidiary is operating in a high-tax country with a double-tax agreement, dividend payments are not subject to further U.S. taxes. One way to transfer income from high tax areas to low tax areas is to levy royalties or management fees on the subsidiaries.

What are some popular international strategies?

Depending on its situation, its mission, and its objectives, a multinational corporation can select from several strategic options the most appropriate methods to use in entering a foreign market or establishing manufacturing facilities in another country. Such strategies can be combined with the corporate, business, and functional strategies. The following are some of the more popular international strategies.

- **Exporting**: Simply shipping goods produced in the company's home country to other countries for marketing is a good way to minimize risk and to experiment with a specific product. The company could choose to handle all critical functions itself, or it could contract these functions to an export management company. Exporting is becoming increasingly popular for small businesses because of fax machines, 800 numbers, emails, and overnight air express services, which reduce the once formidable costs of going international.

- **Licensing**: Under a licensing agreement, the licensing firm grants rights to another firm in the host country to produce and/or sell a product. The licensee pays compensation to the licensing firm in return for technical expertise. This is an especially useful strategy if the trademark or brand name is well known but the MNC doesn't have sufficient funds to finance its entering the country directly. Anheuser-Busch is using this strategy to produce and market Budweiser beer in the United Kingdom, Japan, Israel, Australia, South Korea, and the Philippines. This strategy also becomes important if the country makes entry by investment either difficult or impossible. However, a licensee might develop its competence to the point that it becomes a competitor to the licensing firm. Therefore a company should never license its distinctive competence, even for some short-run advantage.

- **Joint ventures**: The rate of joint venture formation between U.S. companies and international partners has been growing 27% annually. Companies often form joint ventures to combine the resources and expertise needed for the development of new products or technologies. A joint venture also enables an MNC to enter a country that restricts foreign ownership. The corporation can enter another country with less assets at stake and thus lower risk. A joint venture may be an association between an MNC and a firm in the host country or a government agency in that country. A quick method of obtaining local management, it also reduces the risks of expropriation and harassment by host country officials. This is the approach Dean Foods used to increase its presence in Mexico. Disadvantages of joint ventures include loss of control, lower profits, probability of conflicts with partners, and the likely transfer of technological advantage to the local partner. Joint ventures often are meant to be temporary, especially by the Japanese, who view them as a way to overcome a competitive weakness until they can achieve long-term dominance in the partnership.

- **Acquisitions**: A relatively quick way to move into another country is to purchase a company already operating there. Synergistic benefits can result if the MNC acquires a firm with strong complementary product lines and a good distribution network. Maytag Corporation's acquisition of Hoover gave it entry into Europe through Hoover's strength in home appliances in the United Kingdom and in its vacuum cleaner distribution centers on the European continent. To expand into Central Europe, K mart purchased department stores in the Czech and Slovak Republics. In some countries, however, acquisitions can be difficult to arrange because of a lack of available information about potential candidates. Government restrictions on ownership, such as the U.S. requirement that limits foreign ownership of U.S. airlines to 49% of nonvoting and 25% of voting stock, also can discourage acquisitions.

- **Green-field development**: If a corporation doesn't want to obtain another firm's existing facilities through acquisition, it may choose a *green-field development*, or the building of a manufacturing facility from scratch. This approach usually is far more complicated and expensive than acquisition, but it allows the MNC more freedom in designing the plant, choosing suppliers, and hiring a work force. For example, Nissan, Honda, and Toyota built auto factories in rural areas of the United Kingdom and then hired and trained a young work force with no experience in the industry.

- **Production sharing**: The term *production sharing* means the combining of higher labor skills and technology available in developed countries with the lower cost labor available in developing countries. By locating a labor-intensive assembly plant called a *maquiladora* in Ciudad Juarez, Mexico, and a packaging plant across the border in El Paso, Texas, companies such as Hoover have been able to take advantage of Mexico's low labor costs. Companies also are moving data processing and computer programming activities "offshore" to places such as Philippines, India, and Singapore where wages are lower, English is spoken, and telecommunications are in place.

- **Turnkey operations**: Turnkey operations typically involve contracts for the planning, design, and construction of operating facilities for a fee. The facilities are transferred to the host country or firm when they are complete. The customer usually is a government agency of, for example, a Middle Eastern country that has decreed that a particular product be produced locally and under its control. For example, Fiat built an auto plant in Russia to produce an older model of Fiat under a Russian brand name (Lada). Corporations that perform turnkey operations frequently are industrial equipment manufacturers that supply some of their own equipment for the project and also sell replacement parts and maintenance services to the host country. They thereby create customers as well as future competitors.

- **Management contracts**: A large multinational corporation is likely to have a great amount of management talent at its disposal. Management contracts offer a means through which an MNC may use part of its personnel to assist a firm in a host country for a specified fee and period of time. Such arrangements are useful when a multinational corporation builds a turnkey operation in a less developed country where people do not have the knowledge and skills needed to operate a manufacturing facility. Management contracts also are common when a host government expropriates part or all of an MNC's holdings in its country. The contracts allow the MNC to continue to earn some income from its investment and keep the operations going until it can train local management.

6.2 THE FOREIGN EXCHANGE MARKET

What is the foreign exchange market?

Except in a few European centers, there is no central marketplace for the foreign exchange market. Rather, business is carried out over telephone or telex. The major dealers are large banks. A company that wants to buy or sell currency typically uses a commercial bank. International transactions and investments involve more than one currency. For example, when a U.S. company sells merchandise to a Japanese firm, the former wants to be paid in dollars but the Japanese company typically expects to pay yen. Due to the foreign exchange market, the buyer may pay in one currency while the seller can receive payment in another currency.

Although currencies can be supported by various means for short periods, the primary determinant of exchange rates is the supply of and demand for the various currencies. Under current international agreements, exchange rates are allowed to "float." During periods of extreme fluctuations, however, governments and control banks may intervene to maintain stability in the market. The U.S. dollar is the most widely used currency in international markets today. It is considered much more stable than any of the third-world currencies. Thus, many third-world countries rely on the U.S. dollar for foreign trade.

What are spot and forward foreign exchange rates?

An exchange rate is the ratio of one unit of currency to another. An exchange rate is established between the different currencies. The conversion rate between currencies depends on the demand/supply relationship. Because of the change in exchange rates, companies are susceptible to exchange rate fluctuation risks because of a net asset or net liability position in a foreign currency.

Exchange rates may be in terms of dollars per foreign currency unit (called a *direct quote*) or units of foreign currency per dollar (called an *indirect quote*). Therefore, an indirect quote is the reciprocal of a direct quote and vice versa.

An indirect quote = 1/direct quote
Pound/$ = 1/($/pound)

EXAMPLE 6.1

Figure 6.1 presents a sample of indirect and direct quotes for selected currencies. A rate of 1.617/British pound means each pound costs the U.S. company $1.617. In other words, the U.S. company gets 1/1.617 = .6184 pounds for each dollar.

The spot rate is the exchange rate for immediate delivery of currencies exchanged, while the forward rate is the exchange rate for later delivery of currencies exchanged. For example, there may be a 90-day exchange rate. The forward exchange rate of a currency will be slightly different from the spot rate at the current date because of future expectations and uncertainties.

FIGURE 6.1
FOREIGN EXCHANGE RATES
(A SAMPLE)
AUGUST 5, 20X3

Country	Contract	U.S. Dollar Equivalent	Currency per U.S. $
Britain	Spot	1.6124	.6202
(Pound)	30-day future	1.6091	.6215
	90-day future	1.6030	.6238
	180-day future	1.5934	.6276
Japan	Spot	.008341	119.89

(Yen)	30-day future	.008349	119.77
	90-day future	.008366	119.53
	180-day future	.008394	119.13

Forward rates may be greater than the current spot rate (premium) or less than the current spot rate (discount).

What are cross rates?

A cross rate is the indirect calculation of the exchange rate of one currency from the exchange rates of two other currencies. It is the exchange rate between two currencies derived by dividing each currency's exchange rate with a third currency.

EXAMPLE 6.2

Hypothetical dollar per pound and the yen per dollar rates are given in Figure 6.1. For example, if dollars per pound is $1.6124/£ and yens per dollar is ¥119.89/$, the cross rate between Japanese yen and British pounds is

$$\text{Cross rate between yen and pound} = \frac{\text{Dollars}}{\text{Pound}} \text{ x } \frac{\text{Yen}}{\text{Dollar}} = \frac{\text{Yen}}{\text{Pound}}$$

$$= \$/£ \quad \text{x} \quad ¥/\$ \quad = ¥/£$$

= 1.6124 dollars per pound x 119.89 yens per dollar

= 193.31 yens per pound

Because most currencies are quoted against the dollar, it may be necessary to work out the cross rates for currencies other than the dollar. The cross rate is needed to consummate financial transactions between two countries.

FIGURE 6.2
EXAMPLE OF KEY CURRENCY CROSS RATES

	British	Euro	Japan	U.S.
British	---	.7054	.05770	.62020
Euro	1.4176	---	.00733	.87920
Japan	$\boxed{193.31}$	136.36	---	$\boxed{119.89}$
U.S.	$\boxed{1.6124}$	1.1374	.00834	---

Note: The Wall Street Journal routinely publishes key currency cross rates, as shown in the hypothetical rates. They are also available on www.bloomberg.com. The cross currency table calculator can be accessed by www.xe.net/currency/table.htm.

EXAMPLE 12.3

On August 5, 20x3, forward rates on the British pound were at a discount in relation to the spot rate, while the forward rates for the Japanese yen were at a premium from the spot rate. This means that participants in the foreign exchange market anticipated that the British pound would depreciate relative to the U.S. dollar in the future but the Japanese yen would appreciate against the dollar.

The percentage premium (P) or discount (D) is computed as follows.

$$P \text{ (or D)} = \frac{F - S}{S} \times \frac{12 \text{ months}}{n} \times 100$$

where F, S = the forward and spot rates and n = length of the forward contract in months.

If F>S, the result is the annualized premium in percent; otherwise, it is the annualized discount in percent.

EXAMPLE 6.4

On August 5, 20X3, a 30-day forward contract in Japanese yens (see Figure 6.1) was selling at a 1.15 percent premium:

$$\frac{.008349 \quad - \; .008341}{.008341} \times \frac{12 \text{ months}}{1 \text{ month}} \times 100 \; = 1.15\%$$

How do you control foreign exchange risk?

Foreign exchange rate risk exists when the contract is written in terms of the foreign currency or denominated in foreign currency. The exchange rate fluctuations increase the riskiness of the investment and incur cash losses. The controllers must not only seek the highest return on temporary investments but must also be concerned about changing values of the currencies invested. You do not necessarily eliminate foreign exchange risk. You may only try to contain it.

6.3 FINANCIAL STRATEGIES

In countries where currency values are likely to drop, controllers of the subsidiaries should:

- Avoid paying advances on purchase orders unless the seller pays interest on the advances sufficient to cover the loss of purchasing power.
- Not have excess idle cash. Excess cash can be used to buy inventory or other real assets.
- Buy materials and supplies on credit in the country in which the foreign subsidiary is operating, extending the final payment date as long as possible.
- Avoid giving excessive trade credit. If accounts receivable balances are outstanding for an extended time period, interest should be charged to absorb the loss in purchasing power.
- Borrow local currency funds when the interest rate charged does not exceed U.S. rates after taking into account expected devaluation in the foreign country.

What are three different types of foreign exchange exposure?

MNCs' controllers are faced with the dilemma of three different types of foreign exchange risk.

They are:

.*Translation exposure*, often called *accounting exposure,* measures the impact of an exchange rate change on the firm's financial statements. An example would be the impact of a British pound devaluation on a U.S. firm's reported income statement and balance sheet.

.*Transaction exposure* measures potential gains or losses on the future settlement of outstanding obligations that are denominated in a foreign currency. An example would be a U.S. dollar loss after the Euro devalues, on payment received for an export invoiced in Euros before that devaluation.

.*Operating exposure,* often called *economic exposure,* is the potential for the change in the present value of future cash flows due to an unexpected change in the exchange rate.

6.4 TRANSLATION EXPOSURE

A major purpose of translation is to provide data of expected impacts of rate changes on cash flow and equity. In the translation of the foreign subsidiaries' financial statements into the U.S. parent's financial statements, the following steps are involved:

1. The foreign financial statements are put into U.S. generally accepted accounting principles.
2. The foreign currency is translated into U.S. dollars.

Current FASB 52 rules require translation by the *current rate* method. Under the current rate method

- All balance sheet assets and liabilities are translated at the current rate of exchange in effect on the balance sheet date. If a current exchange rate is not available at the balance sheet date, use the first exchange rate available after that date.
- Income statement items are usually translated at an average exchange rate for the reporting period.
- All equity accounts are translated at the historical exchange rates that were in effect at the time the accounts first entered the balance sheet.
- Foreign currency translation gains or losses are presented under "other comprehensive income."

6.5 TRANSACTION EXPOSURE

Foreign currency transactions may result in receivables or payables fixed in terms of the amount of foreign currency to be received or paid. Transaction gains and losses are reported in the income statement.

Foreign currency transactions are those transactions whose terms are denominated in a currency other than the entity's functional currency. Foreign currency transactions take place when a business:

- Buys or sells on credit goods or services the prices of which are denominated in foreign currencies.

- Borrows or lends funds, and the amounts payable or receivable are denominated in a foreign currency.
- Is a party to an unperformed forward exchange contract.
- Acquires or disposes of assets, or incurs or settles liabilities denominated in foreign currencies.

NOTE: Transaction losses differ from translation losses, which do not influence taxable income.

What is long versus short position?

When there is a devaluation of the dollar, foreign assets and income in strong currency countries are worth more dollars as long as foreign liabilities do not offset this beneficial effect.

Foreign exchange risk may be analyzed by examining expected receipts or obligations in foreign currency units. A company expecting receipts in foreign currency units ("long" position in the foreign currency units) has the risk that the value of the foreign currency units will drop. This results in devaluing the foreign currency relative to the dollar. If a company is expecting to have obligations in foreign currency units ("short" position in the foreign currency units), there is risk that the value of the foreign currency will rise and it will need to buy the currency at a higher price.

If net claims are greater than liabilities in a foreign currency, the company has a "long" position since it will benefit if the value of the foreign currency rises. If net liabilities exceed claims with respect to foreign currencies, the company is in a "short" position because it will gain if the foreign currency drops in value.

What is your monetary position?

Monetary balance is avoiding either a net receivable or a net payable position. Monetary assets and liabilities do not change in value with devaluation or revaluation in foreign currencies.

A company with a long position in a foreign currency will be receiving more funds in the foreign currency. It will have a net monetary asset position (monetary assets exceed monetary liabilities) in that currency.

A company with net receipts is a net monetary creditor. Its foreign exchange rate risk exposure has a net receipts position in a foreign currency that is susceptible to a drop in value.

A company with a future net obligation in foreign currency has a net monetary debtor position. It faces a foreign exchange risk of the possibility of an increase in the value of the foreign currency.

What are some ways to neutralize foreign exchange risk?

Foreign exchange risk can be neutralized or hedged by a change in the asset and liability position in the foreign currency. Here are some ways to control exchange risk.

.Entering a money-market hedge. The exposed position in a foreign currency is offset by borrowing or lending in the money market.

EXAMPLE 6.5
XYZ, an American importer enters into a contract with a British supplier to buy merchandise of 4,000 pounds. The amount is payable on the delivery of the goods, 30 days from today. The company knows the exact amount of its pound liability in 30 days. However, it does not know the payable in dollars. Assume that the 30-day money-market rates for both lending and borrowing in the U.S. and U.K. are .5% and 1%, respectively. Assume further that today's foreign exchange rate is $1.7350 per pound.

In a money-market hedge, XYZ can take the following steps:

Step 1. Buy a one-month U.K. money market security, worth of 4,000/(1+.005)=3,980 pounds. This investment will compound to exactly 4,000 pounds in one month.

Step 2. Exchange dollars on today's spot (cash) market to obtain the 3,980 pounds. The dollar amount needed today is 3,980 pounds x $1.7350 per pound =$6,905.30.

Step 3. If XYZ does not have this amount, it can borrow it from the U.S. money market at the going rate of 1%. In 30 days XYZ will need to repay $6,905.30 x (1+.1)=$7,595.83.

Note: XYZ need not wait for the future exchange rate to be available. On today's date, the future dollar amount of the contract is known with certainty. The British supplier will receive 4,000 pounds, and the cost of XYZ to make the payment is $7,595.83.

.Hedging by purchasing forward (or futures) exchange contracts. Forward exchange contracts is a commitment to buy or sell, at a specified future date, one currency for a specified amount of another currency (at a specified exchange rate). This can be a hedge against changes in exchange rates during a period of contract or exposure to risk from such changes. More specifically, you do the following: (1) Buy foreign exchange forward contracts to cover payables denominated in a foreign currency and (2) sell foreign exchange forward contracts to cover receivables denominated in a foreign currency. This way, any gain or loss on the foreign receivables or payables due to changes in exchange rates is offset by the gain or loss on the forward exchange contract.

EXAMPLE 6.6
In the previous example, assume that the 30-day forward exchange rate is $1.7272. XYZ may take the following steps to cover its payable.

Step 1. Buy a forward contract today to purchase 4,000 pounds in 30 days.

Step 2. On the 30th day pay the foreign exchange dealer 4,000 pounds x $1.7272 per pound = $6,908.80 and collect 4,000 pounds. Pay this amount to the British supplier.

Note: Using the forward contract XYZ knows the exact worth of the future payment in dollars ($6,908.80).

Note: The basic difference between futures contracts and forward contracts is that futures contracts are for specified amounts and maturities, whereas forward contracts are for any size and maturity desired.

.*Hedging by foreign currency options*. Foreign currency options can be purchased or sold in three different types of markets: (a) Options on the physical currency, purchased on the over-the counter (interbank) market, (b) options on the physical currency, on organized exchanges such as the Philadelphia Stock Exchange and the Chicago Mercantile Exchange, and (c) options on futures contracts, purchased on the International Monetary Market (IMM) of the Chicago Mercantile Exchange. *Note:* The difference between using a futures contract and using an option on a futures contract is that with a futures contract, the company must deliver one currency against another, or reverse the contract on the exchange, while with an option the company may abandon the option and use the spot (cash) market if that is more advantageous.

.*Repositioning cash by leading and lagging the time at which an MNC makes operational or financial payments.* Often, money- and forward-market hedges are not available to eliminate exchange risk. Under such circumstances, leading (accelerating) and lagging (decelerating) may be used to *reduce* risk. *Note:* a net asset position (i.e., assets minus liabilities) is not desirable in a weak or potentially depreciating currency. In this case, you should expedite the disposal of the asset. By the same token, you should lag or delay the collection against a net asset position in a strong currency.

.*Maintaining balance between receivables and payables denominated in a foreign currency.* MNCs typically set up "multilateral netting centers" as a special department to settle the outstanding balances of affiliates of a MNC with each other on a net basis. It is the development of a "clearing house" for payments by the firm's affiliates. If there are amounts due among affiliates they are offset insofar as possible. The net amount would be paid in the currency of the transaction. The total amounts owed need not be paid in the currency of the transaction; thus, a much lower quantity of the currency must be acquired. *Note:* The major advantage of the system is a reduction of the costs associated with a large number of separate foreign exchange transactions.

.*Positioning of funds through transfer pricing.* A transfer price is the price at which an MNC sells goods and services to its foreign affiliates or, alternatively, the price at which an affiliate sells to the parent. For example, a parent that wishes to transfer funds from an affiliate in a depreciating-currency country may charge a higher price on the goods and services sold to this affiliate by the parent or by affiliates from strong-currency countries. Transfer pricing affects not only transfer of funds from one entity to another but also the income taxes paid by both entities.

6.6 OPERATING EXPOSURE

Operating (economic) exposure is the possibility that an unexpected change in exchange rates will cause a change in the future cash flows of a firm and its market value. It differs from translation and transaction exposures in that it is subjective and thus not easily quantified. *Note:* The best strategy to control operation exposure is to diversify operations and financing internationally.

What are some key questions to ask that help to identify foreign exchange risk?

A systematic approach to identifying an MNC's exposure to foreign exchange risk is to ask a series of questions regarding the net effects on profits of changes in foreign currency revenues and costs.

The questions are:

- Where is the MNC selling? (Domestic vs. foreign sales share)
- Who are the firm's major competitors? (Domestic vs. foreign)
- Where is the firm producing? (Domestic vs. foreign)
- Where are the firm's inputs coming from? (Domestic vs. foreign)
- How sensitive is quantity demanded to price? (Elastic vs. inelastic)
- How are the firm's inputs or outputs priced? (Priced in a domestic market or a global market; the currency of denomination)

6.7 IMPACTS OF CHANGES IN FOREIGN EXCHANGE RATES

Figure 6.3 summarizes the impacts of changes in foreign exchange rates on the company's products and financial transactions.

FIGURE 6.3
THE IMPACTS OF CHANGES IN FOREIGN EXCHANGE RATES

	Weak Currency (Depreciation /devaluation)	*Strong Currency (Appreciation /revaluation)*
Imports	More expensive	Cheaper
Exports	Cheaper	More expensive
Payables	More expensive	Cheaper
Receivables	Cheaper	More expensive
Inflation	Fuel inflation by making imports more costly	Low inflation
Foreign investment	Discourage foreign investment. Lower return on investments by international investors.	High interest rates could attract foreign investors.
The effect	Raising interest rates could slow down the economy.	Reduced exports could trigger a trade deficit.

Can you forecast foreign exchange rates?

The forecasting of foreign exchange rates is a formidable task. Most MNCs rely primarily on bank services for assistance and information in preparing exchange rate projections. The following economic indicators are considered to be the most important for the forecasting process:

- Recent rate movements
- Relative inflation rates
- Balance of payments and trade
- Money supply growth
- Interest rate differentials

6.8 INTEREST RATES

Interest rates have an important influence on exchange rates. In fact, there is an important economic relationship between any two nations' spot rates, forward rates, and interest rates. This relationship is called the *interest rate parity theorem* (IRPT). The IRPT states that the ratio of the forward and spot rates is directly related to the two interest rates.

Specifically, the premium or discount should be:

$$\text{P (or D)} = \frac{r_d - r_f}{1 + r_f}$$

where r_f and r_d = foreign and domestic interest rates.
(When interest rates are relatively low, this equation can be approximated by: P (or D)= $-(r_f - r_d)$).

The IRPT implies that the P (or D) calculated by the equation should be the same as the P (or D) calculated by:

$$\text{P (or D)} = \frac{F - S}{S} \times \frac{12 \text{ months}}{n} \times 100$$

EXAMPLE 6.7

On August 5, 20X3, a 30-day forward contract in Japanese yens (see Figure 6.1) was selling at a 1.15 percent premium:

$$\frac{.008349 \quad - \ .008341}{.008341} \times \frac{12 \text{ months}}{1 \text{ month}} \times 100 \ = 1.15\%$$

The 30-day U.S. T-bill rate is 8% annualized. What is the 30-day Japanese rate?

Using the equation:

$$\text{P (or D)} = \frac{r_f - r_d}{1 + r_f}$$

$$.08 - r_f$$

$$.0115 = \frac{}{1 + r_f}$$

$$.0115 \quad (1 + r_f) = .08 - r_f$$

$$.0115 + .0115\, r_f = .08 - r_f$$

$-.0685 = -.9885r_f$

$r_f = .0693$

The 30-day Japanese rate should be 6.93%.

6.9 INFLATION

Inflation, which is a change in price levels, also affects future exchange rates. The mathematical relationship that links changes in exchange rates and changes in price level is called the *purchasing power parity theorem* (PPPT). The PPPT states that the ratio of the forward and spot rates is directly related to the two inflation rates:

$$\frac{F}{S} = \frac{1 + P_d}{1 + P_f}$$

where F = forward exchange rate (e.g., \$/foreign currency)
S = spot exchange rate (e.g., \$/foreign currency)
P_d = domestic inflation rate
P_f = foreign inflation rate

EXAMPLE 6.8

Assume the following data for U.S. and U.K.:

Expected U.S. inflation rate = 5%
Expected U.K. = 10%

S = \$1.6124/UK

Then,

$$\frac{F}{1.6124} = \frac{1.05}{1.10}$$

So F = \$1.5391/UK

Note: If U.K. has the higher inflation rate, then the purchasing power of the pound is declining faster than that of the dollar. This will lead to a forward discount on the pound relative to the dollar.

How do you analyze foreign investments?

Foreign investment decisions are basically capital budgeting decisions at the international level. The decision requires two major components:

.The estimation of the relevant future cash flows. Cash flows are the dividends and possible future sales price of the investment. The estimation depends on the sales forecast, the effects on exchange rate changes, the risk in cash flows, and the actions of foreign governments.

.The choice of the proper discount rate (cost of capital). The cost of capital in foreign investment projects is higher due to the increased risks of:

- Currency risk (or foreign exchange risk) -- changes in exchange rates. This risk may adversely affect sales by making competing imported goods cheaper.
- Political risk (or sovereignty risk) -- possibility of nationalization or other restrictions with net losses to the parent company.

Note: The ways to adjust for risk when analyzing the prospects of a foreign investment include:

- Adjusting the discount rate
- Adjusting the cash flows
- Conducting sensitivity and scenario analysis

6.10 EXAMPLES OF POLITICAL RISKS

Below is some examples associated with political risks.

- Expropriation of plants and equipment without compensation or with minimal compensation that is below actual market value.
- Nonconvertibility of the affiliate's foreign earnings into the parent's currency --the problem of "blocked funds."
- Substantial changes in the laws governing taxation.
- Government controls in the host country regarding wages, compensation to the personnel, hiring of personnel, the sales price of the product, making of transfer payments to the parent, and local borrowing.

How do you measure political risk?

Many MNCs and banks have attempted to measure political risks in their businesses. They even hire or maintain a group of political risk analysts. Several independent services provide political risk and country risk ratings.

.*Euromoney* magazine's annual *Country Risk Rating*, which is based on a measure of different countries' access to international credit, trade finance, political risk and a country's payment record. The rankings are generally confirmed by political risk insurers and top syndicate managers in the Euromarkets.

.Rating by *Economist Intelligence Unit*, a New York-based subsidiary of the *Economist Group*, London, which is based on such factors as external debt and trends in the current account, the consistency of the government policy, foreign-exchange reserves, and the quality of economic management.

.*International Country Risk Guide*, published by the PRS Group (**www.prsgroup.com/icrg/icrg.html**), which offers a composite risk rating, as well as individual ratings for political, financial and economic risk for 140 countries. The political variable - which makes up half of the composite index - includes factors such as government corruption and how economic expectations diverge from reality. The financial rating looks at such things as the likelihood of losses from exchange controls and loan defaults. Finally, economic ratings consider such factors as inflation and debt-service costs.

What are the methods for dealing with political risk?

To the extent that forecasting political risks is a formidable task, what can a MNC do to cope with them? There are several methods suggested. They are:

.*Avoidance* Try to avoid political risk by minimizing activities in or with countries that are considered to be of high risk. Use higher discount rates for projects in riskier countries.

.*Adaptation* Try to reduce risk by adapting the activities (for example, by using hedging techniques discussed previously).

.*Diversification* Diversify across national borders, so that problems in one country do not severely damage the company.

.*Risk transfer* Buy insurance policies for political risks.

EXAMPLE 6.9

Most developed nations offer insurance for political risk to their exporters. Examples are:

- In the U.S., the Exurban offers policies to exporters that cover such political risks as war, currency inconvertibility, and civil unrest. Furthermore, the *Overseas Private Investment Corporation (OPIC)* offers policies to U.S. foreign investors to cover such risks as currency inconvertibility, civil or foreign war damages, or expropriation.
- In the U.K., similar policies are offered by the *Export Credit Guarantee Department (ECGD)*; in Canada, by the *Export Development Council (EDC);* and in Germany, by an agency called *Hermes.*

6.11 INTERNATIONAL FINANCING

What are international sources of financing?

A company may finance its activities abroad, especially in countries it is operating in. A successful company in domestic markets is more likely to be able to attract financing for international expansion. *Note:* Eurodollars are dollar denominated deposits in banks located outside the United States. Most Eurodollars are deposited in London. Dollar deposits in International Banking Facilities in the United States are also Eurodollars.

The most important international sources of funds are the Eurocurrency market and the Eurobond market. Also, MNCs have access to national capital markets in which their subsidiaries are located. Figure 6.4 presents an overview of international financial markets.

The Eurocurrency market is a largely short-term (usually less than one year of maturity) market for bank deposits and loans denominated in any currency except the currency of the country where the market is located. For example, in London, the Eurocurrency market is a market for bank deposits and loans denominated in dollars, yen, franc, marks, and any other currency except British pounds. The main instruments used in this market are CDs and time deposits, and bank loans. *Note:* The term "market" in this context is not a physical market place, but a set of bank deposits and loans.

The Eurobond market is a long-term market for bonds denominated in any currency except the currency of the country where the market is located. Eurobonds may be of different types such as straight, convertible, and with warrants. While most Eurobonds are fixed rate, variable rate bonds also exist. Maturities vary but 10-12 years is typical.

Although Eurobonds are issued in many currencies, you wish to select a stable, fully convertible, and actively traded currency. In some cases, if a Eurobond is denominated in a weak currency the holder has the option of requesting payment in another currency.

Sometimes, large MNCs establish wholly owned offshore finance subsidiaries. These subsidiaries issue Eurobond debt and the proceeds are given to the parent or to overseas operating subsidiaries. Debt service goes back to bondholders through the finance subsidiaries.

If the Eurobond was issued by the parent directly, the U.S. would require a withholding tax on interest. There may also be an estate tax when the bondholder dies. These tax problems do not arise when a bond is issued by a finance subsidiary incorporated in a tax haven. Hence, the subsidiary may borrow at less cost than the parent.

In summary, the Euromarkets offers borrowers and investors in one country the opportunity to deal with borrowers and investors from many other countries, buying and selling bank deposits, bonds, and loans denominated in many currencies.

Figure 6.5 provides a list of funding sources available to a foreign affiliate of an MNC (debt and equity).

FIGURE 6.4
INTERNATIONAL FINANCIAL MARKETS

Market	*Instruments*	*Participants*	*Regulator*
International monetary system	Special drawing rights; gold; foreign exchange	Central banks; International Monetary Fund	International Monetary Fund
Foreign exchange markets	Bank deposits; currency; futures and forward contracts	Commercial and central banks; firms; individuals	Central banks in each country
National money markets (short term)	Bank deposits and loans; short-term government securities; commercial paper	Banks; firms; individuals; government agencies	Central bank; other government agencies

National capital markets	Bonds; long-term bank deposits and loans; stocks; long-term government securities	Banks; firms; individuals; government agencies	Central bank; other government agencies
Eurocurrency markets (short-term)	Bank deposits; bank loans; short-term and rolled-over credit lines; revolving commitment	Commercial banks; firms; government agencies	Substantially unregulated
Euro-commercial paper markets (short-term)	Commercial paper issues and programs; note-issuing facility; revolving underwritten facilities	Commercial banks; firms; government agencies	Substantially unregulated
Eurobond market (medium and long-term)	Fixed coupon bonds; floating-rate notes; higher-bound bonds; lower-bound bonds	Banks; firms; individuals; government agencies	Substantially unregulated
Euroloan market (medium and long-term)	Fixed-rate loans; revolving loans; revolving loans with cap; revolving loans with floor	Banks; firms; individuals; government agencies	Substantially unregulated

FIGURE 6.5
INTERNATIONAL SOURCES OF CREDIT

Borrowing	*Domestic Inside the Firm*	*Domestic Market*	*Foreign Inside the Firm*	*Foreign Market*	*Euromarket*
Direct, short-term	Intrafirm loans, transfer pricing, royalties, fees, service charges	Commercial paper	International intrafirm loans, international transfer pricing, dividends, royalties, fees		Euro-commercial paper
Intermediated short-term		Short-term bank loans, discounted receivables	Internal back-to-back loans	Short-term bank loans, discounted receivables	Euro short-term loans
Direct, long-	Intrafirm	Stock issue	International	Stock issue	Eurobonds

term	loans, invested in affiliates	Bond issue	intrafirm long-term loans, foreign direct investment	Bond issue	
Intermediated long-term		Long-term bank loans	Internal back-to-back loans	Long-term bank loans	Euro long-term loans

CHAPTER 7
INFORMATION TECHNOLOGY (IT)
AND COMPUTER APPLICATIONS TO BUSINESS

Upon completion of this chapter, you will be able to

- Identify computer technologies available for business.
- Compare and contrast management information system (MIS), decision support systems (DSS), and executive information systems (EIS).
- Demonstrate how to manage your information resources.
- Outline the basic concepts and applications of artificial intelligence (AI) and expert systems (ES).
- State the role of extensible business reporting language (XBRL).
- Discuss how wireless technology means for CEOs, CIOs and users.

Information systems are used in all business domains. For example, finance uses information to forecast revenues and maximize investment, make selections on stocks and even predict bankruptcies. Accounting uses information systems to record transactions, prepare financial statements, manage cash flow, or predict profit or loss. In marketing, information systems are used to develop new merchandise and services, customer segmentation, determine the locations for production and distribution facilities (so that the cost can be reduced and more customers will be attracted), formulate price strategies (so they can maximize total profits) and even develop the promotion policies (so that advertising will be more efficient). In manufacturing, information systems are used to process customer orders, develop production schedules, design new products, and test the quality of products.

What are the computer technologies available for business?

Network technologies allow users to share information and other resources. As a result, information retrieval can be more efficient and available. Current Internet technology provides businesses with a variety of external business information. Multimedia information transmissions (text, graphics, image and video) are also available on the Internet. With the impact of Internet, Intranet becomes another new technology popular to business. Intranet is a small version of Internet in one organization. It provides almost the same services as the Internet would do but with better security and privacy. E-commerce is a way of life. Artificial Intelligence technologies are also applied to business functions. Neural networks have been used to predict the stock and bond markets. Expert Systems are used to help managers with financial decisions. Wireless networking is fast becoming a viable alternative for companies that can utilize the advantages it provides. It can provide businesses with enhanced connectivity and flexibility. In the future, more intelligent agents will be used in the business environment to improve the quality of services and products.

What is the role of the information systems in the development of the strategic plan?

Strategic planning is the process of selecting the organization's long-term objectives and of setting the strategies for achieving those objectives. This planning process is the responsibility of strategic management and is concerned with the overriding issues facing the organization, such as product lines and profitability. Given the international, competitive, and dynamic environment confronted by an organization, strategic planning is crucial to the survival of that organization.

The IS can play an important role in the development of the strategic plan and in monitoring ongoing operations to measure attainment of the plan. During the strategic planning process, data from the entity-wide database can be compared to data about the competition to determine an organization's relative strengths and weaknesses. For example, these data might include sales trends, gross margin on sales, age of capital assets, skills of existing personnel, debt/equity ratio, and so on. These data can be presented in reports from the existing information systems applications, such as sales/marketing, human resources management, fixed assets, finance and inventory, or via the models incorporated in the DSS and EIS. Note that data from the environment can also be incorporated into the DSS and EIS output. Strategic planners can combine the environmental data with those obtained internally to assess the organization's competitive position. The demand for such information has been a major driver in the move to enterprise resource planning (ERP) systems, which bring all of the organization's information together into a single entity-wide database and generally provide the associated tools for strategic analysis and decision support.

In addition to assisting in the planning phase, the IS can be used to follow up by reporting certain performance indicators that illustrate the status of processes and critical success factors. For example, the number of franchises along with the level of sales and number of customer complaints for each should indicate the status of an organization's franchise network. Other performance indicators might be the number of new products, the cost to manufacture the products, and their selling price. If the entity-wide database is developed in light of the strategic plan, many of the data for the performance indicators should be readily available.

In addition to an organizational strategic planning process, there must be a strategic planning process for the IS function. That process must be coordinated with the organization's strategic planning process to ensure that the organization's strategic plan is supported and that IT is used to the best advantage of the organization. For example, during the strategic planning process, organizations should seek to achieve strategic advantage over their competitors by utilizing available information technology. This is particularly observable as companies ponder how to deal with the rapidly evolving world of e-business.

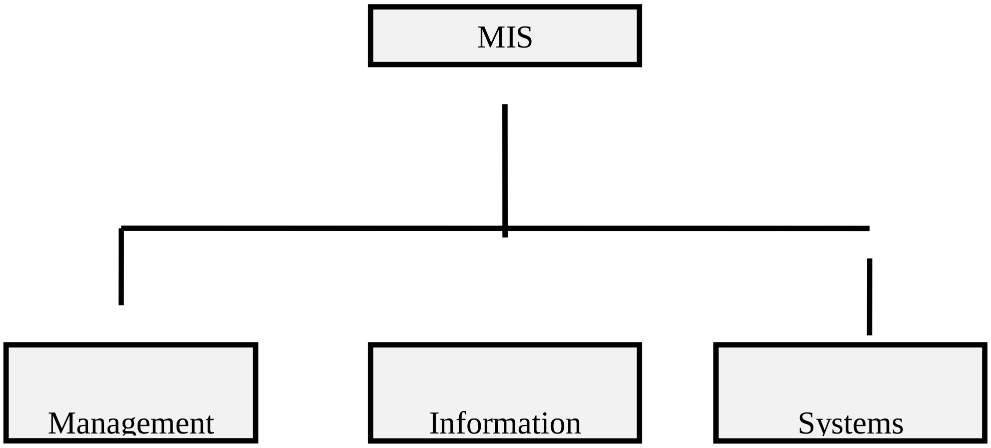
7.1 MANAGEMENT INFORMATION SYSTEM (MIS)

What is a management information system (MIS)?

A management information system (MIS) comprises computer-based processing and/or manual procedures that provide useful, complete, and timely information. This information must support management decision making in a rapidly changing business environment. The MIS system must supply managers with information quickly, accurately, and completely. The MIS has many subsystems: accounting information system (AIS), marketing information system, financial information system, production/operations information system, and human resource information system. For example, An AIS is a subsystem of a MIS and processes financial and transactional data relevant to managerial decisions as well as financial accounting.

The scope and purpose of MIS is better understood if each part of the term is defined. See Figure 7.1.

FIGURE 7.1
THE MEANING OF A MANAGEMENT INFORMATION SYSTEM (MIS)



(1) Making decisions regarding:
Planning
Organizing
Coordinating
Controlling

(2) Information consists of: orderly selected data used for making decisions

(3) Systems for integration of all activities through exchange of information

MANAGEMENT

Management has been defined in a variety of ways, but for our purposes it comprises the processes or activities that describe what managers do in the operation of their organization: plan, organize, coordinate, and control operations. They *plan* by setting strategies and goals and selecting the best course of action to achieve the plan. They *organize* the tasks necessary for the operational plan, set these tasks up into homogeneous groups, and assign authority delegation. They *control* the performance of the work by setting performance standards and avoiding deviations from standards.

Because *decision-making is* such a fundamental prerequisite to each of the foregoing processes, the job of a MIS becomes that of facilitating decisions necessary for planning, organizing, and controlling the work and the functions of the business.

In general, the work that management performs can be classified as (a) planning, (b) organizing and coordinating, (c) controlling, and (d) decision-making.

Planning. The planning function of management involves the selection of long- and short-term objectives and the drawing up of strategic plans to achieve those objectives. For example, the vice president of marketing must consider numerous factors when planning short-term ad campaigns and promotional activities aimed at opening up new long-term markets.

Organizing and coordinating. In performing the organization and coordination function, management must decide how best to put together the firm's resources in order to carry out established plans. For example, top management must decide on the type and number of divisions and departments in the company and evaluate the effectiveness of the organizational structure. Furthermore, managers must identify the personnel needs of the company and select the personnel, as well as train staff.

Controlling. Controlling entails the implementation of a decision method and the use of feedback so that the firm's goals and specific strategic plans are optimally obtained. This includes supervising, guiding, and counseling employees necessary to keep them motivated and working productively toward the accomplishment of organization objectives.

Decision making. Decision making is the purposeful selection from a set of alternatives in light of a given objective. Each primary management function involves making decisions, and information is required to make sound decisions. Decisions may be classified as short-term or long-term. Depending upon the level of management, decisions can be operational, tactical, or strategic.

INFORMATION

Data must be distinguished from *information*, and this distinction is clear and important for our purposes. Data is facts and figures that are not currently being used in a decision process, and they usually take the form of historical records that are recorded and filed without immediate intent to retrieve for decision-making. An example would be one of the supporting documents, ledgers and so on, that comprise the source material for profit and loss statements. Such material would only be of historical interest to an external auditor.

Information consists of data that have been retrieved, processed, or otherwise used for informative or inference purposes, arguments, or as a basis for forecasting or decision-making. An example would be any one of the supporting documents mentioned above, but in this case the data could be used by an internal auditor, the management services department of an external auditor, or by internal management for profit planning and control, or for other decision-making purposes.

SYSTEMS

A *system* can be described simply as a set of elements joined together for a common objective. A subsystem is part of a larger system. All systems are parts of larger systems. For our purposes the organization is the system and the parts (divisions, departments, functions, units, etc.) are the subsystems. While we have achieved a very high degree of automation and joining together of subsystems in scientific, mechanical, and factory manufacturing operations, we have barely scratched the surface of applying systems principles for organizational or business systems. The concept of synergism has not generally been applied to business organizations, particularly as it applies to the integration of the subsystems through information interchange. Marketing, production/operations, and finance are frequently on diverse paths and working at cross-purposes. The systems concept of MIS is therefore one of optimizing the output of the organization by connecting the operating subsystems through the medium of information exchange.

How do you classify a MIS in terms of the type of output provided?

Another way of classifying MISs depends on the format of the output desired by the users of the management information system. Here three distinctions are made:

1. MISs that generate *reports:* These reports can be income statements, balance sheets, cash flow reports, accounts receivable statements, inventory status reports, production efficiency reports, or any report on the status of a situation of interest to the decision maker. The reports can be historical or refer to the current status of the situation.

2. MISs that answer “what-if" kinds of questions asked by management: These information systems take the information stored in the data base and reply to questions asked by management. These questions are in the form of "what would happen if this or that happened?" The information system thus uses its stored information, its comparison and calculation capabilities, and a set of programs especially written for this situation to provide management with the consequences of an action they are considering.

It works like this. The vice-president for human resources of an airline wonders what pilot recruiting levels would be necessary if the company changed its retirement age from 65 to 62 at the same time that the Civil Aeronautics Board (CAB) reduced the maximum number of hours a pilot can fly monthly from 80 to 75.

The vice-president uses a "what-if" information system approach to answer her question. The computer indicates that monthly recruiting levels would have to be increased from 110 to 185 pilots to meet these two conditions. She realizes that is not feasible and now "asks" the system the "what-if" question with the retirement age changed to 63. The reply is now 142 pilots a month recruited. She feels this is an attainable recruiting target. Some "what-if" systems print out entire financial statements reflecting the financial consequences of actions that are being contemplated. Figure 7.2 depicts a “what-if” scheme.

"What-if" management information systems combine models(to be discussed later), software enabling the decision maker to make various inputs to those models and receive the outputs, and report-generating capability. These are generally run on a real-time system which can be online and which can also run on a timesharing basis. In Figure 2 we have illustrated a "what-if" MIS.

3. MISs which support decision making (decision support systems): These advanced systems attempt to integrate the decision maker, the data base, and the models being used. A decision support system (DSS) requires a very comprehensive data base together with the ability to manage that data base, to provide outputs to the decision maker, and to update whatever permanent models are stored in the system. It requires extensive hardware and software. Two features distinguish DSS from other information systems: (1) they actually make a recommended decision instead of merely supplying additional information to the decision maker, and (2) they "build in" the decision maker as an integral part of the system (the software accommodates the person as part of the decision process). Figure 7.3 illustrates a DSS management information system.

A MIS AND ORGANIZATIONAL LEVELS

A MIS should produce useful, accurate, and timely information to management on three levels: low-level (operational), middle (tactical), and top (strategic). Lower management makes day-to-day operational decisions that affect a relatively narrow time frame and that involve details. These decisions are structured. Middle management is involved on more tactical decisions that cover a broader range of time and involve more experience. Middle managers use summary reports, exception reports, periodic reports, on-demand reports, and event-initiated reports to make semistructured decisions. Top management deals with decisions that are strategic and long-term in nature.

The primary objective of the MIS is to satisfy the needs at the various levels. Generally the information needs to be (1) more summarized and relevant to the specific decisions that need to be made than the information normally produced in an organization and (2) available soon enough to be of value in the decision making process. The information flows up and down through the three levels of management and is made available in various types of reports.

FIGURE 7.2
“WHAT-IF” MIS

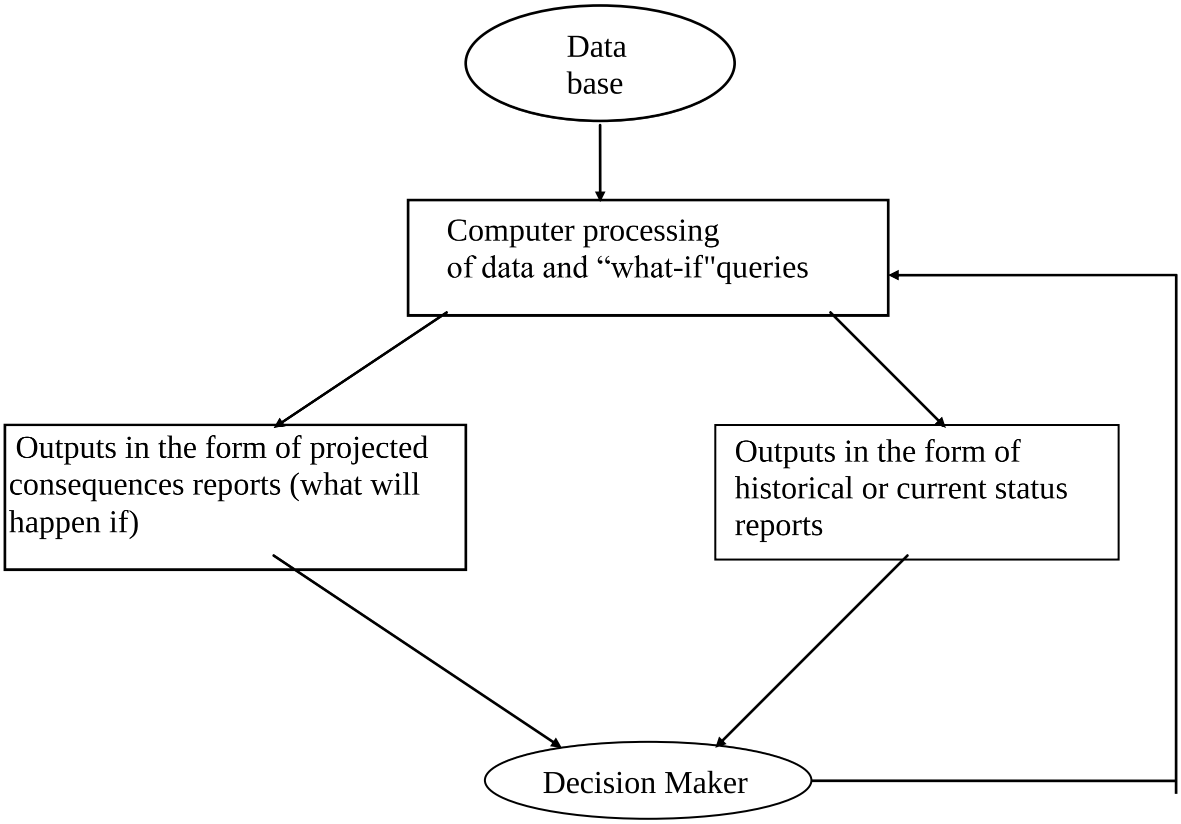
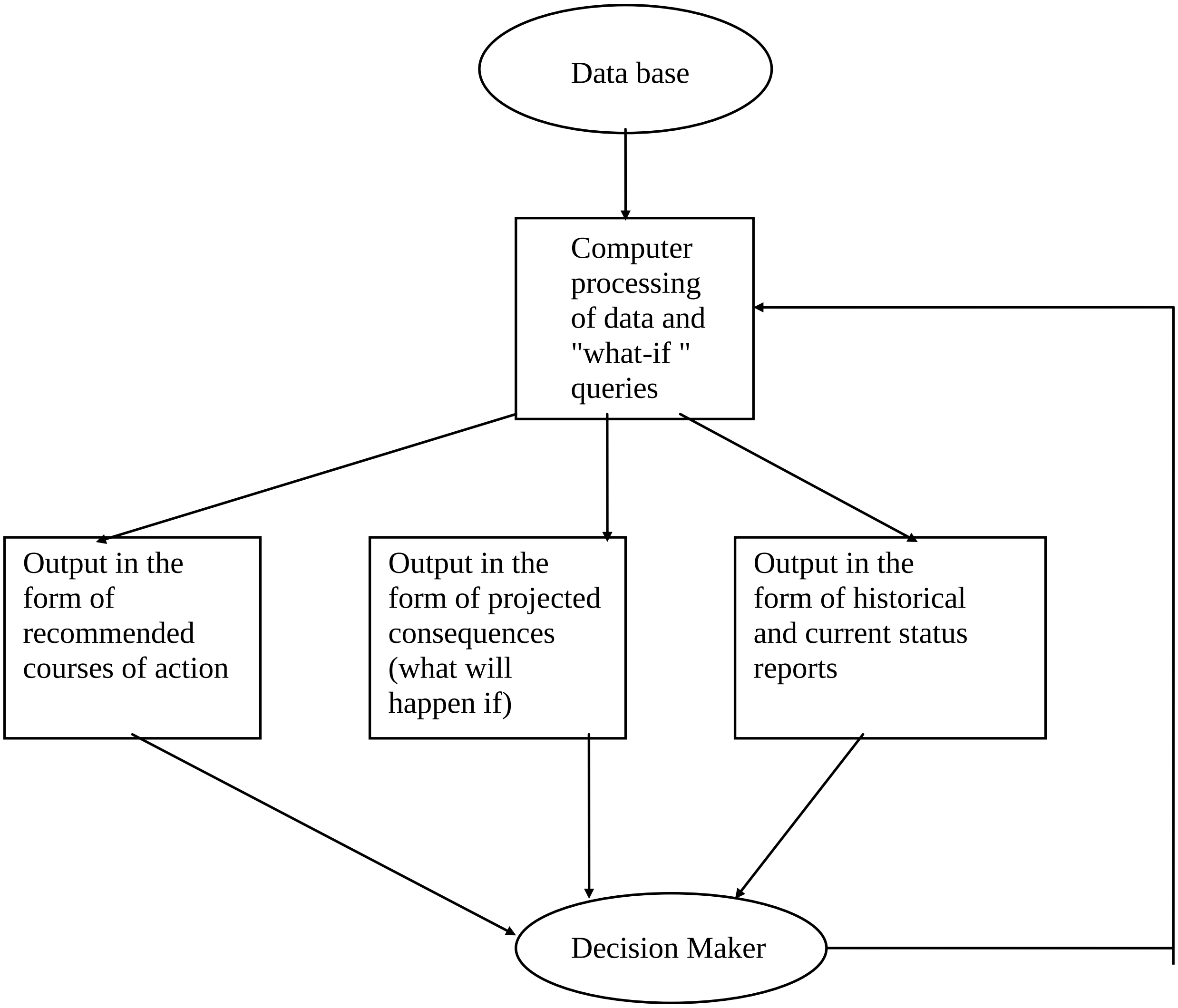

Data base
Computer processing of data and “what-if"queries
Outputs in the form of projected consequences reports (what will happen if)
Outputs in the form of historical or current status reports
Decision Maker

FIGURE 7.3

DECISION MAKER'S "WHAT-IF" QUESTIONS


Data base
Computer processing of data and "what-if " queries
Output in the form of recommended courses of action
Output in the form of projected consequences (what will happen if)
Output in the form of historical and current status reports
Decision Maker

What kinds of decisions are made at each level of management?

Each level of management can be differentiated by the types of decisions made, the time frame considered in the decisions, and the types of report information needed to make decisions. (See Table 7.1).

TABLE 7.1
A COMPARISON OF THE MISs
AT THE OPERATIONAL, TACTICAL, AND STRATEGIC LEVELS

Characteristic	*Operational*	*Tactical*	*Strategic*
Frequency needed)	Regular, repetitive	Mostly regular	Often ad hoc (as
Dependability of results contain	Expected results	Some surprises may occur	Results often surprises
Time period covered	Past	Comparative	Future
Level of data	Very detailed	Summaries of data	Summaries of data
Source of data external	Internal	Internal and external	Internal and
Nature of data unstructured	Highly structured	Some unstructured data	Highly (semistructured)
Accuracy data	Highly accurate data	Some subjective data	Highly subjective
Typical user	First-line supervisors	Middle managers	Top management
Level of decision	Task-oriented	Control and resource allocation oriented	Goal-oriented

LOWER MANAGEMENT

The largest level of management, lower (operational) management, deals mostly with decisions that cover a relatively narrow time frame. Lower management, also called supervisory management, actualizes the plans of middle management and controls daily operations—the day-to-day activities that keep the organization humming. Examples of a lower-level manager are the warehouse manager in charge of inventory restocking and the materials manager responsible for seeing that all necessary materials are on hand in manufacturing to meet production needs.

Most decisions at this level require easily defined information about current status and activities within the basic business functions—for example, the information needed to decide whether to restock inventory. This information is generally given in detail reports that contain specific information about routine activities. These reports are structured, so their form can usually be predetermined. Daily business operations data is readily available, and its processing can be easily computerized. Managers at this level typically make structured decisions. A structured decision is a predictable decision that can be made by following a well-defined set of predetermined, routine procedures. For example, a clothing store floor manager's decision to accept your credit card to pay for some new clothes is a structured decision based on several well-defined criteria:

1. Does the customer have satisfactory identification?
2. Is the card current or expired?
3. Is the card number 011 on the store’s list of stolen or lost cards?
4. Is the amount of purchase under the cardholder’s credit limit?

MIDDLE MANAGEMENT

The middle level of management deals with decisions that cover a somewhat broader range of time and involve more experience. Some common titles of middle managers are plant manager, division manager, sales manager, branch manager, and director of personnel.

The information that middle managers need involves review, summarization, and analysis of historical data to help plan and control operations and implement policy that has been formulated by upper management. This information is usually given to middle managers in two forms: (1) *summary reports*, which show totals and trends— for example, total sales by office, by product, by salesperson, and total overall sales—and (2) *exception reports*, which show out-of-the-ordinary data—for example, inventory reports that list only those items that number fewer than 10 in stock. These reports may be regularly scheduled (periodic reports), requested on a case-by-case basis (on-demand reports), or generated only when certain conditions exist (event-initiated reports).

Periodic reports are produced at predetermined times—daily, weekly, monthly, quarterly, or annually. These reports commonly include payroll reports, inventory status reports, sales reports, income statements, and balance sheets. On-demand reports are usually requested by a manager when information is needed for a particular problem. For example, if a customer wants to establish a large charge account, a manager might request a special report on the customer's payment and order history. Event-initiated reports indicate a change in conditions that requires immediate attention, such as an out-of-stock report or a report on an equipment breakdown.

Managers at the middle level of management are often referred to as tactical decision makers who generally deal with semistructured decisions. A semistructured decision is a decision that includes some structured procedures and some procedures that do not follow a predetermined set of procedures. In most cases, a semistructured decision is complex, requiring detailed analysis and extensive computations. Examples of semistructured decisions include deciding how many units of a specific product should be kept in inventory, whether or not to purchase a larger computer system, from what source to purchase personal computers, and whether to purchase a multiuser minicomputer system. At least some of the information requirements at this level can be met through computer-based data processing.

TOP MANAGEMENT

The top level of management deals with decisions that are the broadest in scope and cover the widest time frame. Typical titles of managers at this level are chief executive officer (CEO), chief operating officer (COO), chief financial officer (CFO), treasurer, controller, chief information officer (CIO), executive vice president, and senior partner. Top managers include only a few powerful people which are in charge of the four basic functions of a business—marketing, accounting and finance, production, and research and development. Decisions made at this level are unpredictable, long-range, and related to the future, not just past and/or current activities. Therefore, they demand the most experience and judgment.

A company's MIS must be able to supply information to top management as needed in periodic reports, event-initiated reports, and on-demand reports. The information must show how all the company's operations and departments are related to and affected by one another. The major decisions made at this level tend to be directed toward (1) strategic planning—for example, how growth should be financed and which new markets should be tackled first; (2) allocation of resources, such as deciding whether to build or lease office space and whether to spend more money on advertising or the hiring of new staff members; and (3) policy formulation, such as determining the company's policy on hiring minorities and providing employee incentives. Managers at this level are often called strategic decision makers. Examples of unstructured decisions include deciding five-year goals for the company, evaluating future financial resources, and deciding how to react to the actions of competitors.

At the higher levels of management, much of the data required to make decisions comes from outside the organization (for example, financial information about other competitors).
Table 7.2 shows the decision areas that the three levels of management would deal with in(a) a consumer product business and (b) a bank.

TABLE 7.2
THREE LEVELS OF MANAGERIAL LEVELS
AND INFORMATION NEEDS

(a) Consumer product business

Strategic Planning	Competitive Industry statistics
Tactical	Sales analysis by customer Reorder analysis of new products Sales analysis by product line

	Production planning
Operational	Bill of materials Manufacturing specifications Product specifications Order processing On-line order inquiry Finished goods inventory Accounts receivable General ledger

(b) Bank

Strategic Planning	Market forecast New product development Financial forecast
Tactical	Branch profitability Product profitability
Operational	Loan billing Accounting systems Policy issuance and maintenance

7.2 DECISION SUPPORT SYSTEM (DSS)

When do you use decision support systems (DSS)?

Decision Support Systems are designed to help managers reach a decision by summarizing or comparing data from different resources. They are suitable for semi-structured and unstructured problems. Decision support systems often include query languages, statistical analysis capabilities, spreadsheet, and graphics to help decision makers evaluate the decision. DSS are a type of MIS expressly developed to support the decision making process. DSS facilitate a dialogue between the user, who is considering alternative problem solutions, and the systems, with its built-in models and accessable database. More advanced decision support systems include capabilities that allow users to create a model of the variables affecting a decision. With a model, users can ask what-if questions by changing one or more of the variables and seeing what the projected results would be. A simple model for determining the best product price would include factors for the expected sales volume at each price level. Many people use electronic spreadsheets for simple modeling tasks. A DSS is sometimes combined with executive information systems (EISs). DSS applications used in business include systems that estimate profitability, plan monthly operations, determine the source and application of funds, and schedule staff .

TABLE 7.3
CHARACTERISTICS OF DSS

Graphical
Large data base
Integrate many sources of data
Report and presentation flexibility
Geared toward individual decision-making styles
Modular format
Optimization and heuristic approach
'What-if" and simulation
Goal-seeking and impact analysis
Perform statistical and analytical analysis

7.3 EXECUTIVE INFORMATION SYSTEMS (EIS)

Who uses executive information systems (EIS)?

An executive information system (EIS) is a DSS made specially for top managers and specifically supports strategic decision making. An EIS is also called *an executive support system (ESS).* EIS is designed to generate information which is abstract enough to present the whole company operation in a simplified version to satisfy senior management. Characteristically, senior managers employ a great variety of informal sources of information, so that computerized information systems are able to provide only limited assistance. However, the CEO, senior and executive vice presidents, and the board of directors also need to be able to track the performance of their company and of its various units, assess the business environment, and develop strategic directions for the company's future.

In particular, these executives need a great diversity of external information to compare their company's performance to that of its competition, and to investigate the general trends of the economies in the many countries where the company may be doing business. EIS is therefore, designed to address the information needs for senior management who may not be familiar working with computer systems. EIS also provides features that make them easier for executives to use. EIS provides a graphical user interface that can be mouse or touch screen oriented. EIS relies heavily on graphic presentation of both the menu options and data. Table 7.4 presents the attributes of an executive information system.

TABLE 7.4
CHARACTERISTICS OF EXECUTIVE INFORMATION SYSTEMS (EIS)

Graphical
Easy-to-use interface
Broad, aggregated, perspective
Different data sources
Optionally expand to detail level

Provide context
Timeliness crucial

7.4 MANAGEMENT OF INFORMATION RESOURCES

How do you manage your information resources?

Managing information resources can be a very complicated task due to rapid changes in this field. Generally speaking, there are two options available to managers:

1. In-House Operation
2. Outsourcing

In-house operation requires your own data processing facilities and personnel to operate. This approach allows users to receive MIS services faster and easier. However, it requires the company to use the equipment and employ MIS personnel to assure the facility is fully functional.

Outsourcing deals with subcontracting MIS tasks to professional MIS companies. With professional help, the task can be achieved more efficiently and effectively. However, the response time to acquire services might be a little longer and very often, the communication channels between subcontractor and users might not be well established. Different MISs are designed for different management functions.

The following is a list of typical outsourced IT services:

- Application development and software maintenance.
- Hardware purchasing and hardware maintenance
- Telecommunications installation and maintenance
- Help desk services
- Web site design and maintenance
- Staff training

7.5 ARTIFICIAL INTELLIGENCE (AI) AND EXPERT SYSTEMS (ESs)

What are the basic concepts and applications of artificial intelligence (AI) and expert systems (ES)?

Artificial intelligence is the application of human reasoning techniques to machines. Artificial intelligence systems use sophisticated computer hardware and software to simulate the functions of the human mind. Expert systems are the most promising applications of artificial intelligence and have received the most attention. Expert systems are computer programs exhibiting behavior characteristics of experts. Expert systems involve the creation of computer software that emulates the way people solve problems. Like a human expert, an expert system gives advice by drawing upon its own store of knowledge, and by requesting information specific to the problem at hand. Expert systems is not exactly the same thing as decision support systems.

A DSS is computer based software which assists decision makers by providing data and models. It performs primarily semi-structured tasks whereas an expert system is more appropriate for unstructured tasks. Decision support system can be interactive just like an expert system. But, because of the way decision support systems process information, they typically cannot be used for unstructured decisions which involve nonquantitative data. Unlike expert systems, decision support systems do not make decisions but merely attempt to improve and enhance decisions by providing indirect support without automating the whole decision process.

Some general characteristics indicate whether a given business application is likely to be a good candidate for the development of an expert system. For example, application requires the use of expert knowledge, judgment and experience. The business problem must have a heuristic nature and must be defined clearly. The area of expertise required for the application must be well-defined and recognized professionally, and the organization developing the expert system must be able to recruit an expert who is willing to cooperate with the expert system's development team. The size and complexity of the application must be manageable in the context of organizational resources, available technical skills, and management support.

EXPERT SYSTEMS

An expert system (ES), sometimes called *knowledge system*, is a set of computer programs that perform a task at the level of a human expert. Expert systems are created on the basis of knowledge collected on specific topics from human experts, and they initiate the reasoning process of a human being. There are six components to the expert system; knowledge base, domain database, database management system, inference engine, user interface, and knowledge acquisition facility. The knowledge base contains the rules used when making decisions.

Expert systems have emerged from the field of artificial intelligence, which is the branch of computer science that is attempting to create computer systems that simulate human reasoning and sensation.

Expert systems are used by management and nonmanagement personnel to solve specific problems, such as how to reduce production costs, improve workers' productivity, or reduce environmental impact. It is a computer program which, based on methodically using a narrowly-defined domain of knowledge that is built into the program, comes up with a solution to a problem much the same way an expert would. The key to the definition is that the domain must be narrowly defined. An expert system cannot (at this point) be developed to give useful answers about all questions-it is limited as a human expert is limited to a particular field. For example, one expert system would not tell the controller whether to lease or buy a piece of equipment based on the tax differences.

Expert systems contain a knowledge base for a limited domain of human expertise and inference procedures for the solution of problems. They use symbolic processing based on heuristics rather than algorithms. A heuristic procedure is an exploratory problem-solving technique that uses self-education methods, e.g., the evaluation of feedback, to improve performance. These systems are often very interactive and provide explanations of their problem-solving behavior.

The drawbacks to expert systems are:

- They fail to adapt to a continually changing environment.
- They are usually confined to a very narrow domain and may have difficulty coping with broad discipline knowledge decisions.

GENERAL USES OF EXPERT SYSTEMS

Case 1

Cyc (short for encyclopedia) is an AI (artificial intelligence) application developed by Cycorp Inc. in Austin, Texas. The system is the brainchild of Douglas B. Lenat. Cyc uses a top-down system to organize knowledge within its knowledge base and to enable the storage of up 2 million rules. A half-dozen companies including Glaxo Wellcome, Digital Equipment, IBM, and United Healthcare have snapped up the first commercial versions. For United Healthcare the ability of Cyc to store mass quantities of data and rules helps them to manage huge online thesauruses of pharmaceutical and healthcare terms that have associations based on the content and/or interaction effects-limiting the need for its employees to deal with the complexity of terms.

Case 2

A newer product based on Cyc is a photo retrieval system. The knowledge base in Cyc is able to learn the relationships between different phrases and use these relationships to search related photographs stored in files along with searchable captions. Type “strong and daring person” and Cyc pulls up a picture captioned “man climbing mountain.” Cyc knows that a man is a person, and that mountain climbing demands strength and is dangerous.

Case 3

Firefly is a web-based Cyc derivative that allows viewers to identify music and artist that they like. Then, based on the information that thousands of other users have entered, Firefly identifies other music in which the viewers are likely to be interested. Essentially, Firefly builds patterns in the data and uses the patterns to identify missing pieces in a new user profile. These missing pieces are music or artists in which the viewer will likely be interested.

Case 4

Derivative products of Cyc have also found their way into commercial applications. The principles underlying Cyc were used to develop a crablike robot for the Navy that can locate and detonate mines on beaches. Another robot, Hermes, will be used by NASA to explore the surface of Mars.

Case 5

An application of an Expert System used by insurance companies to increase the consistency of applying company standards in evaluating various risks (e.g. fire, flood, theft) is underwriting.

Case 6
The Expert Business Impact Analysis System, developed by Decision Support Systems, provides an appraisal of business risks and recommendations for strategies to cope with said risks. The focus is on global risks that can threaten a company's operations. Once a key risk is identified, the IAS develops a set of recommendations for that risk.

Case 7
Strohl Systems provides a contingency plan by assessing potential risks and alternative strategies for preventing business interruptions. The software also aids the decision maker in putting together a contingency plan for recovering from outages, failures, and disasters that cannot be adequately controlled via prevention strategies. Contingency planning is the process an organization goes through to assure that it can get its information systems or operations back up and running in cases of failure or disaster.

Case 8
Internal Operations Risk Analysis, a system by Business Foundations Software, uses 180 interview questions to asses the control strengths and weaknesses of an organization's business operations. The software provides an overall rating of control strength that can be broken down by operational area. A similar system available from PricewaterhouseCooper is known simply as Controls.

Case 9
CARGEX-Cargo Expert System is used by Lufthansa, a German airline, to help determine the best shipping routes.

7.6 VALUE CHAIN MANAGEMENT SOFTWARE

What are the software systems that impact value chain management?

Firms employ a wide variety of software systems to process information and improve the operation of the value chain. They are Enterprise Resource Planning (ERP) systems, Supply Chain Management (SCM) systems, and Customer Relationship Management systems (CRM).

Enterprise Resource Planning Systems (ERP). Enterprise Resource Planning systems grew out of material requirements planning (MRP) systems which have been used for more than 20 years. MRP systems computerized inventory control and production planning. Key features included an ability to prepare a master production schedule, a bill of materials, and generate purchase orders. ERP systems update MRP systems with better integration, relational databases, and graphical user interfaces. Features now encompass supporting accounting and finance, human resources, and various e-commerce applications including SCM and CRM which are explained next.

Supply Chain Management Systems (SCM). Supply chain management is the organization of activities between a company and its suppliers in an effort to provide for the profitable development, production, and delivery of goods to customers. By sharing information, production lead times and inventory holding costs have been reduced, while on-time deliveries to customers have been improved. SCM software systems support the planning of the best way to fill orders and help tracking of products and components among companies in the supply chain. Wal-Mart and Procter & Gamble (P&G) are two companies that have become well known for their cooperation in the use of SCM. When P&G products are scanned at a Wal-Mart store, P&G receives information on the sale via satellite and, thus, knows when to make more product and the specific Wal-Mart stores to which the product should be shipped. Related cost savings are passed on, at least in part, to Wal-Mart customers.

Customer Relationship Management Systems (CRM). Customer Relationship Management Systems (CRM) automates customer service and support. They also provide for customer data analysis and support e-commerce storefronts. While CRM is constantly evolving, it's already led to some remarkable changes in the way companies interact with customers. For example, Federal Express allows customers to track their packages on the Web. This service is becoming commonplace, but it didn't exist 10 years ago. Amazon.com uses CRM technology to make suggestions to customers based on their personal purchase histories. The ultimate development of CRM remains to be seen but undoubtedly mobile communication will play a significant role. Many companies are already experimenting with systems to send messages to cell phone users offering them special discounts and buying opportunities.

7.7 EXTENSIBLE BUSINESS REPORTING LANGUAGE (XBRL)

What is the purpose of Extensible Business Reporting Language (XBRL)?

There exist too many data formats on the Internet preventing users from analyzing financial information without many labor intensive conversions. Excessive time is devoted to extracting useful information from available accounting and financial data. Further, time is wasted re-keying the same information into a spreadsheet. For example, data in the Securities and Exchange Commission’s (SEC) database referred to as Electronic Data Gathering, Analysis, and Retrieval System (EDGAR) cannot be imported directly into spreadsheets. EDGAR performs automated collection, validation, indexing, acceptance, and forwarding of submissions by companies and others who are required by law to file forms with the SEC. The comparison of numbers and ratios requires significant effort and very time consuming re-keying.

Extensible Business Reporting Language (XBRL) makes available financial information in an “easy to use” format on the Internet. Formerly code named XFRML, a freely available electronic language for financial reporting, it is an XML-based framework that provides the financial community a standards-based method to prepare, publish in a variety of formats, reliably extract and automatically exchange financial statements of publicly held companies and the information they contain. XBRL is not about establishing new accounting standards but enhancing the usability of the ones that we have through the digital language of business. XBRL will not require additional disclosure from companies to outside audiences. This new language allows the financial community to communicate in a universal language.

Simple examples are associating numbers with variables and matching a name to a picture. Thus, XBRL is an *intelligent* Internet language that can be used in business by preparers and users of financial statements including corporate accountants, CPA practitioners, financial analysts, business managers in reviewing reports, loan officers at banks, investors, suppliers, securities exchanges (e.g., New York Stock Exchange), over-the-counter market members of NASDAQ, and federal and local governmental agencies (e.g., SEC, IRS). On the other hand, Hyper Text Markup Language (HTML) format is not intelligent enough as a language to understand and reveal relationships in accounting and financial data. HTML is not designed to be aware of the information it presents. XBRL closes the "communication gap" between the preparers and users of financial data on the internet. XBRL is based on the Extensible Markup Language (XML) so content and relationships may easily be understood.

APPLICATIONS OF XBRL

There are many accounting, financial, and business applications of XBRL including:

1. Automating business reporting.
2. Financial statement preparation and analysis. For example, XBRL financial statements on a company's web site can go directly into Microsoft Excel so re-keying is not required.
3. Auditing of financial statements.
4. Managing and distributing accounting data.
5. Consolidating and reporting data to regulatory bodies.
6. Collecting and updating financial data on borrowers such as by accessing the borrower's Web page.
7. Assessing credit risk.
8. Integrating investment information.
9. Communicating financial performance to users of financial statements.
10. Internal management reporting such as cost control and analysis.

7.8 WIRELESS TECHNOLOGY

What does wireless technology mean?

Wireless networking is fast becoming a viable alternative for companies that can utilize the advantages it provides. It can provide businesses with enhanced connectivity and flexibility. For companies seeking to expand a computer network or make their employees more mobile. Major technology companies are behind its standards and the price and choice of products should only improve.

Two major developing technologies are changing the computer networking landscape: Wi-Fi (Wireless Fidelity) and Bluetooth. These two forms of wireless technology can change the entire infrastructure of business networks. Many new hardware and software products, produced by many big-name technology companies, are equipped for use with Bluetooth and Wi-Fi. The Bluetooth Special Interest Group (SIG; www.bluetooth.com) and the Wi-Fi Alliance (www.weca.net) are groups formed to help effectively develop, integrate, and implement these wireless technologies globally. These two groups have created global standards for each technology, which must be met by any company producing hardware or software to operate with Bluetooth or Wi-Fi.

What does it all mean for CEOs, CIOs and users?

CEOs

Mobile working can dramatically boost productivity and improve an organization’s responsiveness and flexibility, but it also poses challenges for the chief executive. But as the trend towards mobile working gather's pace, these are issues that executives cannot afford to ignore. As wired and wireless network-enabled notebook PCs, personal digital assistants (PDAs) and smart phones proliferate, mobile working is becoming a reality, not just for a select few corporate 'road warriors,' but for a much larger group of employees.

This expansion has significant advantages—and risks—for corporate managements. On the positive side, mobile and remote access to corporate systems such as e-mail, enterprise portals and to applications like contact management and customer relationship management systems often provide a competitive edge for companies, while improving both customer and employee satisfaction. But on the other hand, mobile technologies and services tend to come with premium price tags, pushing costs up at a time when chief executives are still under pressure to improve margins and show rapid returns on investments.

Mobile systems are also notoriously difficult to manage and control and perhaps most seriously, ad-hoc arrangements can represent a real threat to enterprise system security. Balancing the risks and rewards of mobile working and establishing a corporate policy framework to cover, for example, remote access to corporate networks has become an important issue for chief executives—an issue that they ignore at their peril.

CEOs will want to ensure that they are getting value for money when they invest in mobile working infrastructure, so they will probably want to see estimates - and subsequently evidence - of productivity gains and other tangible improvements. They will also want to see investment return projections, and probably be involved in making choices about competing projects.

They will probably also be concerned about how to ensure that mobile and remote workers are earning their keep when they are out of the office. Most consultants suggest that trust plays a key role in enabling a mobile workforce. They add that it is important to lay down guidelines and keep a watch on costs to ensure they do not spiral out of control. Given the growing threat posed by e-mail viruses, 'spyware' and other unwelcome network intrusions, most CEOs are well advised to take steps to ensure that the benefits of mobile working are not negated by the threat it can pose to corporate security. But while it may be tempting to use security as an excuse for inaction, the competitive and financial risks of not adopting mobile working practices when competitors are pushing forward may be even greater.

CIOs

Like it or not, mobile devices ranging from Wi-Fi enabled notebook PCs and PDAs to data-centric communicators such as the Treo 600 or RIM's Blackberry are finding their way into the corporate environment.

Sometimes they are part of a corporate roll-out and can therefore be planned and controlled. But more often than not they are surreptitiously introduced by individuals who have tasted the benefits of remote access and mobile working as consumers and now want to use the same devices and services at work.

One of the key challenges for CIOs in either case is to find ways to accommodate a diverse group of mobile devices while protecting the corporate IT infrastructure and minimizing the network security threat they can pose.

Given the fast pace of change in the technology industry - particularly in the mobile device sector - it is also often a challenge for a CIO to keep up with hardware, software and service developments and to provide the level of support - often with reduced resources - that users have come to expect.

One way to minimize the support overhead is to standardize on a set of devices such as notebook PCs, PDAs, mobile phones and communicators. However this often delays deployment and can lead to end user frustration.

Another option is to outsource the provision of devices and services. For example US-based Aruba, which supplies secure Wi-Fi networks for corporate customers, says many of them also want it to manage the deployment and maintenance of the Wi-Fi system.

One of the fastest growing areas in the mobile technology sector is security. Typically, larger companies will deploy virtual private networks to facilitate secure access for mobile and remote users such as home office workers to a corporate network.

However there are secure alternatives including remote access programs such as LapLink and the GoToMyPC remote access service that can be rolled out across an enterprise, or made available to a few users.

There is also a growing market for software and hardware such as mini-USB drives and biometric devices such as fingerprint readers designed to protect confidential or sensitive data stored on a portable PC.

Other vendors have developed systems designed to enable secure access to e-mail and other corporate services from internet public access points such as hotels, conference centers or even Wi-Fi hotspots.

Most CIOs have already discovered that the trend towards mobile working is like a runaway steamroller - it is not about to stop. So while it makes sense to lay down guidelines about which mobile devices are supported and how they should be used, ultimately the CIO has to deal with the realities of mobile working.

USERS

The rapid growth of mobile working and the proliferation of new hardware devices, software and services designed to enable mobile workers to do their jobs from virtually anywhere, poses both great opportunities and challenges.

For many employees, the availability of basic tools like portable PCs, pocket-sized PDA organizers and the now nearly ubiquitous mobile phone, gives them much greater freedom and flexibility.

For example, salespeople can use mobile technologies to update customer profiles, download price quotes and provide their audiences with dazzling multimedia presentations. Executives can send and receive email messages, peer into the corporate ERP system or check share prices and competitors' websites while traveling using Wi-Fi or W-LAN wireless connections.

For mobile professionals in particular, as a recent study conducted by Intel, the US chipmaker, showed technology has dramatically changed their lives making it much easier to stay in touch while traveling and respond to colleagues and customers in a more timely fashion.

Meanwhile, a growing number of employees now have broadband internet access at home or work in remote local offices and yet can tie back into corporate headquarters securely via a virtual private network connection. But while more and more employees have 'always-on' wired and wireless Internet access, they are also finding that they need to set boundaries in order to ensure that they retain a balance between home and office lives and that they are the masters of technology rather than its slave.

Individual attitudes towards mobile technology also vary. So for example, while some employees relish the idea of being able to deal with the overnight flood of e-mail using a wireless device on the train before they reach the office, others balk at the idea of work intruding into another part of their life.

Balancing the demands of work and private lives in the age of mobile technology— when the pressure for greater productivity is often unrelenting —has become one of the more interesting questions probed by sociologists.

Fortunately, the wide range of technologies available mean that most employees can pick and choose which technologies to adopt, and just how much they should intrude into their home lives. Arguably however, portable PCs, mobile phones and PDAs enable employees to work more flexibly and at times that best suit them. Provided a balance is kept, mobile devices and technologies can be valuable tools that enrich both work and private lives.

GLOSSARY

802.11 a family of specifications developed by the US Institute of Electrical and Electronics Engineers (IEEE). There are currently three specifications in the family (802.11a, 802.11b and 802.11g), with more being developed. The 802.11b standard often referred to as Wi-Fi - is currently more widespread. However, hardware manufacturers are increasingly offering multi-standard equipment that can work with various standards.

ABC ANALYSIS inventory control system that divides the inventory into three classes; A, B, and C depending on the value and importance of the item.

ACCEPTABLE QUALITY LEVEL (AQL) quality standard that allows for a prespecified number of defects.

ACCEPTANCE an assent to an offer in accordance with its terms.

ACCOUNTING EXPOSURE variability in the firm’s reported values for net income and net worth that results from changes in exchange rates.

ADVERTISING any paid form of nonpersonal communication designed to gain acceptance of the advertiser’s message.

ADVERTISING RESEARCH carried on as an aid or support function to the advertising manager.

AGENCY RELATIONSHIP a consensual arrangement between two persons whereby one agrees to act for the benefit of and under the control of the other person.

AGGREGATE PRODUCTION PLANNING establishment of aggregate production and inventory levels over a medium range time horizon.

AMERICAN TERMS a method of exchange rate quotation that gives the value of a foreign currency in U.S. dollars.

APPLICATION PROGRAM computer software written specifically to process data in an information system. It performs tasks and solves problems applicable to a manager's work.

APPRECIATION an increase in the value of one currency in terms of another currency. When the dollar appreciates, it can be exchanged for greater amounts of foreign currencies.

AREA SAMPLING may be used for market research when population lists are not available. Blocks are selected at random and residents are interviewed either in total or randomly. *See also* Market research.

ARTIFICIAL INTELLIGENCE (AI) thinking and reasoning software based on information inputted into it by a human expert. The reasoning process involves self-correction. Significant data are evaluated and relevant relationships uncovered. The computer learns which kind of answers are reasonable and which are not. Artificial intelligence performs complicated strategies that determine the best or worst way to accomplish a task or avoid an undesirable result. Examples of applications of AI are tax planning and capital budgeting analysis.

ASSEMBLY CHART graphical method for visualizing how the various parts and subassemblies flow into the assembly process.

ASSIGNABLE CAUSES causes of poor quality that are due to problems with materials, machines, or operators and that can be remedied.

ASSIGNMENT PROBLEM problem of determining how the assignments should be made in order to minimize total costs.

ATTRIBUTE MAPPING a technique for identifying new products by mapping product-line attributes; searching for "attribute space" or possible new attribute combinations for new products.

B2B (BUSINESS-TO-BUSINESS) E-COMMERCE Using B2B trading networks, auction sites, spot exchanges, online product catalogs, barter sites, and other online resources to reach new customers, serve current customers more effectively, and obtain buying efficiencies and better prices.

B2C (BUSINESS-TO-CONSUMER) E-COMMERCE the online selling of goods and services to final customers.

BABY BOOMERS the 78 million people born during the baby boom, following World War II and lasting until the early 1960s.

BAILMENT exists when possession of property belonging to one person is delivered to another person who intends to assume custody or control over the property and who expressly or implicitly promises to return it to the owner or to dispose of it as directed by the "owner".

BAIT-AND-SWITCH ADVERTISING a technique by which a good or service is advertised at a low price with the intention of attracting customers and then switching them over to higher-priced items. The seller may have no intention of selling the "bait item." The customer is often told the bait item is out-of-stock or inferior.

BALANCE OF PAYMENTS the relationship between monies received from exports and monies paid out for imports.

BALANCE OF TRADE a unit of the balance of payments that reflects the value of all goods imported and exported by any nation.

BAUD serial information transfer speed with which a modem receives and sends data.

BENCHMARKING searching for new and better procedures by comparing your own procedures to that of the very best.

BETTER BUSINESS BUREAUS (BBB) local business supported organizations that maintain records on local business firms and provide information to concerned consumers. Local bureaus are part of a loosely tied national system.

BILL OF MATERIALS (BOM) structured parts list that shows the manner in which the product is actually put together.

BLOCK DIAGRAM diagram using symbols to explain the interconnections and information flow between hardware and software.

BRAINSTORMING a technique involving a group of people who meet to voice any idea that comes to mind concerning a particular subject in the hopes of generating new ideas.

BRAND a name term, sign, symbol, or design, or combination of them intended to distinguish products of one seller from those of competitors.

BRAND LOYALTY the strength of buyer preference for a particular good or service, usually resulting in repeat buying.

BRAND NAME has a narrower meaning than brand. It is a word, letter, or a group of words or letters that can be spoken.

BUDGETING MODELS computer-based mathematical models generating all kinds of corporate budgets (e.g., cash flow, profitability). The models help managers look at a variety of "what-if" questions. The resultant calculations provide a basis for choice among alternatives under conditions of uncertainty.

BUSINESS CYCLE a pattern of ups and downs in the output of goods and services.

BUSINESS ETHICS standards by which business activities can be judged as morally right or wrong.

BUSINESS PROCESS REENGINEERING (BPR) approach aiming at making revolutionary changes as opposed to evolutionary changes by eliminating non-value added steps in a business process and computerizing the remaining steps to achieve desired outcomes.

BUSINESS STRATEGIES focus on how to compete in a given business.

BUYING POWER INDEX a market index of a geographic area’s market characteristics that indicate marketing opportunities. It is composed of:

BUZZ MARKETING cultivating opinion leaders and getting them to spread information about a product or service to others in their communities.

C2B (CONSUMER-TO-BUSINESS) E-COMMERCE online exchanges in which consumers search out sellers, learn about their offers, and initiate purchases, sometimes even driving transaction terms.

C2C (CONSUMER-TO-CONSUMER) E-COMMERCE online exchanges of goods and information between final consumers.

CAPACITY 1. rate at which work is capable of being produced. 2. the ability to perform legally valid acts; that is, the ability to incur legal liability or to acquire legal rights.

CAPACITY REQUIREMENTS PLANNING (CRP) system for determining if a planned production schedule can be accomplished with available capacity and, if not, making adjustments as necessary.

CAVEAT EMPTOR a Latin term meaning "let the buyer beware" before she buys. According to this principle, the buyers purchase at their own risk, in the absence of misrepresentations. This does not obligate the seller to volunteer information. In recent years, however, the law requires full disclosure by the seller of known defects in the product or service.

CAVEAT VENDITOR a Latin term meaning “let the vendor beware.” Without specific exemptions, the seller is liable for action on the part of the buyer for any alterations in the contract or warranty, whether explicit or implied. This is the basis for the consumer rights movement.

CBR an abbreviation for crude birth rate or the number of new births per 1,000 population.

CDR an abbreviation for crude death rate or the number of deaths per 1,000 population.

CELLULAR MANUFACTURING groups of machinery that are closely associated with each family of parts.

CENTER-OF-GRAVITY METHOD quantitative approach to locating a facility that minimizes the distance or cost of transportation weighted by the volume of goods moved.

CHAIN LINKS series of linked data items.

CHANNELS OF DISTRIBUTION all the marketing units through which goods flow from origin to final purchase and use. Channel functions provide transfer of title or ownership as goods move from producer to consumer.

CHASE PLAN aggregate production plan that adjusts capacity in response to seasonal demand.

CLASSICAL DECOMPOSITION approach to forecasting that seeks to decompose the underlying pattern of a time series into cyclical, seasonal, trend, and random sub-patterns.

CLICK-AND-MORTAR COMPANIES traditional brick-and mortar firms that have added e-marketing to their operations.

CLOSING the final step of a sales presentation when the customer is asked to “buy” or order.

COBRANDING the practice of using the established brand names of two different companies on the same product.

COLLATERAL CONTRACT one made with an obligee whereby a third person promises to pay the debt, default, or miscarriage of the obligor in the event the obligor fails to perform as obligated.

COMPLEMENTARY PRODUCT a product, the demand for which increases with demand for a second product. Motorcycles and helmets, peanuts and beer, and skateboards and medical services are a few examples.

COMPUTER-AIDED DESIGN (CAD) use of a computer to interact with a designer in developing and testing product ideas without actually building prototypes.

COMPUTER-AIDED DESIGN AND MANUFACTURING (CAD/CAM) computerized system to both integrate part design, as with CAD, and to generate processing or manufacturing instructions.

COMPUTER-AIDED MANUFACTURING (CAM) manufacturing system utilizing computer software that controls the actual machine on the shop floor.

COMPUTER-INTEGRATED MANUFACTURING (CIM) computer information systems utilizing a shared manufacturing database for engineering design, factory production, and information management.

COMPUTER-NUMERICALLY CONTROLLED (CNC) MACHINES stand-alone machines controlled by a computer.

CONCENTRATION RATIO represented by the sales of the largest firms in an industry.

CONCEPT STATEMENT a working statement about a product idea outlining strengths and benefits.

CONSIDERATION either a detriment to the promisee or a benefit to the promisor, which was bargained for and given in exchange for the promise.

CONSIGNMENT PURCHASE the merchant does not pay for inventory until items are sold, and can return unsold items. Title is not taken until the final sale is completed.

CONSUMER BEHAVIOR the process consumers use in deciding among and between goods and services they will purchase.

CONSUMER PRODUCT SAFETY COMMISSION (CPSC) a federal regulatory agency with a five-member board that administers the Consumer Product Safety Act of 1972. The Board can require *a* firm to recall, replace, or repair products considered hazardous to consumers.

CONSUMER RESEARCH concerned chiefly with the discovery and analysis of consumer attitudes, reactions, and preferences.

CONSUMER'S RISK probability of accepting a bad lot.

CONTRACTS essentially promises, or groups of promises, to do something in the future.

CONTRACTUAL VERTICAL MARKETING SYSTEMS (VMS*)* formal agreements between channel members result in a coordinated effort. Some types are retail co-ops, wholesaler-sponsored voluntary chains, and franchises.

CONTROL CHART graphical means of depicting sample characteristics, such as means, ranges, and attributes, over time used for process control.

CORPORATE STRATEGIES address what businesses a multiple-business-unit organization will be in and how resources will be allocated among those businesses.

CORPORATE VERTICAL MARKETING SYSTEMS (VMS) a vertical marketing system where each unit in the channel is owned and controlled by a single entity.

CORPORATION a legal entity which has a legal existence separate from its owners.

COST OF CAPITAL the rate of return that investors require in return for supplying funds to the firm.

COST-PLUS PRICING selling price is determined by totaling production, merchandising, or service costs, and adding on a profit margin.

COUNTER-ADVERTISING advertising that refutes or corrects false claims or misrepresentations. It may be voluntary or required by some regulatory agency. Counter-advertising also includes media messages that present information opposing use of commercially advertised products. Nonsmoking or anti-alcohol usage are two examples.

CRASHING process of reducing an activity time by adding resources and hence usually cost.

CREDIT RISK the risk that the importer of goods shipped by a foreign firm on credit will default.

CRIME an act done by an individual which society considers to be a wrong against it and for the commission of which society prescribes certain penalties or punishment.

CRITICAL PATH longest sequence of activities in a project management network.

CROSS RATE the effective exchange rate between two currencies that can be obtained by exchanging each currency for a third currency.

CUSTOMER RELATIONSHIP MANAGEMENT (CRM) SOFTWARE software that automate customer service and support. They also provide for customer data analysis and support e-commerce storefronts.

CYBER INVESTING Investing such as on-line trading on the Internet.

DATA INTERCHANGE FORMAT (DIF) FILE system to transfer computer files from one program to another.

DECISION SUPPORT SYSTEM (DSS) branch of a management information system that provides answers to management problems and that integrates the decision maker into the system as a component. DSS software provides support to the manager in the decision making process. It analyzes a specific situation and can be modified as the manager desires. Examples of applications include planning and forecasting.

DECISION MAKING UNDER RISK decision made when the probability of occurrence of the different states of nature is known.

DECISION MATRIX also called, payoff table, matrix consisting of the decision alternatives, the states of nature, and the decision outcomes.

DECISION THEORY systematic approach to making decisions especially under uncertainty.

DECISION TREE graphical method of showing the sequence of possible decision alternatives.

DEED OF TRUST a three party device for obtaining a secured interest in real property. The land contract is a security device for securing the balance due on a contract for the sale of land.

DEMOGRAPHICS reflect the nature of a given population, i.e., ethnic composition, age, sex, housing, marital status, education, earnings, occupation, and any data on which to establish a norm or profile.

DEPRECIATION a reduction in the value of a fixed asset due to age and use. Accounting depreciation is based upon mathematical rules. Economic depreciation reflects loss of economic value.

DESCRIPTIVE STUDIES research efforts directed toward obtaining information about a clearly defined problem or objective. “How many people listened to the President’s speech and what was the composition of the listeners?” *See also* Market research.

DEVALUATION when a nation reduces the value of its currency in relation to currencies of other nations.

DIFFUSION PROCESS the manner in which innovations or new products are adopted by consumers and spread through a segment or social unit. Typical progression would include stages of: (1) innovation, (2) minor acceptance, (3) early majority, (4) late majority, and (5) laggards.

DIRECT QUOTE the value of a foreign currency in units of the domestic currency. A direct quote on the pound in America would be a dollar value, whereas a direct quote for the value of the pound in Britain would be a pound value.

DISPOSABLE PERSONAL INCOME (DPI) that income remaining after deducting personal taxes and all other payments to the government.

DISSOLUTION OF A PARTNERSHIP a change in the relation of the partners caused by any partner ceasing to be associated in the carrying on of the business.

DISTRIBUTION CENTER (WAREHOUSE) a location for collecting, sorting and dispersing products in order to facilitate rapid handling and matching combinations of product with user needs. User storage cost and inventories are reduced.

DISTRIBUTION CHANNELS *see* Channels of distribution.

DIVERSIFICATION the reduction in the variability of an average return on several investments that occurs when the individual returns are not perfectly positively correlated.

DRAFT a three-party instrument in which one person (the drawer) orders a second person (the drawee) to pay a sum certain in money to a third person (the payee) either on demand or at a definite future date.

DUMMY ACTIVITY fictitious activity with zero activity time used to represent precedence or used whenever two or more activities have the same starting and ending nodes.

DUMPING selling domestic products at low prices in *a* foreign market in order to “dump” excess inventory or otherwise unsellable goods.

ECONOMIC EXPOSURE variations in the economic or market value of the firm that result from changes in exchange rates. This is due primarily to changes in the firm’s competitiveness with importers and exporters.

EFFICIENT MARKET a market in which prices accurately reflect all available information. Arbitrageurs cannot make profits in efficient markets.

ENTERPRISE RESOURCE PLANNING (ERP) SOFTWARE system that grew out of material requirements planning (MRP) systems that computerized inventory control and production planning. Key features included an ability to prepare a master production schedule, a bill of materials, and generate purchase orders.

EUROBANKING banking that involves accepting deposits and making loans that are denominated in many different currencies besides the host country's currency.

EUROBOND BONDS that are denominated in the currency of countries other than the currency of the country in which they are sold.

EUROCOMMERCIAL PAPER short-term notes that are issued by firms and denominated in currencies of countries other than the one in which they are sold.

EURODOLLARS dollar denominated deposits in banks located outside the United States. Most Eurodollars are deposited in London. Dollar deposits in International Banking Facilities in the United States are also Eurodollars.

EUROPEAN TERMS a method of exchange rate quotation whereby the value of the dollar is given in units of foreign currency, such as francs per dollar or lire per dollar.

EXECUTIVE INFORMATION SYSTEM (EIS) provides information on how the company is currently performing in its operating and financial activities. The EIS provides detailed information as needed to bring management up-to-date in executive decision making.

EXPERT SYSTEMS computer software involving stored reasoning schemes and containing decision making processes of business experts in their specialized areas. The software mimic the way human experts make decisions. The expert system appraises and solves business problems requiring human intelligence and imagination that involve known and unknown information. The components of the expert system include a knowledge base, inference engine, user interface, and knowledge acquisition facility.

EXPORT IMPORT BANK a U.S. government agency that facilitates international trade. Its primary activity is providing low cost financing for imports and exports.

EXPOSURE netting a procedure used by multinational firms to reduce the costs of hedging transaction exposure. It relies on the principal of netting inflows and outflows of currencies.

EXPROPRIATION the involuntary seizure by a host government of foreign owned businesses and other assets without adequate compensation.

EXTENSIBLE BUSINESS REPORTING LANGUAGE (XBRL) formerly code named XFRML, a freely available electronic language for financial reporting. It is an XML-based framework that provides the financial community a standards-based method to prepare, publish in a variety of formats, reliably extract and automatically exchange financial statements of publicly held companies and the information they contain.

FACTOR RATINGS procedure in which each alternative site is rated according to each factor relevant to the decision, and each factor is rated according to importance.

FAMILY BRAND a company with two or more products all bearing the same brand identity. Kellogg’s corn flakes and rice crispies are examples.

FEDERAL DEBT the amount the government owes to creditors.

FEDERAL DEFICIT excess of government spending over taxes collected for a year.

FISCAL POLICY the government's use of taxes and expenditures to achieve desired economic goals.

FISHBONE DIAGRAMS often called *cause-and-effect diagrams*, way of determining likely root causes of a problem.

FISHER EFFECT an economic relation between interest rates and inflation rates. Interest rates reflect expected inflation rates.

FIXED EXCHANGE RATE an exchange rate that doesn’t vary. Governments fix exchange rates by buying and selling currencies in the foreign exchange market.

FIXED-POSITION LAYOUT layout in which the construction of a large product is accomplished in one place.

FLAGSHIP STORE the main, downtown, central, or oldest unit of *a* multiunit department store group.

FLEXIBLE (FLOATING) EXCHANGE RATE an exchange rate that is set by free market forces without government intervention.

FLEXIBLE MANUFACTURING SYSTEM (FMS) computer-controlled process technology suitable for producing a moderate variety of products in moderate, flexible volumes.

FLOW PROCESS CHART description of the sequence of operations in a production process. These generally are operation, inspection, movement, storage, and delay.

FOREIGN BOND a bond issued by a foreign company in the domestic bond market. Unlike Eurobonds, foreign bonds sold in the United States are denominated in dollars.

FOREIGN EXCHANGE RATE the price of one nation's currency in terms of another nation's currency.

FORFAITING a method of financing the purchase of capital goods by East Bloc countries. The forfaiter coordinates the activities of exporters, importers, and financial institutions.

FORWARD PREMIUM the percentage by which the forward rate exceeds the spot rate. Forward rate the exchange rate or price of a currency specified in a forward contract.

FRAUD an intentional misrepresentation of a material fact made with the intent to induce another to rely on it and to surrender a legal right or piece of property; thus fraud essentially is an intentional misrepresentation.

FUNCTIONAL CURRENCY the primary currency in which a foreign subsidiary conducts its business. FASB 52 specifies the rules for determining a functional currency.

GANTT CHART graphical representation of a schedule used to plan or monitor progress.

GATT (General Agreement on Tariffs and Trade) an international agreement to encourage trade by the reduction of tariffs and quotas on foreign goods and services.

GENERIC BRAND NAME aspirin and nylon are former brand names now used as general terms for a class of products.

GIFT a voluntary transfer of personal property from one person to another person without any consideration being given for the transfer.

GROSS DOMESTIC PRODUCT (GDP) total money value of all final goods and services produced by an economy during a year.

GROUP LAYOUT layout in which machine groups are arranged to process families of parts with similar characteristics.

GROUP OF SEVEN the major Western economic powers: Britain, Canada, France, Germany, Italy, Japan, and the United States. They meet periodically to coordinate global monetary policy.

GROUP TECHNOLOGY concept for identifying and classifying part families to efficient mass-production-type layouts. It can be designed for items usually manufactured by a process layout.

HEDGING any procedure that eliminates or reduces variability in future cash flows. If future dollar cash flows form investments that are uncertain due to uncertainty about future exchange rates, then additional investments can be made that offer dollar payouts that are inversely related. The net dollar cash flow from the two investments is less variable.

HEURISTIC LINE BALANCING TECHNIQUE technique involving the generation of a precedence diagram (technological sequencing requirements) in a particular way, which indicates the flexibility available for shifting tasks from column to column to achieve the desired balance.

HOTSPOT provides high-speed wireless internet access in convenient public locations or at home. Using either a laptop or PDA that is 802.11 wirelessly-enabled, people can download their email attachments, watch a live webcast, or listen to streaming audio.

INDEX OF SATURATION—a formula: *Ci* x *REi* where Ci = the number RFi of customers; REi = the dollar expenditure per customer; and RFi = total square feet of unit area allotted to a product or service. The objective is to have the optimum per capita sales per square foot of space.

INDIRECT QUOTE a method of quoting an exchange rate that gives the number of foreign currency units per unit of domestic currency. An indirect quote for the yen in America would be the number of yen per dollar.

INFLATION an increase in the general level of prices.

INFLATION RATE percent increase in price level over a year.

INSTITUTIONAL APPROACH refers to the study of marketing by examining the full range of marketing institutions; retailers, wholesalers and service units responsible for moving goods and services from producer to consumer. Also called the macro or environmental approach.

INTEREST RATE PARITY an equilibrium relationship between spot and forward exchange rates and foreign and domestic interest rates. Banks use interest rate parity to price forward exchange.

INTERFACE means of interaction between two computer devices or systems that handle data (e.g., formats, codes) differently. An interface is a device that converts signals from one device into signals that the other device needs.

INTERNATIONAL BANKING FACILITY (IBF) special departments of U.S. banks that are free to accept dollar deposits and make loans to foreign residents without reserve requirements or interest rate regulations. They are permitted so that U.S. banks can pursue business in the Eurodollar market.

INTERNET international network connecting smaller networks linking computers of different entities.

INTRANET internal company Web sites. It is developed by the company itself.

INVENTORY STATUS FILE file indicating how much inventory is on hand or on order.

IRR (Internal Rate of Return) the rate of return at which the present value of cash invested is equal to the present value of the cash earned.

ISO 9000 certification standards developed by the International Organization for Standardization (ISO) that serve as a basis for quality standards for global manufacturers.

JIT MANUFACTURING manufacturing approach that produces only what is necessary to satisfy the demand of the preceding process (a demand-pull system).

JOB DESIGN determination of specific job tasks and responsibilities, the work environment, and work methods.

JOHNSON’S RULE technique that can be used to minimize the completion time for a group of jobs that are to be processed on two machines or at two successive work centers.

JOINT TENANCY undivided ownership of property where the surviving tenant succeeds to the ownership interest of the deceased tenant with the deceased tenant having no opportunity to pass his or her interest to someone else by will.

JOINT VENTURE the sharing of risk and responsibility with a firm in a foreign country.

JUST-IN-TIME PRODUCTION approach to manufacturing in which items are produced only when needed in production.

KANBAN Japanese information system for coordinating production orders and withdrawals from in-process inventory to realize just-in-time production.

LAGGING delaying payment or receipt of a foreign currency until there is an offsetting transaction for the purpose of reducing transaction exposure.

LAW OF ONE PRICE an equilibrium between the price of a tradable good in one country and its price in another country. Arbitrage ensures that the prices are equivalent when translated at the current exchange rate.

LEADING accelerating payment or receipt of a foreign currency until there is an offsetting transaction for the purpose of reducing transaction exposure.

LETTER OF CREDIT a contractual commitment by a bank to make payment for goods shipped to an importer. This eliminates the exposure of exporters to credit risk.

LEVEL PLAN aggregate production plan that maintains a uniform output rate.

LIBOR (London Interbank Offer Rate) an interbank market interest rate in Eurocurrency deposits lent by banks to one another. Many loans have interest rates tied to LIBOR.

LICENSING a procedure whereby a foreign firm permits a domestic firm to produce and market goods on its behalf in return for royalties on sales or a share of profits.

LINE BALANCING process of distributing the workloads evenly.

LINK FINANCING a financing technique where banks arrange for two firms in two countries to borrow each other’s currency and then make an offsetting arrangement to pay off each other’s loan at maturity. This eliminates their exposure to exchange rate changes.

LOCAL AREA NETWORK (LAN) linking of computers and other devices for intersite and intercompany applications in a small geographic area.

LOCATIONAL BREAK-EVEN ANALYSIS technique that compares potential locations on an economic basis by estimating the variable and fixed costs and then graphing them for a representative sales or production volume at each location.

LOGO a symbol, design, picture or any figure that represents an individual or firm. Trademarks, unique trade names, or associated sounds are all "logotypes."

LONG-RANGE OBJECTIVES specification of the results desired in pursuing the organization's mission and normally extend beyond the current fiscal year of the organizations.

LOSS LEADERS items priced to attract customers who will then purchase other standard- or high-profit margin items.

MANAGED FLOAT a description of a government policy that allows market forces to determine a currency's exchange rate but does not rule out government efforts to influence these market forces.

MANAGEMENT INFORMATION SYSTEM (MIS) a computer-based or manual system which transforms data into information useful in the support of decision making.

MANUFACTURING RESOURCE PLANNING (MRP II) integrated information system that steps beyond first-generation MRP to synchronize all aspects (not just manufacturing) of the business.

MARKET ANALYSIS a study of the size, location, nature, and characteristics of markets.
Market efficiency the degree to which market-determined prices accurately reflect the true economic value of assets.

MARKET RESEARCH the systematic, objective, and exhaustive search for, and study of, the facts relevant to any problem in the field of marketing. For a detailed listing of components, *see* Marketing research.

MARKET SEGMENTATION individuals are clustered in to recognizable groupings based on common characteristics such as age, sex, income, or geographic location, and products or services are designed to satisfy that segment of the total market.

MARKETING basically a bridge between production and consumption that directs the flow of goods and services to the consumer. It also contributes to the recognition of consumer needs and their eventual satisfaction.

MARKETING DATA BANK an organized record of all data generated by a marketing information system and market research activities. *See also* Market research.

MARKETING INFORMATION SYSTEM (M1S) a systematized procedure for collecting, processing, implementing, and following-up on all activities related to the marketing function.

MARKETING MIX the combination of the four Ps (product, price, promotion, and place) that best meets the needs of the consumer and that should result in some desired sales/profit objective.

MARKETING RESEARCH a systematic approach to gathering and accessing quantitative and qualitative market information. Serves as *a* basis for policy and decision making concerning new programs or the evaluation of existing ones.

MARKETING STRATEGY a selected combination and predetermined mix of the four Ps as applied to any marketing function, good, or service.

MASTER PRODUCTION SCHEDULE (MPS) time-phased statement of how many finished items are to be manufactured. It is obtained by disaggregating the production plan and is the primary input to *material requirements planning (MRP).*

MATERIAL REQUIREMENTS PLANNING (MRP) computerized data processing system whose function is to schedule production and control the level of inventory for components with dependent demand.

MERCHANDISING efforts by: (1) manufacturers and wholesalers to encourage sales promotion activities by retailers, (2) marketers to influence consumers at the point of sale by other than personal selling, and (3) marketers to plan the best marketing mix to stimulate consumption.

MILLINE RATE a hypothetical cost standard established by dividing the population reached into the cost of one agate line times 1,000,000. $\frac{\text{Cost 1 agate x 1 million}}{\text{population}}$ is the formula used as a basis for comparing advertising costs among media.

MISSION a statement that defines an organization's line or lines of business, identifies its products and services, and specifies the markets it serves at present and in a time frame of three to five years.

MODEL representation of a real life system.

MONETARY POLICY the efforts of a nation's central bank aimed at influencing inflation rates, economic growth, and interest rates by varying the supply of money.

MONETARY/NONMONETARY METHOD an accounting procedure for translating accounting statements from one currency to another. This method specifies that monetary assets and liabilities be translated at current exchange rates, whereas nonmonetary assets and liabilities be translated at historic exchange rates.

MONEY MARKET HEDGE elimination or reduction of a firm’s transaction exposure by simultaneously borrowing in one currency and lending in another currency.

MORTGAGE the most common device for obtaining a security interest in real property.

MOTION STUDY analysis of a manual task in order to improve productivity.

MOTIVATION RESEARCH application of psychological and other probing techniques to obtain a better understanding of why people respond as they do to products, advertisements and other marketing stimuli. The in-depth interview is one technique.

MULTIDIMENSIONAL SCALING a statistical technique for evaluating the overall image of a marketing unit.

MULTILATERAL NETTING a method of reducing transaction exposure that offsets receipts in one currency with payments in other currencies that have values that are highly correlated with it.

MULTINATIONAL MARKETING the application of a common global strategy or policy within individual international segments.

MULTIPLE BRANDING the opposite of family branding. Each individual item in a product line is given *its* own brand identity.

MULTITASKING simultaneous execution of two or more computer functions.

MURPHY’S LAW “If anything can go wrong, it will.”

NEEDS physiological or psychological drives that move one toward a particular course of action. Similar to wants and motives.

NEGLIGENCE the failure to use due care to avoid foreseeable injury which might be caused to another person or property as a result of the failure to exercise due care.

NEGOTIATION the transfer of an instrument in such a manner that the transferee of the instrument becomes a “'holder.”

NETTING a procedure used by multinational firms to reduce the costs of hedging transaction exposure. It relies on the principle of netting inflows and outflows of currencies.

NETWORK 1. interconnected nodes (points where working units interreact (link) with others. 2. connection of computers and devices.

NEURAL NETWORKS a technology in which computers actually try to learn from the database and operator what the right answer is to a question. The system gets positive or negative response to output from the operator and stores that data so that it will make a better decision the next time. While still in its infancy, this technology shows promise for use in fraud detection, accounting, economic forecasting, and risk appraisals.

NODES intersection or junction points of a network.

NOISE (ADVERTISING) the effect of competing advertising on a given firm's advertising efforts. Goodrich's *use* of Goodyear's blimp in its commercials creates "noise."

NOLO CONTENDERE a plea of no contest to a legal charge, usually resulting in an agreement between the two parties.

ODD PRICING the setting of prices below even dollar values, such as $3.97 or $1.86. Odd prices may be perceived as lower by consumers. Clerks are required to make change, thus enhancing case control.

OECD (Organization for Economic Cooperation and Development) a group of the major Western economic powers that cooperates to improve international economic development.

OFFER a proposal made by one person to another.

OPERATING CHARACTERISTIC (OC) CURVE plot of the probability of acceptance of a lot as a function of the percent of defective items.

OPERATION CHART often called *right-handed, left-handed chart*, chart used to describe simultaneous motions of hands when performing a task.

OPERATIONS MANAGEMENT (OM) also called *production/operations management*, design, operation, and improvement of the productions/operations system that creates the firm's primary products or services.

OPERATIONS set of all activities associated with the production of goods and services.

OPERATIONS STRATEGY strategy specifying how the firm will employ its production capabilities to support its corporate strategy.

ORGANIZATIONAL CULTURE the collective assumptions and beliefs held by an organization's employees that shape the behavior of individuals and groups in the organization.

PENETRATION PRICING the setting of a new product or service price at a low level to discourage competition and build market loyalty.

PERSONAL CONSUMPTION household spending on consumer goods.

PERSONAL DEFENSES defenses which do not go to the validity of the instrument, but rather represent reasons why the promisor of a contract would not have to fulfill part or all of his or her promise to the original promisee of the contract.

PERSONAL INCOME a measure of income available to households.

PERT/COST also known as the *Critical Path Method (CPM*), technique designed to assist in the planning, scheduling, and controlling of project costs.

PETRODOLLARS dollars revenues of oil producing nations that are deposited with banks in the Eurodollar market.

POLITICAL RISK variability in the value of a foreign investment that is caused by political factors ranging from tax rate changes to expropriation.

PORTFOLIO RISK the amount of variability in the average return on a portfolio.

POSITIONING a term related to the identifying of specific market segment needs and then designing a specific product or service to fit the niche.

PREDATORY PRICING pricing of items in a way that eliminates competitors. A large grocery chain could enter a small market and price small competitors out-of-business and then raise prices to regain losses.

PRICE INDEX a means to measure changes in the general price level over time by comparing the cost of specified items.

PRIORITY RULES simple heuristics used to select the order in which the jobs will be processed.

PROCESS LAYOUT layout in which machines or activities are arranged by function.

PROCESS PLANNING planning involving a total analysis of the product and its processing requirements, decisions concerning the purchase of items outside versus their internal manufacture, and techniques for selecting among competing processes.

PROCESS SELECTION when operations can be performed by more than one process, an economic analysis should normally be made to determine which process should be chosen.

PRODUCT ANALYSIS analysis of product assembly. The early phases of product analysis may produce diagrams which “explode” the product into its various subassemblies and parts. These diagrams may be pictorial or schematic.

PRODUCT DIFFERENTIATION the adding of extra or different characteristics to separate one firm’s goods or services from those of competitors.

PRODUCT LAYOUT layout in which equipment is arranged based on the sequence of operations performed on a product or group of products.

PRODUCT LIFE CYCLE the stages of product evolution, including research and development, introduction, growth, maturity and decline, and the marketing activities related to each stage.

PRODUCT PLANNING the activities of manufacturers and intermediaries which are designed to adjust the merchandise produced, or offered for sale, to consumer demand.

PRODUCTION AND OPERATONS MANAGEMENT management of all activities directly related to the production of goods and services.

PRODUCTION DESIGN the conscious effort to design for low manufacturing cost.

PRODUCTIVITY ratio of outputs to inputs.

PROFIT IMPACT MARKETING STRATEGIES (PIMS*)* a model for estimating the impact on profit of a change in the marketing mix.

PROMOTIONAL BLEND the final result of expenditure decisions on how the budget will be allocated among the items on the promotional mix. *See also* Promotional mix.

PROMOTIONAL MIX a strategic combination of advertising, personal selling, sales promotion, publicity, and other promotional tools employed to achieve sales objectives.

PROPERTY (OR OWNERSHIP OF PROPERTY) a bundle of rights which includes, among others, the exclusive right to possess, use, and dispose of objects or rights having economic value.

PROSPECTING the act of searching for new customers.

PURCHASING POWER PARITY an equilibrium condition in which changes in exchange rates reflect changes in the underlying values of currencies as a result of different inflation rates.

QUALITY ASSURANCE all of the activities necessary to ensure that the customer receives satisfactory performance.

QUALITY FUNCTION DEPLOYMENT (QFD) system that uses interfunctional teams from marketing, design engineering, and manufacturing to translate the voice of the customer into the design specification of a product.

QUALITY measure of conformance of a product or service to certain specifications or standards.

QUOTE a listed price at which a currency can be bought and sold.

RANDOM SAMPLING in a truly random sample each unit in the population has an equal chance of being included; the random sample accurately reflects characteristics of its population.

RATIFICATION the subsequent adoption of an act done by another person who was not authorized at the time it was performed, although that person was purporting to act as an agent. A partnership is an organization created for the purpose of carrying on a business for profit.

REAL DEFENSES defenses which, in general, go to the validity of the instrument at its inception and which render it a nullity.

REBATE an amount returned from a payment: a deduction or discount upon payment.

RECESSION a decline in GDP that lasts for at least two consecutive quarters.

RELIABILITY probability that a product or process will perform satisfactorily over a period of time under specified operating conditions.

REORDERT POINT inventory level that triggers a new order.

REPORTING CURRENCY the currency of the parent firm into which a foreign subsidiary's financial statements must be translated under FASB 52.

REPOSITIONING the adjustment of an existing good's characteristics to differentiate it from competitors or other items in a product line. *See also* Market segmentation.

REVALUATION an increase in the foreign currency value of a currency.

ROUGH-CUT CAPACITY PLANNING analysis of the *master production schedule* to determine the feasibility with respect to capacity limitations (warehouse facilities, equipment, labor, etc.).

SAFETY STOCK inventory carried to assure that the desired service level is met.

SALES MANAGEMENT the activity of directing the sales effort. It includes hiring, training, motivating and coordinating the sales force in accordance with a firm's objectives.

SCHEDULING assignment of work to a facility and the specification of the sequence and timing of the work.

SENSITIVITY ANALYSIS a form of risk analysis that shows the effect on financial variables of changes in factors whose future economic value is uncertain.

SEQUENCING determination of the order in which a facility is to process a set of jobs.

SIMULATION an attempt to represent a real life system via a model to determine how a change in one or more variables affect the rest of the system, also called what-if analysis.

SLACK length of time an activity can be delayed without affecting the project completion date.

SOVEREIGN RISK variability in the value of a foreign firm or investment that results from uncertainty about future government action. It is also called political or country risk.

SPOT RATE the price at which a currency can be purchased or sold and then delivered within two business days.

SPREADSHEET table of numbers arranged in rows and columns to make accounting, finance, marketing and other business calculations. Spreadsheets facilitate end-result summary numbers, "what-if" experimentations, and projections.

STRATEGIC BUSINESS UNITS operating units in an organization each of which sells a distinct set of products or services to an identifiable group of customers in competition with a well-defined set of competitors.

STRATEGIC MANAGEMENT the process by which top management determines the long-run direction and performance of the organization by ensuring that careful formulation, effective implementation, and continuous evaluation of the strategy takes place.

STRATEGY FORMULATION the making of decisions to define an organization's philosophy and mission, establish objectives, and select the strategy to be used in achieving the objectives.

STRATEGY IMPLEMENTATION the making of decisions with regard to matching strategy and organizational structure; and developing budgets, functional strategies, and motivational systems.

SUPERSTORE a retail unit in size between a supermarket and a hypermarket. Usually located in a shopping center and carrying a wide range of goods and household items on a self-service basis.

SUPPLY CHAIN MANAGEMENT management of the integration of the functions, information, and materials that flow across multiple firms in a supply chain—i.e., buying materials, transforming materials, and shipping to customers.

SYNDICATE a group of investors (usually commercial or investment banks) that participate jointly in purchasing and selling assets (generally financial assets).

SYNERGISM the whole is greater than the sum of the individual inputs when performed collectively.

SYSTEMATIC LAYOUT PLANNING generalized approach to layout that indicate nearness priorities, taking into account factors other than transportation cost.

TENANCY BY THE ENTIRETY a joint tenancy with the right to survivorship in which the tenants must be husband and wife.

TENANTS IN COMMON co-owners of real property, whose undivided ownership of the property passes on their deaths to their heirs or devisees.

TERMINAL input-output device allowing a user to communicate directly with a computer.

THERBLIG one of 17 elementary human motions such as grasp, select, assemble, and so on.

THROUGHPUT rate at which money is generated by the system through sales.

TIME SERIES FORECASTING the use of past data to build projections for the future. Series of seasonal data are popular data sources.

TIME STANDARD amount of time required to perform a task by a trained operator working at a normal pace and using a prescribed method.

TIME STUDY development of standards through stopwatch observation.

TITLE VII statue in the Federal Civil Lights Act of 1964 that prohibits discrimination in the hiring, firing, promotion, compensation, or any other aspect of employment because of a person's race, color, religion, sex, or national origin.

TORT a private wrong against a person or his/her property.

TOTAL QUALITY CONTROL (TQC) philosophy that aggressively strives for a defect-free manufacturing process.

TOTAL QUALITY MANAGEMENT (TQM) concept of using quality methods and techniques to strategic advantage within firms.

TRANSACTION EXPOSURE variability in the domestic currency value of a known future receipt of foreign currency.

TRANSLATION EXPOSURE changes in reported net income and net worth that are caused by changes in exchange rates used to translate accounting statements in foreign currencies.

TRANSPORTATION LP PROBLEM problem of determining how much to ship from each origin to each destination in order to minimize total shipping costs.

UNEMPLOYMENT RATE percent of the labor force that is unemployed.

UNIFORM COMMERCIAL CODE a set of laws to regulate commercial activities to benefit and protect both buyers and sellers.

UNIVERSAL PRODUCT CODE (UPC) a coding system for visual scanners used at check-out or point-of-purchase locations to electronically record price and content information.

UTILITY PROGRAM program supporting the processing of a computer such as diagnostic and tracing programs.

VENDOR EMPTOR "let the seller beware.”

WARRANTIES contractual grounds for this liability, whereas negligence and strict liability are usually considered to be tort grounds for it.

WEIGHTED AVERAGE an average in which the numbers to be averaged are assigned certain values or weights. Weighted averages are frequently used to construct index numbers.

WI-FI short for "wireless fidelity," the popular term for a high-frequency wireless local area network. The Wi-Fi technology is rapidly gaining acceptance in many companies as an alternative to a wired LAN. It can also be installed for a home network.

WINDFALL PROFIT earnings or profit in excess of that planned or expected or “normal.”

WIRELESS TECHNOLOGY a variety of technologies to communicate without wires, namely radio transmissions. Examples are cellular, microwave, infrared, and satellite.

W-LAN one in which a mobile user can connect to a local area network (LAN) through a wireless (radio) connection. A standard, 802.11, specifies the technologies for wireless LANs.

WORK MEASUREMENT process of estimating the amount of worker time required to generate one unit of output.

WORK SAMPLING work measurement technique involving the sampling of the nature of the activity in which the worker is involved; used for the broader problem of determining production standards.

WORKERS’ COMPENSATION a law, found in all states, requiring employees to relinquish their right to sue their employers for accidental death, injury, or disease arising from or during the course of their employment.

WORLD WIDE WEB (WWW) Internet system for world-wide hypertext linking of multimedia documents, making the relationship of information that is common between documents easily accessible and completely independent of physical location.

XBRL *see* EXTENSIBLE BUSINESS REPORTING LANGUAGE (XBRL)

YANKEE BOND a bond that is denominated in dollars and sold in the United States by foreign firms.

ZERO COUPON BOND a bond that pays no coupon interest. Because they sell at a deep discount, they appreciate as they approach maturity, when they pay their face value.