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Airline Management and Organization

Chapter Checklist • You Should Be Able To:

- Define *management* and *organization*
- Discuss the different levels of management, and explain each level's role
- Describe the basic functions of management
- Describe the principles of organization planning that are of particular significance to the air carriers
- Explain what is meant by a *line-and-staff organization*
- Identify the typical staff administrations in a major carrier, and describe their primary responsibilities
- List several major departments under each administration, and discuss their individual roles
- Identify the three line administrations found in a typical air carrier, and describe their primary responsibilities
- List several major departments under each of the line administrations, and discuss their individual roles
- Identify the "new" corporate structure used at new-entrant and low-cost carriers.

INTRODUCTION

Every organization has goals, whether they be profits, market share, growth, quality of products or services, community image, or any combination of these. **Management** is the process of achieving an organization's goals through the coordinated performance of five specific functions: planning, organizing, staffing, directing, and controlling.

Years ago, when the major carriers were in their formative period, the management process was much simpler. The few employees truly felt that they were part of a team, and they could clearly see how their efforts contributed to meeting the company's goals. Everyone knew what the objectives of the firm were and how each particular job related to them. The lines of communication and span of control were very short. There was an esprit de corps among the employees, from president to the most unskilled worker. In fact, the president probably knew each employee personally.

Today, the major carriers employ as many as 80,000 people. No longer does the president know the men and women on the line, and many workers on the line have as much allegiance to the union they belong to as they do to the company they work for. It is difficult for individual employees to see exactly how their particular jobs contribute to the corporate goals. The lines of communication are long, and the decision-making process is complex. The airline tends to assume a remoteness from the individual and to become a "thing" that exists, survives, and grows not because of the people who compose it, but in spite of them.

According to Chris Argyrus, a noted management theorist, "organizations emerge when the goals they seek to achieve are too complex for any one man. The actions necessary to achieve the goals are divided into units manageable by individuals—the more complex the goals, other things being equal, the more people are required to meet them."[1]

An **organization** is the framework within which the management process can be carried out. It is a structure that enables a large company to attain the same efficiency as or greater efficiency than a small firm run effectively by a few employees. In the highly competitive airline business, an effective organizational structure may prove to be the necessary advantage one firm has over another.

MANAGEMENT

Levels of Management

Terms such as *top management*, *middle management*, and *operating management* are commonly used in business to distinguish the levels of management within an organization. Unfortunately, there is no clear definition of each level, and meanings attached to the terms sometimes differ from one company to another. However, a firm's *top management* is generally considered to be the policy-making group responsible for the overall direction of the company; *middle management* is responsible for the execution and interpretation of policies throughout the organization; and *operating management* is directly responsible for the final execution of policies by employees under its supervision.

Figure 7-1 shows a typical airline pyramid of authority including all three levels of management. The nature of activity carried on at each level is illustrated, with examples showing the organizational breakdown of two administrations and the typical titles of individuals heading up each unit. The term **administration** is generally used to describe

[1]Chris Argyrus, *Integrating the Individual and the Organization* (New York: Wiley, 1964), p. 26.

a major unit within the company, such as flight operations, marketing, or personnel. **Departments** are the next major breakdown within administrations; **divisions** within departments, and so forth.

The Board of Directors. The chief governing body of a corporation is the board of directors, which is elected by the stockholders. This board ranges in size from 3 to 20 or more members and represents a cross-section of prominent individuals from various fields, including banking, insurance, law, and accounting. Airline boards typically include individuals from the hotel and food-processing industries, as well as former political and military leaders. The board of directors is the chief policy-making body of the corporation and the forum to whom the president reports. This body decides such broad questions as, Should the company be expanded? and Should the company diversify into other fields? The board also has the sole responsibility for the declaration of dividends. The basic decision about a dividend involves other decisions, such as what percentage of the year's earnings should be retained for company use and whether the dividend should be paid in cash or in stock.

The directors of the corporation are responsible for the appointment of a president, secretary, treasurer, and other executive officers who handle the actual details of management. Often, the board elects some of its own members to fill these important posts.

Top Management. Top management is the highest level of management in the organization. The job of top management is to determine the broad objectives and procedures necessary to meet the goals established by the board of directors. Top management will also make recommendations to the board regarding the goals of the company. What distinguishes top management from middle management is not always clear in a given organization, but the individuals in this group usually have many years of experience in all phases of management. Often called key executives, senior executives, or major executives, they usually bear the title of president, executive vice-president, or senior vice-president.

President. This individual is the chief executive officer of the corporation and is responsible for the proper functioning of the business. In the case of airlines, this individual often is a prominent business or political leader with very little airline experience, because the president's primary role is to deal with the financial community, various segments of government, community groups, and so forth.

Executive vice-president and general manager. This individual generally has years of airline experience and is responsible for the day-to-day operation of the company. Generally, the senior vice-presidents report to this individual.

Senior vice-president. This title generally is reserved for those individuals who head up a major administration, such as flight operations, marketing, or engineering and maintenance.

Middle Management. Middle management is the second level of management in the organization and is responsible for developing operational plans and procedures to implement the broader ones conceived by top management. Middle management may be

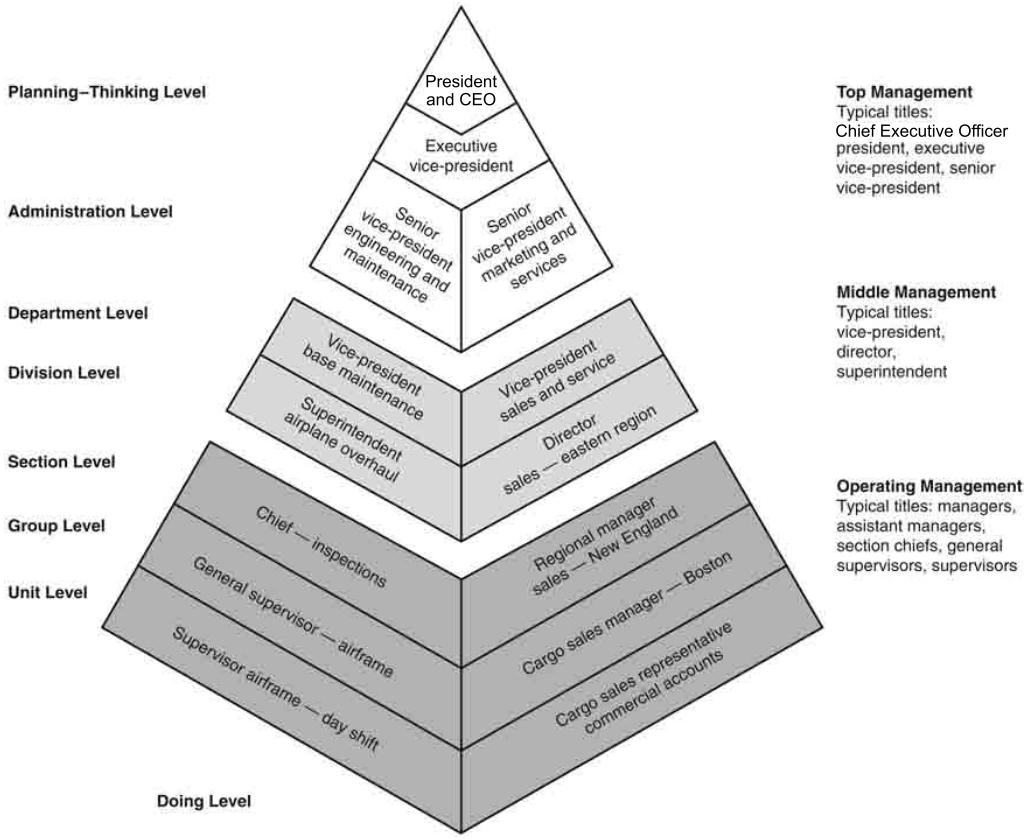

FIGURE 7-1 Typical airline pyramid of authority. The darker shading indicates "doing" kinds of work, such as gathering statistics, making reservations, and maintaining aircraft. The lighter shading indicates activities such as planning, conferring, and formulating policy.

given much leeway in the development of plans, so long as the end result is in keeping with top management's requirements. Decisions on which advertising media to use, how many reservations agents are needed, and what new equipment to purchase are examples of those made by middle management.

Middle management includes individuals who head up departments or divisions within a major administration, such as the advertising department under marketing or the flight procedures and training department under flight operations. Or it might include the simulator division head, who reports to the flight procedures and training department head.

Typical airline titles for individuals in charge of departments and divisions are vice-presidents, directors, and, in the case of maintenance facilities, superintendents.

Operating Management. Operating management is the lowest level in management. It includes managers, assistant managers, section chiefs, general supervisors, and supervisors who head up sections, groups, or units that report to division or department heads. Examples might include the manager of display advertising or the general supervisor

of the sheet metal shop. Members of the operating management group are primarily concerned with putting into action operational plans devised by middle management; generally, they do not initiate plans of their own.

Although the direction an airline takes is established by top management, the operating management level is extremely important. Top management makes policies, and middle management makes plans to carry out the policies, but operating management sees that the work the plans call for actually is done. Top management is secure as long as the profit picture is favorable. When a carrier is in serious trouble financially, the board of directors may make changes in the top echelon. Sometimes, a new president and executive vice-president are employed. When this is done, changes at other management levels are not always made by the new top management, because middle management can still make plans to carry out policy, and operating management can still implement plans.

Decision Making

Possibly the foremost responsibility of management at all levels, but especially top management, is the making of decisions. It permeates all functions of management. In accord with the broad operational policies set forth by the board of directors, top managers are confronted daily with the need to decide on courses of action that will enable them to achieve the goals to which their companies are dedicated. In many, if not most, instances, the decisions involve choosing between two or more courses of action. And at the top echelon of management, from which the basic procedural orders for the company's operations emanate, correct decisions may be vital to the continued success of the firm, or even to its survival. Farther down the managerial ladder, the number and importance of decisions made usually decreases, but the decisions made at these levels are nevertheless essential to the well-being of the company.

The ability to make correct decisions in business has long been recognized as a prime attribute of successful management, but until comparatively recently, there has been little apparent need for inquiry into the decision-making process. However, the large carriers now wield vast resources in the areas of finance, capacity, and personnel, and they also face increased competition. Thus, the possible consequences of unwise decisions, both for the companies involved and for the economy, have served to focus the attention of students of business on the methods by which decisions are made, insofar as these can be discovered.

The steps involved in **decision making** include (1) recognition of the problem involved, (2) definition of the problem and breakdown into its essential parts, (3) the attempt to establish two or more alternative solutions and to evaluate them comparatively, (4) selection of the solution believed to be the most favorable, and (5) adoption of this solution and implementation of it through the issuing of the necessary orders. These steps might be taken in a few moments by a single executive, or they might require a much longer time, depending on the complexity and importance of the problem at hand.[2]

In recent years, a number of changes have brought the decision-making process into sharper focus. From the purely mechanical side, the rapid and extensive development of high-speed computers and data-processing procedures has added immeasurably to the quantity of information available to executives, thereby enabling them to base their decisions on far greater amounts of relevant data than previously.

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[2]Carl Heyel (ed.), *The Encyclopedia of Management*, 2d ed. (New York: Van Nostrand Reinhold, 1963), p. 977.

Second, and what many analysts believe is the most important aspect of airline deregulation, the quality of managers and their decisions has come into question.

Managing air carriers during the regulated era required a different set of skills than those most in demand since deregulation, because of the control that the Civil Aeronautics Board (CAB) exercised over routes, prices, and equipment. By the 1970s, the CAB had effectively stopped granting new routes to the largest trunk carriers, so they were restricted to serving their existing routes. Also, for any carrier, awards of additional routes required a lengthy and expensive regulatory procedure, with no guarantee of success. Trunk or local-service airlines could compete on price to win market share, but only within a fairly limited sphere. The CAB also exercised considerable influence over decisions about the acquisition of aircraft. In this environment, managers needed to be experienced at operating within the confines of CAB regulations, if not adept at lobbying to change them. Many airline managers were indeed quite effective, but skills in marketing and cost control were less important than those in law and politics.

Deregulation gave managers the ability to deploy assets and to price services according to market demand, a freedom exercised daily by managers throughout the rest of the economy. Most top airline executives, however, many of whom had staunchly resisted deregulation, were not prepared for the freedom given them, nor were they particularly adept at exercising it. Some of the early postderegulation strategic moves by carriers such as Pan American and Eastern, for example, were ineffective and failed to make them cost-competitive or to offer a sharply differentiated product. Because the CAB had protected carriers from failing, managers were also unaccustomed to taking risks that could result in the failure of the firm. Braniff, for example, expanded far too aggressively and was pushed into bankruptcy (for the first time in 1982) by the first major downturn in the economy.

Throughout deregulation, top and middle managers who remained from the regulated era have been either trained on the job or replaced by managers and owners more prepared for marketplace competition. Not all new managers, or new entrant entrepreneurs for that matter, have been successful. Pan American and Eastern were weak before deregulation and have since failed. Other carriers, like American, Continental, Delta, and United, have become stronger. Some management innovations developed or expanded during deregulation have been successful at increasing productivity and controlling costs.

THE NEW CORPORATE STRUCTURE

Management Team

New-entrant and low-cost carriers have an advantage over legacy and established carriers when it comes to keeping costs down, efficiency up and communication flowing. One way of doing this is through the establishment of a lean organizational structure where the "right" people are hired to do the "right" job.

Good management is a key to success and each participant must be able to contribute something to the business. Each position should fit with the experience and skills of the individual and each participant should be able to answer the question, "What do you offer this business venture?". As a rule of thumb, there should be at least one very experienced person on the management team. Often, such an individual is referred to as a "gray hair." To improve success of the company, the ideal person should have a proven

business background, preferably as C.E.O. with a middle to large size company. The type of industry does not really matter but an airline background is a definite advantage.

Without offending the reader, there is another rule of thumb that should be considered when discussing the management team. Be cautious of the number of line pilots that make up the management team. Generally speaking, pilots do not make the most effective managers. Pilots are very educated when it comes to aircraft operations but often lack the business skills required to run a successful operation. That being said, more pilots are combining flight hours with academics and during the course of the next decade, it is expected that pilots will be more educated than in the past. In the airline industry, it is often said that there is a surplus of pilots on the market but a lack of qualified pilots in terms of flight experience, combined with academic experience.

The number of people required to make up an efficient management team depends entirely on the type of operation, size of operation, and skills of the individuals. Existing airlines already have a corporate structure in place as mentioned earlier in this chapter. In most cases, the management team is too large and somewhat ineffective due to duplication of work and lack of communication between departments. New airlines starting out have the advantage of being able to establish an effective management team from the start. It is wise to have a small management team initially and grow it as the airline expands. For starters, it is recommended that the management team consist of one lead person acting as President/C.E.O. Ideally, this is the optimal position for the "gray hair" mentioned earlier. This individual is the chief executive officer of the corporation and is responsible for the proper functioning of the business often involved with the financial community, government, and members of the public. Not only should this individual have extraordinary business skills, but he/she should have good interpersonal skills as communication plays an important aspect of this position.

It is also recommended that a second lead person be a part of the management team. This person might be given the title of Executive Vice-President or Senior Vice-President. Once the airline is established and growing, it will most likely be necessary to appoint two individuals to fill each title. However, for a new airline starting out, this is not necessary unless massive rapid growth is anticipated over a short period of time. Ideally, the second lead person should have a Vice-President/General Manager title. This person should have a number of years of airline experience at the management level because he/she is responsible for the day-to-day operation of the airline.

Aside from the two positions previously mentioned, a new airline starting out might consider the following information when forming a management team. Again, keeping the initial team small is important. In the United States, for an air carrier to obtain certification, the management team must have a minimum number of positions. For FAR 121 certification, mandatory positions include: Director of Safety, Director of Operations, Chief Pilot, Director of Maintenance, and Chief Inspector. For FAR 135 certification, the mandatory positions include: Director of Operations, Chief Pilot, and Director of Maintenance. Depending on the complexity of the operation, it is possible to obtain a deviation from the required basic management positions and qualifications if requested in writing to the FAA. Such a request is normally made when the air carrier submits the formal application letter for certification. However, the air carrier must be able to show the FAA that it can perform the operation with the highest degree of safety under the direction of fewer or different categories of management personnel. Information concerning the required background for each of the positions mentioned can be obtained from the FAA's Advisory Circular (AC) 120-49 entitled "Certification of Air Carriers".

Developing the right management team is a difficult process and in the case of many new airlines planning to commence operations, opportunities often pass by because of the length of time needed to put people in place. In order to speed up the raising of capital and move forward with the certification process, some business plans utilize the reputation of an outside party to act as the "interim" management team. There are a number of consulting companies and expert individuals in the market who will permit use of their name and talents on paper for a fee or some form of compensation. Some firms will put together an entire management team to help get a new airline off the ground. Many existing airlines have found this to be a worthwhile option but it should be noted, such an option can be expensive and somewhat risky. Be sure to obtain references for all potential members of the management team and do background searches, if necessary. The aviation industry is full of "experts" so be cautious and do not rush into any type of contract until a thorough investigation has been completed. Also, depending on who the primary investors are, they will often have a say with who should be a part of the management team. In many cases, the investor is not the best person to decide who should manage the airline.

Organizational Structure

Most airlines, old and new, tend to operate using the classic pyramid or top-down structure consisting of top management, middle management, and operating management. There is no clear definition of each level, and meanings attached to the terms sometimes differ from one company to another. However, top management is generally considered to be the policy-making group responsible for the overall direction of the company; middle management is responsible for the execution and interpretation of policies throughout the organization; and operating management is directly responsible for the final execution of policies by employees under its supervision. The pyramid is divided into administrations each headed by an individual. For example, major units might include flight operations, marketing, or personnel. Departments are the next major breakdown within administrations; divisions within departments, and so forth.

Although this structure has been used for many years, there are different options to consider. The top three costs for an airline are fuel, labor, and maintenance. Increased pressure has been put on the airlines in recent years to implement cost cutting strategies and one area hit has been labor. Middle management is usually the first to be eliminated during bad times as witnessed in the mid-1980s when the United States faced a major recession. Many airlines have realized that middle level management is not always necessary to run a successful operation and new airlines often eliminate this section of the corporate structure therefore reducing costs and often improving efficiency. When middle management is cut from the picture, work ordinarily done at the department and division levels shifts upward increasing the roles and responsibilities with top management. In other cases, more authority is delegated to the lower or operating level of management.

In today's environment, it is important for an airline to avoid duplication of work structures and improve internal communications where possible. It is also important to create a flexible corporate structure that can expand when necessary and contract if needed without serious harm being done to the business. New start-up carriers have the advantage over existing airlines of being able to tailor a corporate structure that best fits the organization. New corporate structures should provide more authority to individuals at different levels. As authority is delegated, responsibility should be increased with specific positions therefore changing the nature of the typical top-down or silo system to

more of a flat organization. Figure 7-2 visualizes a possible corporate structure suitable for the current aviation environment.

The structure previously discussed will also allow the airline to become more diverse when needed. Diversification is one key to success in the airline business but most airlines are not able to diversify despite having all the resources to do so. The typical pyramid structure is designed so that virtually all decisions for the organization are made among a handful of people. As a result, the talents and skills of others are often not utilized and decisions made are sometimes not in the best interest of the airline but in the best interest of upper management of the board of directors. A less formal organizational structure allows diversification to happen because more skills and talents can be tapped into. Access to such resources will permit the airline to initiate new departments when needed and increase the ability of the company to become involved in businesses outside of the core business.

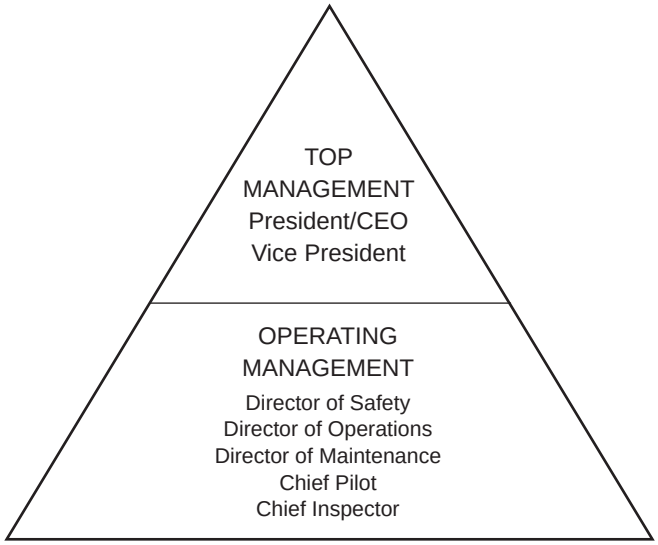

FIGURE 7-2 Typical new organizational structure for new-entrant and low-cost carriers

FUNCTIONS OF MANAGEMENT

The main **functions of management** are planning, organizing, staffing, directing, and controlling. The key tools of management are supervisory skills, which must be learned and practiced.

Planning

An airline is dependent for its very existence on the ability of its top planners. Failure to forecast the demand for air travel and to plan how to meet a rising or shrinking demand spells the difference between success and failure. The management process begins with **planning,** which sets the stage for what the organization will do, both globally and specifically.

Goals should be established for the company as a whole and for each administration and department, as well as for individual activities. A goal is anything that an organization or group is seeking to do. Some goals are large, such as buying a hotel chain or building a new flight kitchen to serve a growing hub airport. Other goals are small, such as getting a report completed by Friday or handling more reservations calls per hour than last month.

Companywide goals. These are the general goals an organization wants to achieve. Some examples might be "earn an annual return of 12 percent on our investment," "capture 25 percent of the New Orleans–Memphis market," and "develop a new promotional fare to compete with Airline X."

Administration or departmental goals. These goals should be related to—and should lead directly to—the achievement of companywide goals. Some examples might be "improve on-time performance by 10 percent systemwide during the next quarter," "develop and implement a new training program for apprentice-level mechanics in the sheet metal shop," and "hold flight attendant absenteeism to 7 percent."

Individual goals. These are the goals that specific persons will have to achieve if departmental, division, group, or unit goals are to be met. Some examples might be "increase my

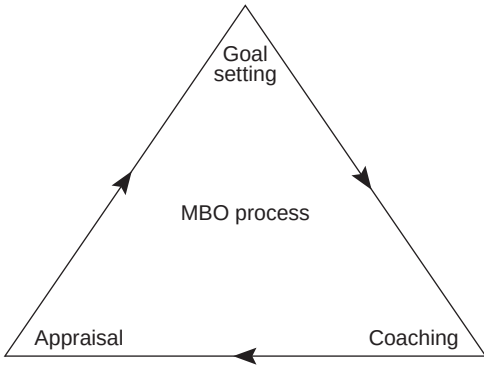

FIGURE 7-3 Management by objectives.

cargo sales volume by 10 percent over last year" and "process 10 percent more insurance claims per week."

Management by Objectives. Many carriers operate by a system popularly referred to as **management by objectives** (MBO), in which employees at all levels are given tangible goals and are held accountable for achieving them (see Figure 7-3). Strategies must be formulated to achieve the goals and objectives of an organization. Consider the companywide goal just mentioned: "capture 25 percent of the New Orleans–Memphis market." A strategy might include increasing the number of daily flights, including those serving full meals. In a well-designed MBO program, overall goals and strategies of the company and of individual employees are established through discussions between managers and their subordinates. Feedback is provided through follow-up discussions during the period of time set for achieving the goals. Feedback may be in the form of data on quantitative results (such as dollar sales, new accounts, unit costs, aircraft turnaround time, or mechanical delays) or data on qualitative results (such as customer complaints, reductions in errors, improvement in image, or development of subordinates). Person-to-person communication, through day-to-day coaching, is particularly important.

With MBO, because employees receive timely, accurate, and fairly complete information on their performance results, they are in a position to take corrective action when necessary. The whole MBO approach assumes that employees will accept responsibility for the achievement of company goals and that they will become committed when the goals are meaningful, attainable, and established through mutual planning.

The final stage of the MBO process is the appraisal of results. At the end of the performance period, the manager and the employee check the employee's progress in achieving the goals. This serves as a time for recognition of good performance and for renewed goal setting.

MBO is a continuous cycle of goal setting, coaching and feedback, and appraisal of results. It is a natural behavioral process that most individuals follow on a daily basis.

Policy and Procedures as Part of Planning. Every airline has a **policy and procedures** manual, usually prepared by the personnel department and containing major sections pertaining to each of the administrations. A policy is a broadly stated course of action that employees should follow in making decisions. A policy is a guide; employees do have some discretion in its implementation. For example, an employment policy for all staff positions above a certain level might be that "preference in employment will be given to college graduates with a management background." Hundreds of policies are in effect at any major carrier, and those of a broad nature are established by top management. Power to make specific policies for the guidance of each department usually is delegated to administration or department heads.

A *procedure* is somewhat like a policy, but it specifies in more detail the kind of action required to handle a specific situation. There are procedures for ordering supplies, training new employees, fueling aircraft, handling customer complaints, and hundreds of other processes within the various administrations, departments, divisions, and so forth.

Rules or *regulations* indicate in very precise terms whether, in a specific situation, something is to be done or not done. An example of a rule is, "Company-authorized headgear and glasses must be worn at all times by all persons who work within 40 feet of the welding operation in Building 7." Rules are important for essentially the same reason

as procedures: they save time, because people do not have to think through and ponder each new situation, and they give employees a clear sense of what they can and cannot do.

Organizing

Once plans have been made and policies determined, the job of carrying them out becomes one of organization and operation. Organizing involves the division of work among employees and the determination of how much authority each person will have. More specifically, **organizing** may be defined as the process of logically grouping activities, delineating authority and responsibility, and establishing working relationships that enable the employees, and thus the entire unit, to work with maximum efficiency and effectiveness.

The chief purpose of organization is to establish efficient lines of responsibility and authority designed to (1) provide supervision of all work with a maximum utilization of knowledge and experience to best advantage, (2) efficiently assign and schedule all work with the proper priority observed in projects to be accomplished, (3) provide a means whereby management can be kept informed of the efficiency and dispatch with which each particular unit is fulfilling its function, and (4) establish a sequence of importance in job classifications so that all employees can adequately judge the possibilities for advancement.

Staffing

Staffing involves stationing people to work in the positions provided for by the organizational structure. It includes defining work force requirements for the job to be done, as well as inventorying, appraising, and selecting candidates for positions; compensating employees; and training or otherwise developing both job candidates and current employees to accomplish their tasks effectively.

Directing

Directing includes assigning tasks and instructing subordinates on what to do and perhaps how to do it. Because the supervisor's job is to get things done through other people, effectiveness is closely tied to communicating directives clearly and in a way that will bring about the desired action. It is essential that subordinates understand the orders, or they will not be able to carry them out. In directing people, it is important to know how much information and what kind of information to give them. Orders should be fitted to the receiver; the new employee needs to be instructed in detail, but the experienced worker may need to know only the objectives and then be capable of choosing the means to attain them.

Controlling

Controlling is the measuring and correcting of activities of subordinates to ensure that events conform to plans. Thus, it involves measuring performance against goals and plans, showing where deviations occur and, by putting in motion actions to correct deviations, ensuring accomplishment of plans. Basically, control involves three steps: (1)

setting performance standards for the work, (2) comparing actual performance with the standard, and (3) taking corrective action to bring performance in line with the standard.

Standards of both quantity and quality should be determined as precisely as possible. Until they are determined and established, a job will be judged by three different standards: (1) workers' ideas of what constitutes a fair day's work and of what they think might be expected of them, (2) supervisors' ideas of what they would like to have done and of what they think can be done, and (3) top management's criteria and expectations. Whether quantity and quality standards are recognized, they exist, and each level in the organization—workers, operating management, middle management, and top management—may be judging jobs by different standards.

ORGANIZATION

Previously, *organization* was defined as the framework within which the management process can be carried out. More formally, *organization* is a plan for bringing together the resources of a firm (capital and labor) to the position of greatest effectiveness, or productivity. The plan consists of the grouping of operations (labor and equipment) to achieve the advantages of specialization and a chain of command.

Principles of Organization Planning

An internal organizational structure must be designed to enable management at all levels to exercise control of those activities designed to meet the goals and objectives of the firm. To aid management, there are a number of principles of organization. These principles have been developed and practiced by successful firms in various industries and are universally applicable whenever people work together.

Unity of Objectives. The principle of **unity of objectives** states that each administration, department, division, section, group, and unit of the company must contribute to the accomplishment of the overall goals of the firm. For example, the regional sales and services department must be concerned not only with sales but also with how its activities are integrated with all other activities in the company, such as personnel, finance and property, flight operations, and so forth. Each department must accomplish its own goals while at the same time working cooperatively with all other departments. Thus, regional sales and services cannot be planning a major promotional fare campaign offering easier credit terms at the same time that the finance department is embarking on a policy of restricting credit.

Span of Control. The principle of **span of control** states that there is a limit to the number of subordinates a manager can effectively supervise. It is impossible to specify the exact number of subordinates that a manager can supervise for each situation, for that depends on such variables as (1) the type and complexity of work being performed, (2) the manager's ability, (3) the training of subordinates, (4) the effectiveness of communications, and (5) the importance of time. A customer services agent at an airport might effectively supervise 20 ticket-counter agents, whereas a senior analyst in the revenue accounting department might supervise only three junior analysts due to the analytical nature of the work involved.

Departmentalization. **Departmentalization** is the practice of subdividing both people and functions into groups within an organization to gain the advantages of specialization. Many terms are used for such groups, including administrations, departments, divisions, regional offices, sections, and units. The extent to which an airline is departmentalized depends on the size of the carrier, the complexity of its operations, and its route structure. In other words, in preparing an organizational plan, it is necessary to decide the extent to which tasks are to be subdivided. In a small commuter carrier, the marketing department might consist of 25 people who are involved in everything from schedule planning to soliciting new cargo accounts. In a carrier the size of United Airlines, with 25,000 employees engaged in the marketing function, there is considerable division of labor through departmentalization.

Airlines of the 21st century are expected to focus much of their energy on departmentalization, as such companies diversify their operations. Airlines of tomorrow will need specialized departments. The time to start building is now. New departments might include safety and security, training, and corporate innovation (a think tank where the airline learns to diversity its operation into other types of businesses). As a result of the events of September 11, 2001, airlines have focused much attention on enhancing safety and security at all levels.

Focusing energies on training will be important as the industry learns to manage a new generation of employees known as "Generation Y." The new generation is outspoken, expectation driven, and motivated. Airlines must create conditions that attract the best people from a large and diversely skilled talent pool. The training department must be able to train these employees quickly to increase the employee's value to the company. Such training will include an emphasis on career-effectiveness skills and teaching the manager to manage. The airline's environment will become a resource center for personal growth and development. People are the airline's biggest asset and efficient training programs could mean the difference between success and failure. Southwest Airlines realizes the importance of its people and runs results-oriented training programs through its own People University.

Delegation of Authority. Although it is true that the final authority for all decisions rests with the president and board of directors, it is not possible or practical to allow every decision to reach that level. **Delegation of authority** implies that the authority to make decisions should be pushed down to the lowest competent level of supervision. This allows minor decisions to be made at the lower levels of management, and major decisions at the higher levels. However, delegation of authority does not relieve the delegator of the responsibility for the actions of subordinates. A supervisor is always ultimately responsible for the actions of subordinates.

This principle is quite useful for comparing the management styles of various carriers or, for that matter, the same carrier during different periods in its history. Some carriers are very stingy in the delegation of authority to units down the chain of command, whereas others, notably Delta, have always been known for their confidence in their employees to make decisions at the lowest level possible. Southwest Airlines encourages employees to present ideas often resulting in the employee being empowered to implement the idea.

Levels of Management. This principle holds that the number of **levels of management** in the company should be kept to a minimum. As the number of organizational levels

increases, problems in communication increase, inasmuch as each communication must pass through more people as it travels from its point of origin to its final destination.

A carrier must achieve a proper balance between span of control and the number of levels of management if it is to function effectively. If a carrier has too narrow a span of control, many levels of management will be required. With a wide span of control, fewer levels of management will be needed.

During the past 20 years, many carriers have gone through periods of rapid growth in numbers of personnel followed several years later by periods of massive furloughs. Without careful analysis of their organizational plans, they have found themselves in recessionary times with whole layers of management that were needed when the traffic volume supported them but that in slack periods represent overstaffing.

Clearly Defined Duties. Every job classification should be clearly defined so that it differs from and does not overlap with other job classifications. All of the major carriers have organizational manuals (usually developed and maintained by the personnel department, except in the case of several of the largest carriers, which have separate organizational planning departments). These manuals include all job descriptions within the company, from president on down. The prerequisites for the job (in terms of education and experience) are included, as is the salary range. Normally, each nonmanagement job description is reviewed by the personnel department every two years in terms of the scope of the job, the functions performed, the number of persons supervised, and the salary range. Management jobs are usually reviewed annually.

Flexibility. A carrier must be flexible so that it can adapt to changing conditions, both internal and external. In today's competitive environment, it behooves management to assess the organizational plan continuously to be sure that it is responsive to the changing marketplace.

Communication. The term communication here means an uninterrupted flow of orders, instructions, questions, responses, explanations, ideas, and suggestions between top management and the rest of the organization. This flow should be two-way—that is, both from management to employees and from employees to management. Aside from the customary orders and instructions concerning normal operations, management frequently wishes to explain some of its policy decisions or to give information regarding a major route expansion, plans for an acquisition or merger, finances, or personnel changes in order to bring about a better understanding among its workers of the salient facts concerning the company. For their part, employees often have ideas for saving time, labor, and materials or have grievances of one kind or another that should reach the ears of management. In planning the details of an organization, provision must be made for the creation and maintenance of a good two-way communications system.

Line and Staff Responsibilities

As a company grows from a simple to a complex organization, it becomes impossible for a small number of executives to assume direct, personal responsibility for functions such as employment, purchasing, market research, labor relations, and public relations. Therefore, as the company grows in size and complexity, assistants to executives are appointed. Specific advisory responsibilities are delegated to these assistants, who frequently carry

such titles as "staff assistant accounting" or "assistant to the vice-president of operations for personnel." As the activities of these assistants increase, other personnel are added to assist them. Eventually, the work centering around a special assistant is organized into a department, which is known as a staff department and which supplements the line functions of the organization.

All large carriers are organized using the line-and-staff concept. **Line personnel** are those whose orders and authority flow in a straight line from the chief executive down to lower levels in the organization. Line people are usually involved directly in producing or selling air transportation. Often referred to as volume-related personnel, because they are involved in a particular volume, such as flying hours or number of departures, line personnel have a direct responsibility for accomplishing the objectives of the firm. Examples of line personnel include pilots, flight attendants, mechanics, reservations clerks, and sales personnel.

Staff personnel are those whose orders and authority do not flow in a straight line down from the top of the organization. Although staff people do report to a specific person in the company hierarchy, they may at times perform work for people at levels above or below them. Staff executives are usually technically trained and are employed to advise and inform line and other staff executives on specialized areas, including finance, personnel, legal affairs, medical concerns, and data processing. In short, staff people help line people to work more effectively in accomplishing the primary objectives of the firm. Examples of staff personnel include accountants, budget analysts, employment representatives, market research analysts, industrial engineers, programmers, and company medical staff.

THE ORGANIZATIONAL CHART

Often referred to as the blueprint of the company, the **organizational chart** depicts the formal authority relationships between superiors and subordinates at the various hierarchical levels, as well as the formal channels of communication within the company. The organizational chart helps managers implement organization principles, such as span of control and unity of objectives. The chart can serve as an aid in identifying such organizational deficiencies as one individual reporting to more than one boss or a manager with too wide a span of control.

A major reason advanced for organization charting is that it boosts morale among managers and workers. The chart helps organization members to perceive more clearly where they stand in the company in relation to others and how and where managers and workers fit into the overall organizational structure.

The organizational chart is a static model of the company, because it depicts how the company is organized at a given point in time. This is a major limitation of the chart, because carriers operate in a dynamic environment and thus must continually adapt to changing conditions. Some old positions may no longer be required, or new positions may have to be created to achieve new objectives. Therefore, the chart must be revised and updated periodically to reflect these changing conditions. Like the organization manual, organizational charts generally are maintained by the personnel department or, as in the case of several large carriers, by a separate organization planning department.

Airlines have grown so rapidly in the past 25 years that it is difficult to say that any organizational chart is typical or that the chart of one company at any particular time

is the one still in effect even a few months later. However, all airlines do have certain organizational traits in common, such as the administrations, departments, divisions, and so forth into which airline activities are divided. Understandably, the larger the carrier, the greater the specialization of tasks and the greater the departmentalization.

Figure 7-4 shows the administrations normally found in a major air carrier. The following sections describe the major line and staff administrations shown.

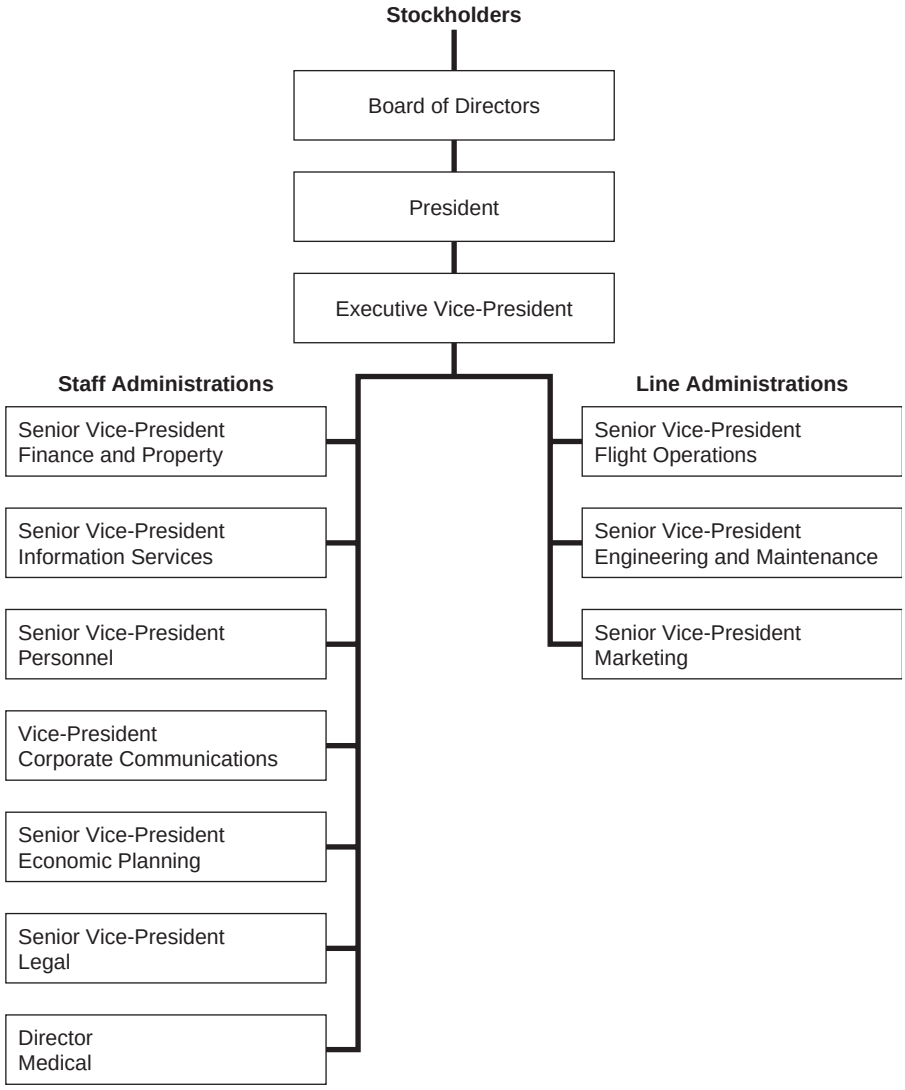

FIGURE 7-4 The administrations in a major air carrier's organization.

STAFF DEPARTMENTS

Staff departments include those areas that provide a service to the line departments. They are primarily located at the carrier's executive headquarters or at major regional offices.

Finance and Property

The finance and property administration formulates policies for the financing of all activities in the airline and is charged with the receipt and safeguarding of the company's revenues and the accounting of all receipts and disbursements. In carrying out these functions, it administers the activities of (1) the treasurer's department; (2) facilities and property, which involves the administration of all owned and leased property and equipment; and (3) purchasing and stores, which is a multimillion-dollar business by itself. Airlines purchase everything from uniforms, supplies, parts, and equipment to food, fuel, and hundreds of other items on a daily basis. Other major departments include auditing, accounting, and insurance (see Figure 7-5).

Information Services

Information services is responsible for designing and maintaining the data communications network within the airline. Included in this administration are database administrators, who coordinate the data collection and storage needs of user departments, and systems analysts, who are responsible for analyzing how computer data processing can be applied to specific user problems and for designing effective data-processing solutions. Programmers, who are responsible for developing programs of instructions for computers, work very closely with the user administrations (see Figure 7-6).

Personnel

The primary goal of the personnel administration is to maintain a mutually satisfactory relationship between management and employees. It is responsible for providing fair and adequate personnel policies. Major departments under personnel include employee development, employee relations, and personnel field services, which encompasses the employment function (see Figure 7-7).

Medical

The medical department provides health services to all employees through physical exams and emergency treatment and establishes health criteria for hiring new employees. In recent years, some major carriers have virtually eliminated their medical staffs, choosing instead to have private physicians and clinics provide medical examinations and other specialized services. Medical service at the major base or at regional facilities is thus limited to emergency treatment (see Figure 7-8).

Legal

Every airline has a legal department under a vice-president or general counsel. This administration is responsible for handling all legal matters, including claims against

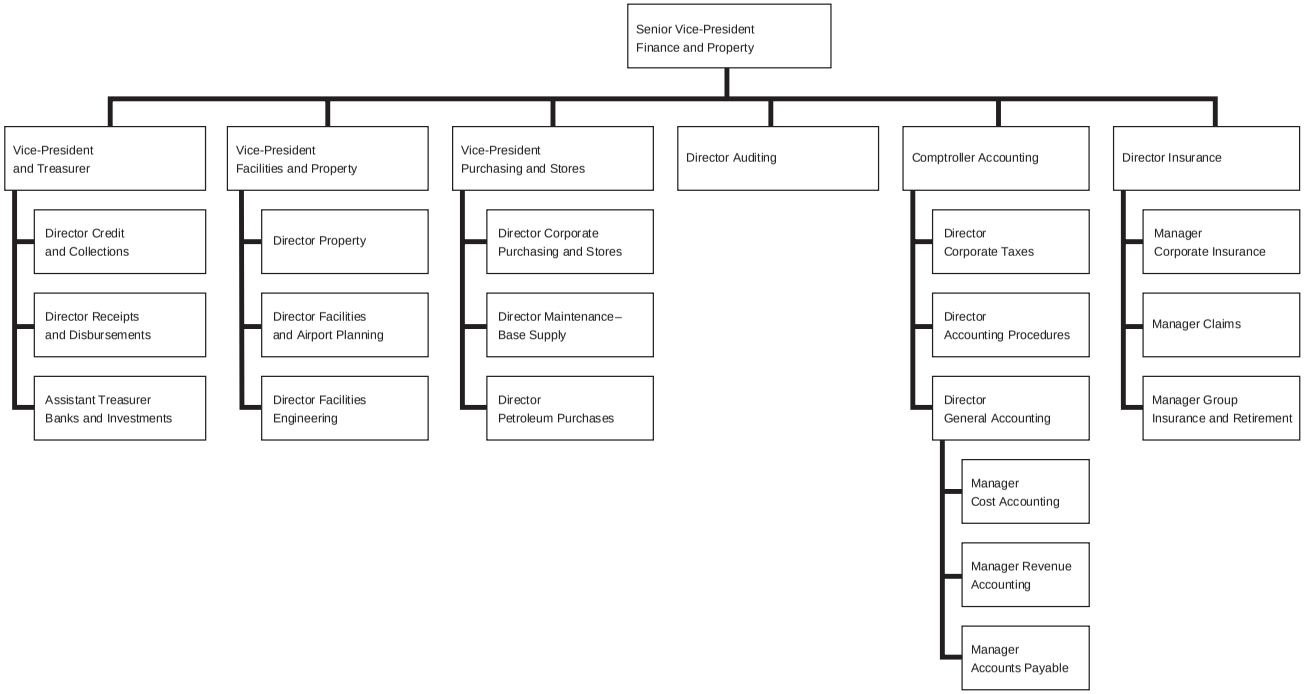

FIGURE 7-5 **A typical major air carrier's finance and property administration (employs approximately 10 percent of the carrier's work force).**

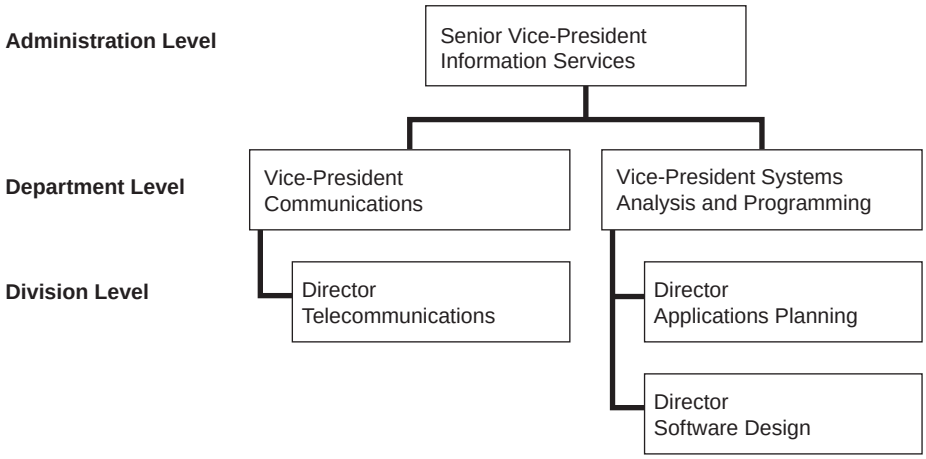

FIGURE 7-6 A typical major air carrier's information services administration (employs approximately 2 percent of the carrier's work force).

the company for loss of or damage to the property of others and for injuries to persons. This administration also works closely with government agencies regarding regulatory matters (see Figure 7-8).

Corporate Communications

This department can be seen as the mouthpiece for the carrier. Most announcements regarding company activities, whether it be an impending strike, weather-caused flight cancellations, or the latest traffic or financial statistics, are made by a representative of this department. This department also has representatives, or lobbyists, in Washington, D.C., and a number of state capitals who are important to the carrier from a legislative standpoint. Legislation regarding increased fuel taxes would be of concern to such individuals (see Figure 7-9).

Economic Planning

The basic function of the economic planning administration is to plan and control the factors that affect the company's economic well-being. This administration develops all long-range forecasts and projects the company's financial returns, including revenues and profit-and-loss statistics, and it develops all cost control and capital expenditure programs. In this capacity, the administration works very closely with top-level management, as well as with all other administrations, in implementing corporate goals (see Figure 7-10).

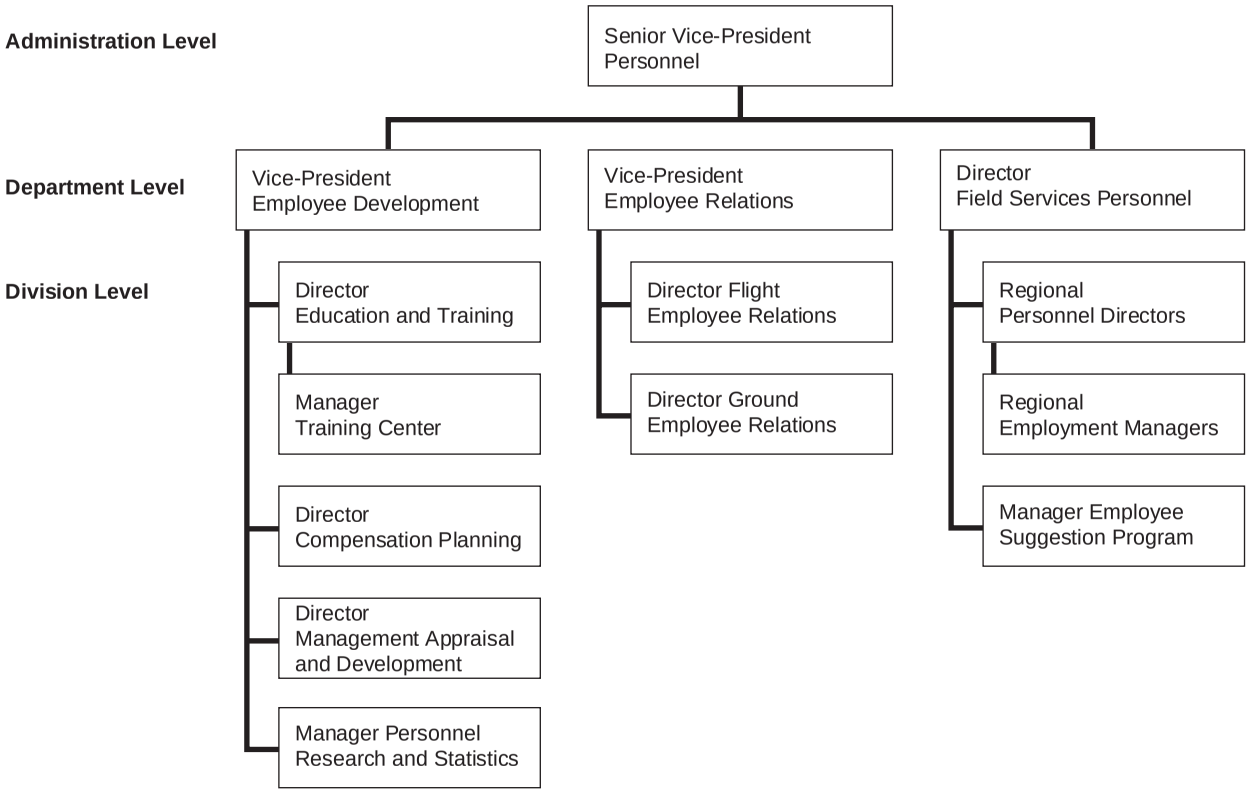

FIGURE 7-7 **A typical major air carrier's personnel administration (employs approximately 1 percent of the carrier's work force).**

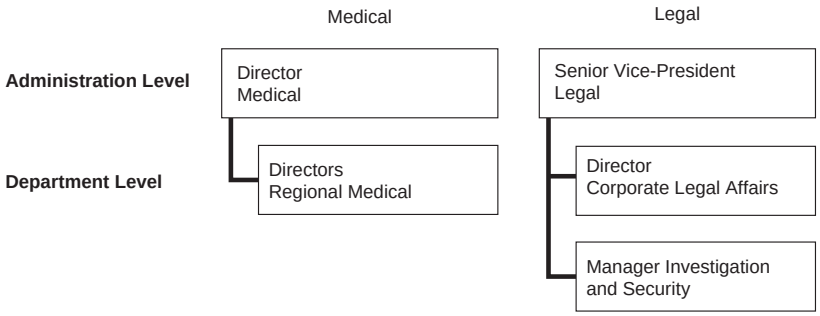

FIGURE 7-8 A typical major air carrier's medical and legal administrations (employ less than 1 percent of the carrier's work force).

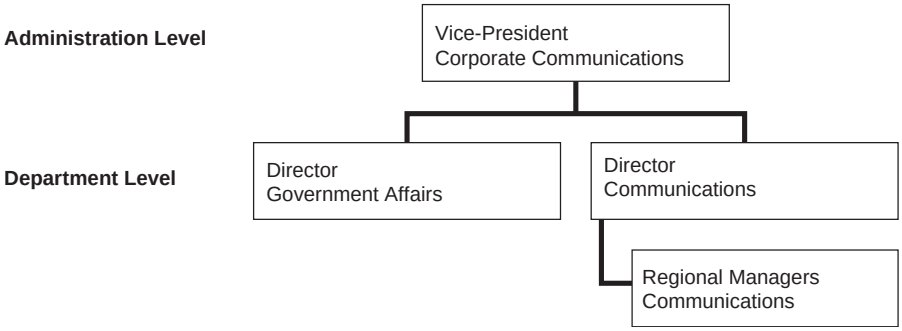

FIGURE 7-9 A typical major air carrier's corporate communications administration (employs less than 1 percent of the carrier's work force).

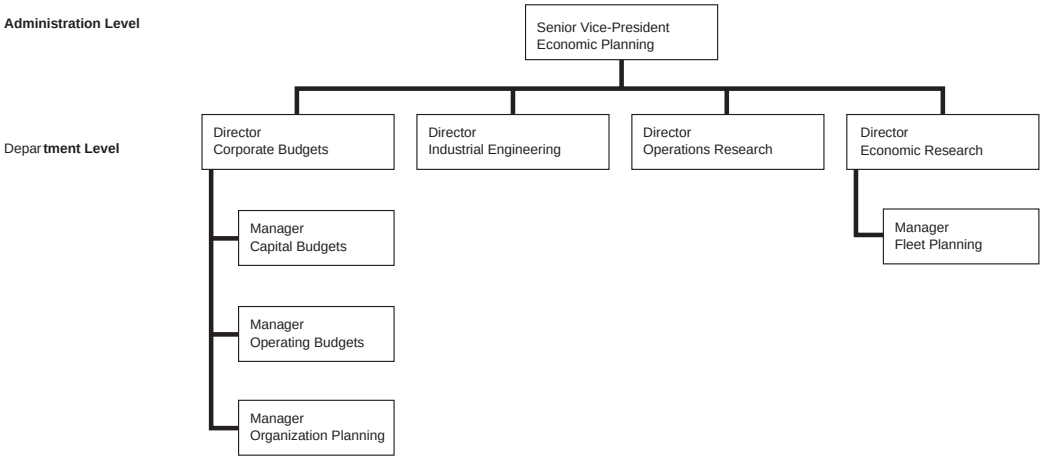

FIGURE 7-10 A typical major air carrier's economic planning administration (employs less than 1 percent of the carrier's work force).

LINE DEPARTMENTS

Line departments are those administrations that are directly involved in producing and selling air transportation. They include flight operations, engineering and maintenance, and marketing and services.

Flight Operations

The office of the senior vice-president of flight operations is responsible for developing flight-operations policies, procedures, and techniques to promote the safe, efficient, and progressive operation of aircraft. Flight operations must maintain the airline operating certificate in compliance with FAA regulations. In addition, the administration is responsible for developing schedule patterns and procedures for the economic utilization of flight equipment and personnel. It also directs an operations analysis and planning service that effectively plans and exercises continuous control over flight-operations activities throughout the system (see Figure 7-11).

Departmental Level. The *vice-president of air traffic and safety* develops and recommends ways to promote the safe, economic, and expeditious flow of air traffic from departure to arrival. This executive develops programs for aircraft interior cabin safety and is responsible for safe aircraft operations, navigation aids, and ground communications (teletype and telephone). The vice-president also maintains current information on all airports and airways that may affect operating policies and procedures.

The *vice-president of flight procedures and training* develops and recommends operating policies, procedures, and techniques for the entire fleet. This executive makes recommendations with regard to equipment, such as instruments, controls, power plants, and radios, in addition to directing the flight-operations training department and the flight standards department. The *vice-president of flying* develops and directs pilot-training programs to enable pilots to meet and maintain proficiency standards required by the airline and the FAA. This executive analyzes the need for pilots within the system to meet schedule requirements and arranges for assignment of new co-pilots, necessary pilot transfers, and furloughs over the entire airline system.

The *director of flight-crew scheduling* is responsible for developing crew schedules for all flight personnel to obtain maximum utilization and availability for each flight.

Division Level. In dispatching aircraft, airlines generally maintain a central control agency, sometimes referred to as **system operations control (SOC)**, that coordinates flight operations, including airplane movements systemwide. This agency is headed up by a *director of flight dispatch*. A typical carrier operates 24 hours a day, 365 days a year. *Regional flight dispatch* managers are responsible during their shifts for the overall planning of the flight operations over the entire system. They must consider the technical phases of the operation and coordinate plans with flight dispatchers at adjacent dispatch centers. The goal is to effect safe, efficient, and smooth flow of aircraft operations under existing conditions.

Flight dispatch managers coordinate the activities of their offices in the scheduling of personnel coverage around the clock and are responsible to the regional managers of flight operations. The flight dispatchers are responsible to the chief flight dispatcher for all local activities. They work with flight officers in clearance preparation, covering all

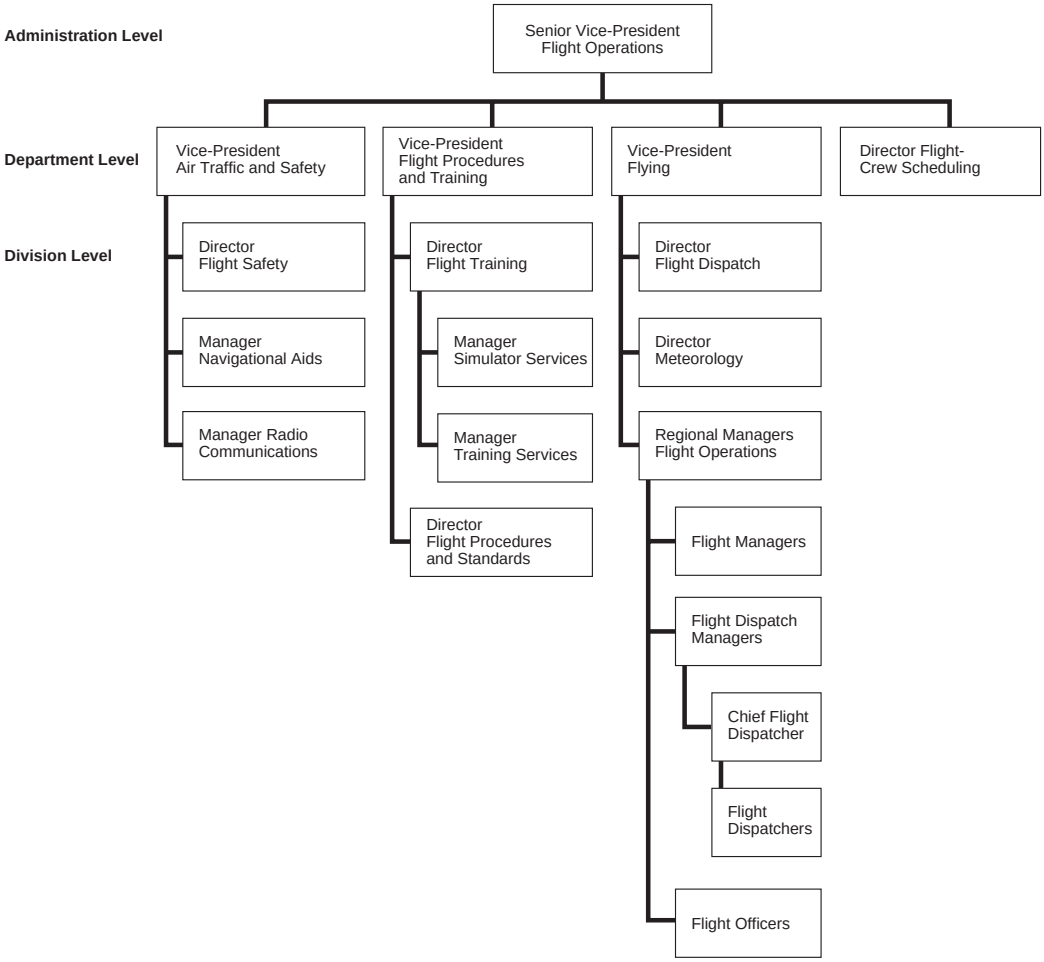

FIGURE 7-11 A typical major air carrier's flight-operations administration (employs approximately 10 percent of the carrier's work force).

details of the proposed flight, including all factors related to the safety of the operation. These factors include (1) the nature and duration of the flight, (2) weather conditions at various flight altitudes, (3) airway routing, (4) fuel requirements, (5) an alternate flight plan, including airport, if necessary, and (6) the signing of necessary clearance papers after full concurrence with the captain on the proposed plan.

Reporting to the vice-president of flying are usually several *regional managers of flight operations.* Their duties include monitoring all flight-operations policies, methods, and procedures by personal observation and close liaison with flight managers and investigating all irregularities and deviations from established regulations. Regional managers must establish, within their areas and within the limits of airline and FAA guidelines, flight policies and regulations deemed necessary in the interest of safety based on local terrain, weather, and navigational and traffic conditions. Regional managers also hold individual conferences and group meetings with flight managers and flight officers to keep them informed on current company policies, management plans, equipment problems, work

planned or in progress for the improvement of equipment, working conditions, personnel problems, grievances, and so forth.

Flight managers are responsible to the regional managers of flight operations for all activities involving flight operations in their area. They monitor the proficiency of pilots by doing en route checks, check flight preparation and execution under various flight conditions, and help and counsel personnel through individual and group meetings.

All pilots report to the flight manager at their domicile. The *captain* is in command of the airplane and, as established by FAA regulations, may take any action deemed necessary to preserve and maintain the safety of the flight. The captain's command commences when the flight is cleared from the loading position. The captain is responsible for determining, before takeoff, that the airplane is loaded within established weight and balance limits and that the required fuel is aboard.

The *first officer* is responsible to the captain for conduct and attention to duty during the flight. The first officer's authority is potential only, capable of being exercised when specifically designated or if the captain becomes incapacitated. The *flight engineer* is also responsible to the captain for conduct and attention to duty during the flight. As new aircraft technology evolves, the flight engineer is being replaced by a computer resulting in two-pilot crews, even for the largest aircraft flying.

Pilots generally are required to arrive one hour before their scheduled flights. In the case of a two-person crew, one pilot reviews the flight plan prepared by SOC, which has been loaded onto the aircraft's computer, while the other inspects the aircraft. The captain will also hold a crew briefing with the flight attendants working the flight.

There are several checklists of tasks that must be completed and items that must be checked before the plane can take off. The checklists used by the major carriers are mechanical rather than paper-and-pencil, requiring the pilot to flip a switch when each necessary task is accomplished; this reduces the likelihood that any check will be left undone. Cockpit procedures are completely standardized, which allows crew members who have never worked together before to operate as an efficient team.

During a given flight, the roles of the cockpit crew members are well defined. There is always one pilot who is flying the aircraft, including takeoffs and landings, and one who is in a support role (checking weight and balance calculations, communicating with SOC, coordinating with air traffic control, monitoring weather data, and so on). Because crews typically work together for at least one month, the captain and co-pilot alternate in these roles. An exception to this is that the captain always taxis the plane, because the tiller that is used in taxiing is on the left side of the cockpit, where the captain sits.

While the aircraft is on the ground, the crew is in contact with the ground controllers, part of the FAA's Air Traffic Control (ATC) system. Ground Control directs taxiing aircraft, while Tower Control handles takeoffs and landings. Once the flight has taken off, it is handed over to Departure Control, which monitors the flight's first 50–100 miles. Beyond that, the flight is the responsibility of an en route Air Traffic Control Center, which handles a large region of the country. During long flights, aircraft pass from center to center until they approach their destination.

Once a flight departs its origin city, keeping track of it and facilitating its on-time completion is the task of SOC. The nerve center of the airline, SOC coordinates and manages the airline's day-to-day and minute-to-minute operations from its facility near the company headquarters. Life at SOC is never routine. Every time something unexpected happens—whether it is a traffic backup, a weather delay, a mechanical problem, a computer outage, an earthquake or a volcanic eruption, a water-main break, a security

incident, or any of the other unexpected occurrences that can happen at an airline—SOC experts spring into action.

SOC dispatchers provide the cockpit crew with assistance if a problem occurs en route. For example, if an on-board system fails, a dispatcher arranges for the captain to speak directly with maintenance technicians on the ground to determine if the problem can be rectified in flight. The dispatcher also helps obtain medical advice in the event that a passenger becomes ill during a flight. The dispatcher provides a communications link between the airline's medical department and the captain to discuss the situation, and helps decide whether and where to divert the plane to obtain the appropriate medical treatment.

When the plane gets within 50–100 miles of its destination, the ATC process just described is repeated in reverse. Approach Control takes the flight until it is ready to land, at which point it is handed to Tower Control. Once the aircraft is on the ground, Ground Control is in charge of getting it to its designated gate.

Because the captain must do the taxiing, the co-pilot maintains contact with Ground Control and checks to make sure the arrival gate is ready for the aircraft. Once they have successfully guided the plane to the gate, the crew completes a checklist of shutdown duties and makes entries in the aircraft's log. If any maintenance problems arise during the flight, the crew calls them in ahead of time, so that maintenance personnel are ready to address them as soon as the plane arrives.

The basic function of the *director of meteorology* is the administration of the centralized weather service. Meteorologists in this department construct and analyze weather maps and charts to determine what weather phenomena are occurring over various geographic areas at a specific time.

After World War II, the airlines saw the need for a specialized weather service. The forecasting section of the U.S. Weather Bureau could not devote the necessary time to give the airlines the weather information they needed to conduct the safe, smooth, and efficient operation they were striving for. The current airline weather service does not replace but only supplements that of the U.S. Weather Bureau. Whereas the Weather Bureau must consider forecasts to cover all types of aircraft operation nationwide, the airlines focus only on operations over prescribed routes and into prescribed cities.

Weather has a major impact on an airline's ability to meet its objective of safe, comfortable, on-time service. Under federal law, an airline cannot dispatch an aircraft if the forecasted weather is such that the aircraft cannot safely reach its final destination. Aviation forecasts are very detailed and include cloud height, horizontal visibility, and wind speed and direction, because a forecast error of even 30 minutes as to when a storm will arrive at a particular airport can wreak havoc on an airline's operation. Experienced meteorologists use information from governments, satellites, radar, and more than 1,000 airports, as well as constant reports from pilots, to produce hourly forecasts of expected conditions throughout the airline system.

Wind speed and temperature influence how much fuel a flight requires and thus affect how many passengers and how much cargo can be on board. In extreme heat, airplanes taking off from certain runways or anticipating strong head winds need extra fuel and cannot carry as much other weight as planned, which causes some flights to be unexpectedly weight-restricted. In very cold weather, the airplane's wings and fuselage are de-iced to remove any accumulation of ice or snow and prevent further buildup.

Wind conditions dictate the direction toward which an airplane takes off, as well as its allowable takeoff weight. Winds also affect travel time, because pilots always try to

choose the route and altitude with the least turbulence to give passengers the smoothest possible ride. All of the available weather information goes into the flight plan; and if weather conditions change in midflight, the captain works with SOC to adjust the flight plan accordingly.

The *director of flight training* reports to the vice-president of flight procedures and training and is responsible for the training of flight crews on the airline, including initial training, transition, refresher, requalification, and familiarization training. The training department is divided into three divisions: (1) the ground school, which makes use of audiovisual aids and mockups; (2) flight simulators; and (3) aircraft used for flight training. The *director of flight procedures and standards,* who also reports to the vice-president of flight procedures and training, is responsible for conducting proficiency checks on all flight officers. This includes rating flights for upgrading of first officers, rating flights for transitioning captains, and monitoring flight and simulator training programs conducted by the flight training department.

Engineering and Maintenance

The chief executive officer of engineering and maintenance (E & M) is the senior vice-president, whose responsibilities are as broad as the mission of this administration: to keep the company's equipment in condition to provide safe and salable air transportation. "Safe," in this sense, implies full compliance with the carrier's own operating specifications and also with all applicable directives and regulations of the FAA. "Salable" means fast and dependable service in up-to-date equipment with comfortable furnishings and decor, without which the company would be unable to compete successfully.

A major carrier's E & M objectives have resulted through the years in the development of an elaborate technical support operation that involves many levels of activity performed at numerous facilities of widely varying capability in accordance with planning and procedures disseminated via a number of media (see Figure 7-12). E & M requires about 25 percent of a carrier's entire work force, and it consumes roughly a fifth of every revenue dollar.

Classes of Stations. From the standpoint of the maintenance function, a major carrier normally divides its many stations served into different **classes of stations**. For example, in descending order of capability, they include (1) the maintenance base, (2) major stations, (3) service stations, and (4) other stations.

The *maintenance base* is generally conceded to be the largest, most versatile, and best-equipped facility in the system. It is the overhaul and modification center for the carrier's entire fleet, and it has the capability of repairing nearly all aircraft components. Few components must be returned to the manufacturer or sent to outside agencies for reconditioning.

Major stations include the carrier's large hub cities. These stations have relatively large numbers of maintenance people and extensive facilities. They also maintain a substantial inventory of spare parts, mainly supplied by the maintenance base. In general, these stations are capable of providing complete line maintenance of specific types of equipment.

Service stations are large stations served by the carrier but not located at major hub cities with large banks of connecting flights. These stations are well equipped and well staffed with line maintenance personnel, but less so than the major stations.

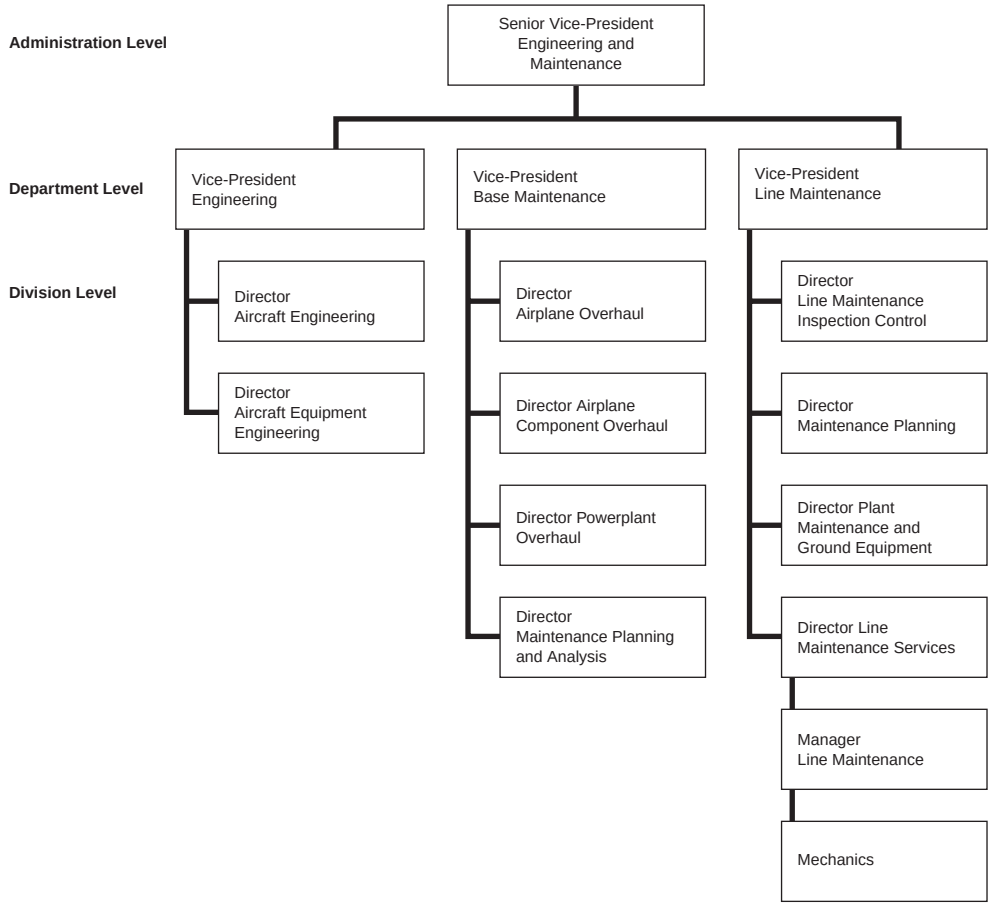

FIGURE 7-12 A typical major air carrier's engineering and maintenance administration (employs approximately 25 percent of the carrier's work force).

Other stations throughout the system might be designated Class 1, Class 2, and Class 3. Class 1 stations might have only sufficient numbers of licensed people to assure maintenance coverage for each flight before departure. These stations would have minimal facilities and spare parts for performing the assigned work. Class 2 stations might have just enough mechanics and facilities to do routine servicing, such as engine heating, de-icing, aircraft moving, and light maintenance on specific equipment. Ordinarily, the maintenance workload at these stations is so low that the mechanics perform additional tasks. Class 3 stations might exist in smaller cities where there are no licensed maintenance people. They are, therefore, never scheduled to perform maintenance work, and their aircraft servicing is limited to work that has no effect on airworthiness, mainly cargo and passenger handling. Ordinarily, they deal only with through-trips or turnaround flights.

Types of Maintenance. All aircraft must follow an FAA-approved maintenance program that keeps the aircraft in an airworthy condition. Each airline develops its own program, based on the manufacturer's planning documents, but includes adjustments for the

airline's own operation. The programs are even different for various operators of the same aircraft type. Although maintained under different programs, aircraft of the same type, utilization, and age will generate approximately the same number of routine maintenance hours during the program cycle. The program cycle is the time elapsed from one overhaul until the next. It generally runs between six and eight years and approximately 20,000 flight hours.

A modern jet aircraft is an assemblage of thousands of parts. For example, a Boeing 747 is made up of 300,000 unique parts. These parts constitute many specialized subsystems based on a wide range of technologies. The enterprise of maintaining this highly complex machine usually is classified by both product type (airframe, engine, and components) and the timing and purpose of the work. The latter yields four groupings: (1) **routine scheduled maintenance** (such as airframe and engine checks), (2) **nonroutine maintenance** (structural fatigue repair and corrosion control), (3) refurbishments (cabin upgrades and exterior painting), and (4) modifications (passenger-to-freight conversions and hushkit installations). Routine and nonroutine maintenance account for over 95 percent of maintenance activity and spending for most major carriers.

Routine Airframe Maintenance. The most elementary form of routine maintenance is a visual inspection of the aircraft before flight (sometimes called a "walk-around") by pilots and mechanics to ensure that there are no obvious problems such as leaks, missing rivets, or cracks. A "check," the form most routine maintenance takes, comes in several grades, referred to as "letter checks"—A through D—all performed at regular intervals. However, much of "routine" maintenance is unplanned. Up to half of the 400,000 or so tasks involved in a C-check are contingent on the condition of the aircraft.

The following list outlines what each check involves and gives a time frame for its occurrence based on a relatively new narrow-body aircraft. The times and even some of the terminology will differ between airlines.

Overnight maintenance. At the end of the working day, workers conduct a 1- to 1½-hour inspection to ensure that the plane is operating in accord with the original equipment manufacturer's (OEM's) minimum equipment list (MEL). This also represents an opportunity to remedy passenger and crew complaints and to implement marketing-driven modifications (such as the installation of telephones), as well as to attend to aspects of FAA Airworthiness Directives (ADs) and Manufacturers' Service Bulletins. This is a chance to do whatever work can be completed in the time allotted so as not to disrupt the aircraft's flight schedule.

A-check. Roughly every 125 flight hours (two to three weeks), an amplified preflight visual inspection of the fuselage exterior, power plant, and certain readily accessible subsystems, including avionics (aviation electronics) and accessories, is conducted to ascertain the general condition of the aircraft.

B-check. Approximately every 750 flight hours (three to four months), workers conduct an open inspection of panels and cowlings, during which some preventive maintenance (exterior wash, engine oil spectroscopic analysis, and so on) is performed, oil filters are removed and checked, parts are lubricated as required, and the airframe is carefully examined. The B-check incorporates an A-check.

C-check. This fundamental airworthiness inspection, which is carried out approximately every 3,000 flight hours or every 15 months, incorporates both A- and B-checks. In addition, components are repaired, flight controls are calibrated, and major internal mechanisms are tested. Other tasks include heavy lubrication, attendance to Service Bulletin requirements, minor structural inspections, flight control rigging tests, engine baroscope inspections, compressor washes, aircraft appearance maintenance, and, usually, some corrosion prevention. The C-check also includes a postcheck flight test.

D-check. This is the most intensive form of routine maintenance, typically occurring every six to eight years or approximately every 20,000 flight hours. Cabin interiors (including seats, galleys, lavatories, cockpit, furnishings, headliners, and sidewalls) are removed to enable careful structural inspections. Flight controls are examined, and the fuel system is probed for leaks and cracks. The aircraft essentially is stripped to its shell and rebuilt with the intention of returning it to original ("zero-timed") condition as much as possible.

A- and B-checks and overnight maintenance are examples of "line" maintenance: work that can be managed at an airport (sometimes even on the ramp) and that is usually performed overnight so as not to encroach on flight plans. C- and D-checks, however, constitute "heavy" maintenance, demanding special facilities and extensive downtime.

Some airlines employ intermediate layover (IL) checks, a form of so-called progressive (or phased, equalized, or continuous) maintenance that does without a standard D-check by incorporating portions of it across several more frequently scheduled inspections, usually C-checks. In another variation, parts of a C-check are merged with several successive A-checks. The goal in either case is to minimize the time the aircraft is out of service while also balancing workloads.

The maintenance of different components varies considerably. For example, a *consumable* (such as a gasket) is a single-use item that is scrapped whenever it is first removed. An *expendable* (such as a fastener or a cable) is used until it becomes unserviceable. A *repairable* (for example, a turbine or a compressor blade) can be repaired and returned to service a limited number of times. Whereas a repairable tends to be an item, a *rotable* (such as a pump, a fuel control, or a constant-speed drive) is an assembly, usually high-cost and capitalized, and almost never scrapped. It is zero-timed when repaired and thus can be reworked indefinitely. A *life-limited part* (such as a disk, a shaft, a hub, or other major rotating engine unit) must be removed from service after its OEM- or government-imposed life limit, typically 15,000–20,000 cycles. Although a life-limited part (or LLP) can be repaired, in accord with the OEM's manual, its life is not thereby extended.

Since the 1970s, there has been a shift from hard-time removals to "on condition" monitoring. This means that engine and component repairs generally do not occur at fixed time periods or intervals; rather, the timing of routine maintenance is based on the state of the equipment. Thus, instead of detaching an item for inspection and repair after a set number of hours or cycles of operation, technicians consult actual operating data, sometimes collected by sensors or built-in test equipment (BITE), to determine when it requires repair. Engines remain on-wing for the longest possible time to minimize operating cost per flight hour. Safety is enhanced because circumstances that might lead to an in-flight shutdown can be foreseen and prevented. Maintenance planning is improved because removals can be made in concert with other repairs.

In addition, many engines have been designed in modular form, permitting entire sections to be removed and replaced or repaired as needed, rather than having the whole powerplant serviced. Typically, an overhaul shop will view an incoming engine as a group

of modules, each of which gets different treatment. Similarly, component repair generally consists of the removal of a component or subcomponent that is later tested and repaired or replaced.

Nonroutine Maintenance. Nonroutine maintenance is either the product of an unforeseen event, such as an accident or random occurrence, or a response to an AD. An example of the first is engine damage due to bird ingestion or an airframe dented by a catering truck. An example of the second, aging aircraft, is worth dwelling on.

Because of concerns about the growing number of older aircraft still flying, the FAA instituted tougher rules several years ago to counter (1) the repeated cabin pressurization and depressurization that stresses an airframe's structure and skin, resulting, if untreated, in metal fatigue and cracking, and (2) the corrosion caused by long-term exposure to moisture. (Engines are not as vulnerable to aging because periodic maintenance may leave few, if any, original parts.)

Although the average age of the U.S. airline fleet has remained the same during the mid-1990s and early 2000s (around 12.5 years) because of the continued influx of new planes, there remains a cohort of older planes getting older. Close to one-quarter of the fleet has reached 20 years of service, and close to 500 planes are over 25 years old and nearing or exceeding their original design life. Airlines strapped for capital—both start-ups and older carriers—are finding it cheaper to extend the life of an old airplane than to buy a new one.

The problem with this practice is that maintenance costs, special aging regulations aside, grow as an airframe ages. One reason for this is that many parts reach the point at which they can no longer be repaired and must be replaced, which is a costlier proposition. The main reason, though, is the mounting number of nonscheduled procedures that arise. Eventually, the cost of repair approaches a significant fraction of the aircraft's value, and a decision must be made as to whether continued maintenance is cost-efficient. Many aircraft are retired just before a D-check to avoid the over $1 million expense. But any retirement analysis must also factor in replacement costs, operational costs, and resale value. It is almost certain that operational costs for these aging aircraft (including maintenance) will climb.

Overhaul of Airframes. The real reason for routing an airplane into a maintenance base and opening it up is to give it a thorough structural going over—to inspect and repair. Other reasons are mainly those of convenience. It's easier and probably more economical to change time-controlled units at this time, as well as to do modifications. But these are not essential to an airframe overhaul, and this is not the way most carriers maintain their fleets these days.

It used to be that airplanes were overhauled according to a plan that required a series of seven minor overhauls and a major one. The major overhaul was designed to rework the airplane to a like-new condition—to fit the bits and pieces back together to the exactness of current manufacturing tolerances. The carriers departed from this practice about the end of World War II by developing what was then called a *progressive overhaul* or *progressive maintenance* but should have been described as a *progressive major overhaul.* What this practice did was merely take portions of the work of a major overhaul and incorporate them into the minor overhauls so that all were about equal in workload.

This approach had its advantages, but it didn't go far enough. It did not provide for early sampling of multiple-run items (those not requiring attention at every overhaul),

and it resulted in bunching of multiple-run repair-and-return components in the shops. For these reasons, the plan adopted for DC-7s in the 1950s and early 1960s staggered the entry of the airplanes into overhaul. The first eight DC-7s in to the base got eight different treatments, and then the ninth started the cycle over again. Every airplane, on successive visits, received a different one of the eight treatments until it had them all. On each visit, some additional multiple-run items were picked up. The same things weren't necessarily looked into or pulled off of all airplanes just because they were in for the first, second, or third time. Still, after eight visits, each DC-7 had the equivalent of a major overhaul—mostly imposed piecemeal on what had been the seven minor overhauls.

It is considerably different with the jets, although the plan in use is a natural extension of the former progressive one. No longer, though, is the eight-visit cycle in evidence, and no longer is it valid to say that a jet has had the equivalent of a major overhaul after any particular number of visits.

The basic document used in formulating the airframe overhaul plan of a major carrier's jet fleet is the work report prepared by the engineering department for maintaining the structural integrity of the particular aircraft. When this document is approved by the FAA, it becomes a part of the operations specifications, which detail the requirements for continuous airworthiness. Compliance with this document's specifications is mandatory.

A separate work report covers the entire structure, the landing gear, and all control surfaces of each jet airplane type by zones. It spells out the kind of inspection each item is to receive and designates the frequency or interval of inspections. And it further specifies that an approximately equal number of each of the zone inspections are to be made and evenly spaced within each fleet overhaul period. The latter is the provision that largely determines the shape of the overhaul plan for that fleet. A carrier's structural-integrity program thus provides the framework upon which each airframe overhaul is constructed. Other jobs, some related and others not, constitute the body of the overhaul.

Conceivably, an airframe overhaul might be limited in content to a thorough inspection plus the repairs, replacements, and operational checks triggered by it. If this were done, though, a large amount of work would have to be scheduled at other times. This would then necessitate adding to the time and workload of the periodic checks described earlier, or it would lead to special routing of airplanes to a station or base where the work could be done at a time other than check or overhaul.

Generally, however, airlines have preferred to exchange time-controlled units (nonstructural) and do the major modifications at the time of overhaul. But these impose certain penalties on the essential work of the overhaul. In particular, they tend to cause congestion and interference among jobs, and they sometimes upset sequencing of operations and result in delays. All this has prompted some reappraisal of the practice.

In recent years, the lengthening of times between airframe overhauls has led to a shift toward line accomplishment of modification projects, but few time-controlled units are currently scheduled for replacement other than at overhaul. Engines are a notable exception. Jet engine overhauls have never been in phase with airframe overhauls; engines are not ordinarily scheduled for change at the time of an airframe overhaul.

The documents that govern the operational checking of aircraft systems and the removal and replacement of time-controlled units are the engineering and maintenance control (EMAC) cards. The EMAC system, which came into use with the jets, is designed to assemble, disseminate, and control all the information essential to proper maintenance of components and systems, both airframe and engine. It blends with the work reports and the modification project schedules to determine what is involved in overhauls.

Generally, carriers seek to utilize components to their full allowable time. Thus, one-run units are removed and replaced at each overhaul, two-run units at the second overhaul and every second one thereafter, three-run units at the third overhaul and every third one thereafter, and so on. There are some exceptions, however, particularly when sampling or other circumstances indicate benefits of early initial removal and staggering of removals thereafter.

Currently, a big-jet airframe overhaul consumes over 20,000 work-hours, including inspector and lead mechanic hours. Of this total, less than 10 percent is involved with inspection, including that called for in the work reports. Over 40 percent involves component changes and systems checkout, about 20 percent modifications, and about 30 percent nonroutine work generated by the inspection. The job takes approximately 15 days in the overhaul dock and 2 days on the ramp for flight preparation and testing.

Overhaul of Engines and Other Components. In general, overhauls of engines, their accessories, and other components are handled in much the same manner. Components are brought in when either operating time or condition requires it, and the overhaul returns them to specifications laid down by engineering and the manufacturer. A large part of engine overhaul is made up of repair and reconditioning operations, as it is usually beneficial, both economically and from the standpoint of reliability, to reuse seasoned components when they can be reworked to approved specifications.

Scheduled engine changes are planned so as to minimize shipping costs and transit times and to avoid special routing of aircraft. All scheduled big-jet engine changes are handled at the carrier's major base, and all others at compromise locations where routing is convenient and labor is available. When practical, engine changes are made during maintenance checks or airframe overhauls.

Contract Maintenance. There are many reasons an airline contracts with an independent facility to perform maintenance. An airline may not have the personnel or equipment to complete a special project or a large modification to its fleet. An air carrier might also recognize that an independent facility has the expertise in a given area, such as turbine-engine maintenance or heavy-airframe modification, to do the job better and more efficiently than the airline. A newer airline may not have the capital to set up a complete maintenance operation, and an independent facility may be able to perform the same service at a lower cost than an airline because of lower labor costs.

Several other factors have led to the airlines' using outside maintenance service more than in the past. When a carrier expands its fleet, its maintenance capabilities are often stretched to the limit simply providing routine services. Thus, many carriers have found it necessary to go outside to meet their needs. In the past, when airlines had larger maintenance facilities, they were able to handle a big job like standardizing a number of aircraft acquired from another carrier. But deregulation, recessions, lower fares, and higher costs have forced the carriers to keep their maintenance capabilities on the lean side.

Carriers often contract with an independent facility when serving a distant airport at which they have no maintenance support. In addition to providing minor maintenance services, some contracts extend to other functions, such as cleaning and fueling aircraft.

Marketing and Services

The senior vice-president of marketing is a member of a company's top management group and in this capacity brings a marketing focus to its deliberations. As chief executive officer of the largest administration (typically over 50 percent of a carrier's work force), this executive's responsibilities include making decisions about marketing policy, as well as the daily administration of the organization. In the latter capacity, the senior vice-president's office administers the organization's cost control efforts and coordinates and implements personnel policies, including staff training programs. Major departments, generally headed up by vice-presidents, that report to the senior vice-president include advertising, marketing services, services planning, sales planning, sales and services, and food service (see Figure 7-13).

Advertising. Advertising is an extremely important marketing department, particularly in today's competitive environment. The advertising department, working closely with the company's advertising agency, provides expertise on promotional messages, copy, media, and timing. This department may influence, but generally does not determine, the amount of company funds spent on advertising and promotion.

Marketing Services. Marketing services is another extremely important marketing department, as it literally designs the carrier's products and determines the firm's market opportunities. Included are such major divisions as market research and forecasting, pricing, and schedule planning. (For a complete discussion of these important areas, see chapters 8, 10, and 12.)

Market research and forecasting is charged with the responsibility of systematically gathering, recording, and analyzing data relating to the marketing of air transportation. Operationally, this means forecasting market opportunities and finding out about the market for air transportation—the numbers and types of consumers, the product itself, channels of distribution, and consumer motivation and behavior. With the so-called consumer-oriented marketing concept in use in recent years, whose objective is to furnish consumer satisfaction, market research and forecasting has been recognized by most major carriers as co-equal in status with sales, advertising, new product and services development, pricing, and scheduling (see Chapter 8).

Of all the marketing variables that influence the potential sales of the airline product, *pricing* has certainly received the most attention since deregulation. The pricing division of a major carrier has become one of the most visible areas within the company (see Chapter 10).

Defining what the *schedule planning* division does is simple: all that is necessary is to take the company's marketing goals for a particular period and turn them into a salable schedule that creates volumes of new traffic; beats the competition; makes the most efficient use of personnel, facilities, and aircraft; serves the cities on the system; and earns ever-increasing profits. Scheduling may be the most difficult job in any airline (see Chapter 12).

Services Planning. The services planning department is responsible for the development of the in-flight and ground services for the various markets identified by market research and forecasting. These include everything from reservations and ticketing services to in-

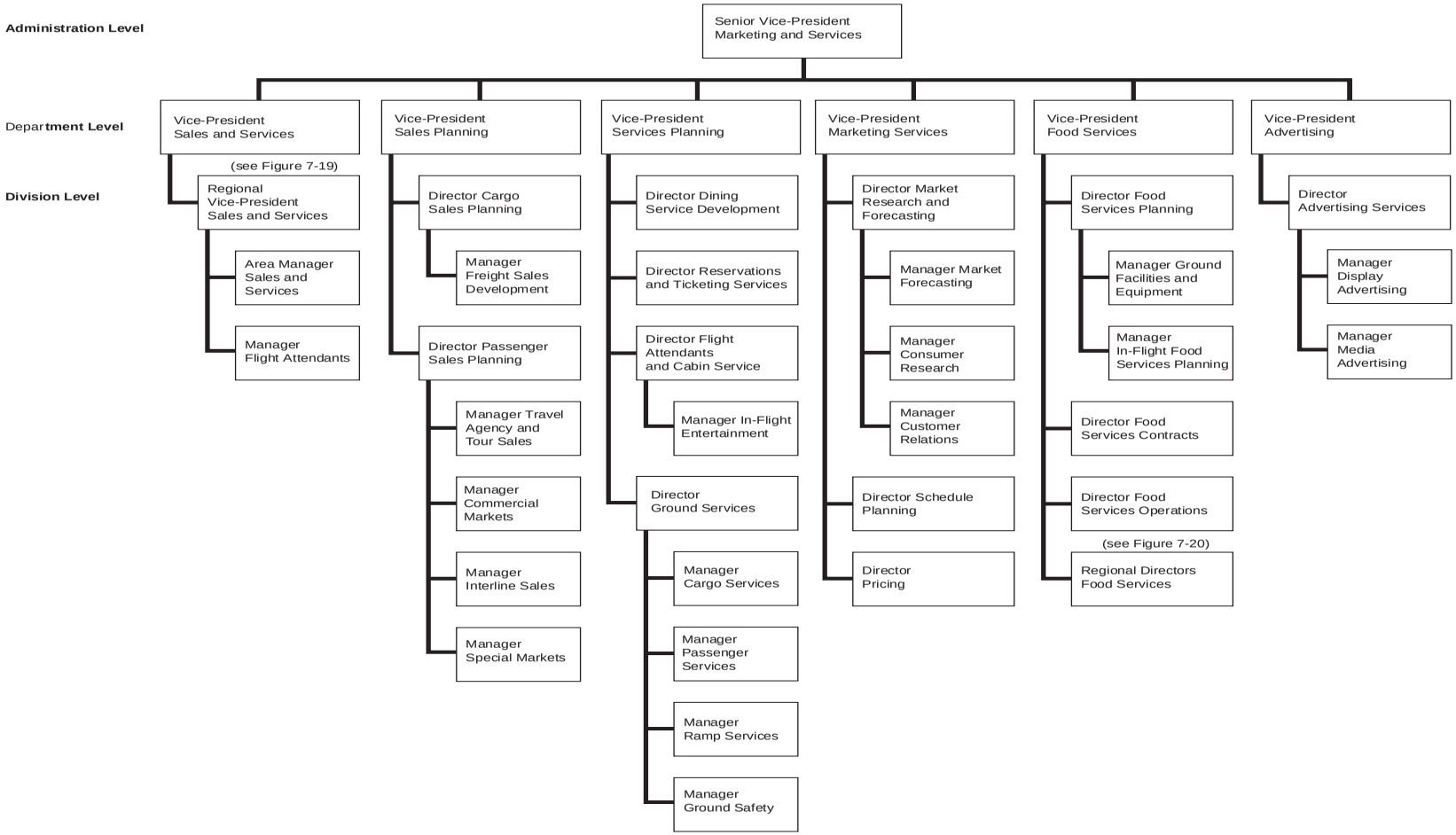

FIGURE 7-13 **A typical major air carrier's marketing and services administration (employs approximately 50 percent of the carrier's work force).**

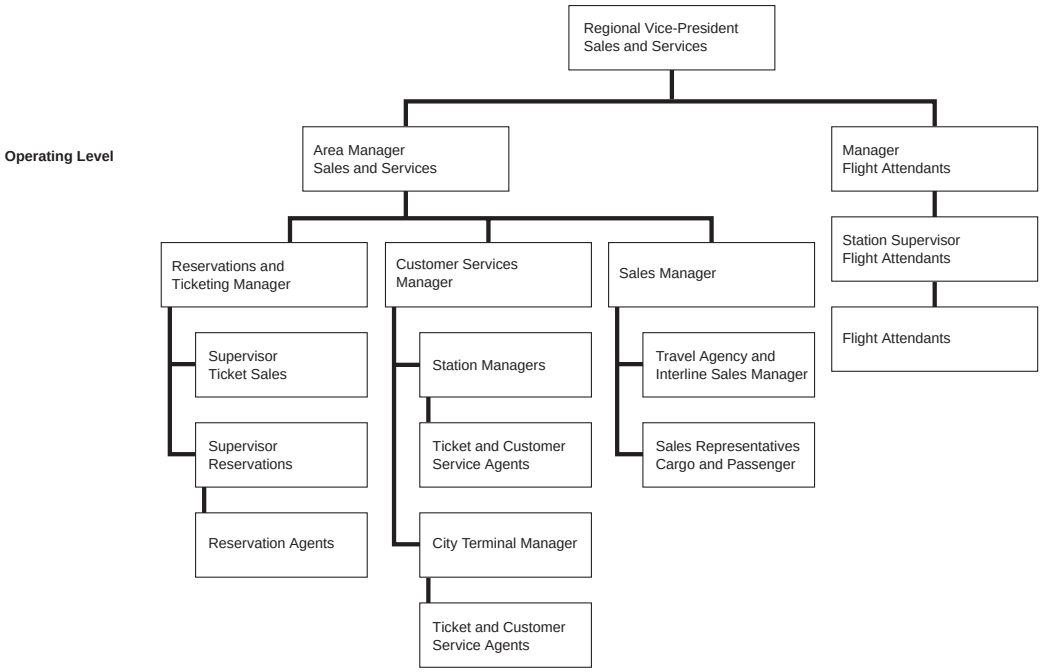

FIGURE 7-14 A typical major air carrier's regional sales and services department.

flight entertainment and dining services. The latter includes such details as the type of meal service aboard various flights, the number of courses, and the various menus.

Sales Planning. Sales planning is concerned with the means by which a carrier's products and services are delivered to consumers. Given the markets developed by market research and forecasting, the prices and schedules, and the services planned for the various markets, it is up to sales planning to develop an approach to reach these target groups. This department works closely with regional sales and services personnel in implementing their plans.

Traditional organizational planning holds that when the number of reporting functions becomes too numerous, a useful solution is to regroup them into several clusters and appoint a manager to each cluster. Accordingly, most of the major carriers have separated the marketing functions into operations and planning. In a sense, the three aforementioned departments—marketing services, services planning, and sales planning—have become staff departments to sales and services.

Sales and Services. Sales and services is concerned with the implementation of the plans formulated by the planning staff (see Figure 7-14). Airline sales management is as old as the carriers themselves, but there have been significant changes since World War II. The social sciences, and especially psychology, have given sales personnel new insights into old problems. Newer organizational methods have increased sales efficiency. To implement

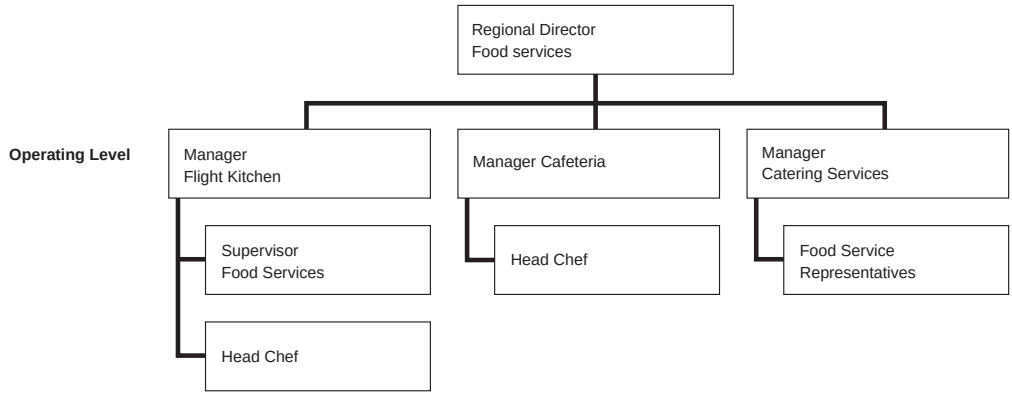

FIGURE 7-15 An air carrier's food service department.

the selling function, personnel in this department must have complete knowledge of who consumers are, what makes them purchase the product, and how they can be reached. The planning departments have helped in meeting these selling challenges.

A rationale for the separation of the planning and selling functions is that it is difficult for any individual to give equal time to two tasks and to be equally good at both. Each member of the operating sales force—whether a cargo sales representative, a reservations agent, or a ticket-counter agent—is involved in daily crises, problems, and workloads that detract from long-range thinking and planning. Thus, the planning work gets done better when left to those who specialize in it and who have time to do it. A major criticism is that the planners may do a poor job because they do not understand operating conditions.

It is interesting to note that flight attendants generally report to the regional sales and services personnel. Although their primary purpose aboard aircraft is to serve passengers' needs in the event of an emergency and although their specific number aboard a flight is determined by federal aviation regulations, they have truly become a part of the marketing game plan.

Food Service. Before 2000, food service was a major business for the large airlines. Many airlines had flight kitchens throughout the system located at major hub airports. These kitchens served thousands of meals per day not only to the carrier's flights but also to those carriers that contracted with the major carrier. The costs of operating a flight kitchen are extremely high, and airlines have realized that costs can be substantially reduced if this service is subcontracted. For those airlines that still operate flight kitchens, Figure 7-15 shows a typical organizational structure.

The Flight—Serving Passengers

The end product of marketing and services is serving customers' needs. The typical airline customer spends more time with the flight attendants than with any other employee group. Thus, the flight attendants have much to do with how an airline's customers feel about the carrier and whether they will fly that airline again in the future. In the eyes of the flying public, the flight attendants *are* the airline, so it is up to the flight attendants to turn every customer into a repeat customer. Although their primary function is ensuring in-flight

safety, flight attendants have become an extension of the marketing effort. Flight attendants receive training in aircraft familiarization, customer service, galley equipment, and food and beverage presentation. Through classroom lectures, hands-on demonstrations, and simulations, they become professionals ready to deal with any emergency situation and dedicated to making every passenger's trip comfortable and safe.

Flight attendants are required to sign in at the airport one hour before their flight's scheduled departure time. Flight attendant schedules—like those of the pilots—are based on each flight attendant's preferences, weighted by seniority.

Once they have signed in, flight attendants are required to be at their flight's departure gate 40–50 minutes before departure. At the gate, an agent provides them with the passenger load, a list of the flight's frequent customers, and any special-handling requests (such as passengers who will need a little extra help). Once on board the aircraft, the flight attendants check the emergency equipment and the catering and generally make sure the cabin is ready for passengers. On wide-body domestic flights and all international flights, there is a designated first flight attendant, or purser, who has received special training and who supervises and coordinates the activities of the other flight attendants.

When passengers begin to board, one flight attendant will check passenger tickets either at the jet-bridge entrance or at the door of the aircraft. For safety reasons, one flight attendant stays at the back of the plane while the rest assist passengers in finding their seats and stowing their carry-on luggage and, in the first-class cabin, serve a pre-departure beverage. Before the plane can leave the gate, the flight attendants need to make sure that all of the overhead bins are closed and that the passengers are seated and buckled in. Only then can the aircraft leave the gate.

Before takeoff, the plane's doors need to be "armed," which means a flight attendant activates an inflatable slide that opens automatically if the doors are opened in an emergency situation. The slides must be deactivated once the plane has landed safely at its destination.

While the captain taxis the plane to its designated runway, the flight attendants make safety announcements and demonstrate the proper use of oxygen masks, seat belts, and—when the plane is to pass over water—life vests and rafts. Before sitting down for takeoff, the flight attendants make sure that all passenger seats are upright, that tray tables are up and locked, and that any first-class beverage service items have been collected and put away.

Once the flight is in the air and has reached cruising altitude, the flight attendants can begin their food and beverage service. In the first-class cabin, flight attendants ask passengers for their drink and, when a meal is being served, entree preferences. In the main cabin, the flight attendants prepare the drink cart, with the objective of beginning drink service within 15–20 minutes after takeoff. If there is a meal on the flight, beverages are always served first.

It should be noted, due to cost-cutting measures and increased revenue generation, many airlines, domestic and international, now charge passengers for beverages, food, entertainment and certain services. In some cases, passengers are even charged for carrying "normal" baggage in addition to the seat purchase. It will not be long before an airline creates a unique marketing campaign where they charge passengers based on the comfort and location of a coach class seat. For example, a middle seat might be charged less money than an aisle or window seat.

Before landing, the flight attendants pick up any remaining food and beverage service items and make sure all passenger seat belts are fastened and all tray tables are up

and locked. One flight attendant will announce connecting gate information for those passengers who need to catch other flights.

After the plane lands, the flight attendants must remain seated while the captain taxis to the arrival gate. Ramp personnel guide the aircraft to its parking position and, after it comes to a stop, put chocks under its wheels. As soon as that has been done, other workers hook up ground-based power and air-conditioning.

On the airplane, the flight attendants open the door, and as passengers begin deplaning, a mechanic squeezes past them to get a debriefing from the cockpit crew and to see if any maintenance work must be done. Once all the deplaning passengers are off, the cabin cleaners begin cleaning out seat-back pockets, tidying up the cabin, cleaning the lavatories, doing a light vacuuming, and repositioning safety belts for each seat's next occupant. A more thorough cleaning is done each night.

Meanwhile, out on the ramp, airline personnel are unloading baggage, freight, and mail from the airplane's belly compartments and are beginning the process of sorting by various categories and destinations. The bags and cargo must be delivered promptly to passengers and shippers or transferred to other flights if they have not reached their final destination.

If a meal has been served or is planned for the outbound flight, catering trucks pull up to service the first-class and main-cabin galleys. Another truck services the lavatory holding tanks, and in the midst of all this, mechanics deal with any problems reported by the crew and do their own walk-around inspections.

Once all of these processes are complete, customers begin to board the aircraft for its next flight, and everything happens in reverse. Ground workers start loading baggage in the forward belly and freight and mail in the rear. Fuel trucks pull up to refuel most flights. The airplanes also must be "watered." Fresh water is pumped aboard from either a water truck or servicing equipment built into the gate itself. During cold-weather months, de-icing trucks spray fluid on the airplane's wings and fuselage. Ramp crew chiefs are responsible for orchestrating all of the ground-operations activities. Performing all of the required jobs quickly enough for the plane to meet its next departure time requires a great deal of teamwork and cooperation. Although efficiency and customer service are important, the underlying theme of safety pervades all operations.

KEY TERMS

management
organization
administration
department
division
decision making
functions of management
planning
management by objectives
policy and procedures manual
organizing
staffing
directing
controlling
unity of objectives
span of control
departmentalization
delegation of authority
levels of management
line personnel
staff personnel
organizational chart
staff department
line department
system operations control (SOC)
classes of stations
routine scheduled maintenance
nonroutine maintenance

REVIEW QUESTIONS

1. Define *management.* What is meant by the different levels of management? How are they distinguishable? Which titles do we normally find at each level of management?

2. How does decision making differ at the various levels of management? "Sometimes no decision is a decision." Discuss. It has been said that management decision making was easier before deregulation. Do you agree? Why?

3. Why is planning such an important management function within an airline? Who plans? Define *management by objectives.* What is a policy and procedures manual? How does a procedure differ from a rule? Describe the other functions of management.

4. What is an organization plan? Describe the eight principles of organization discussed in this chapter. Why are they so important to the management of airlines?

5. Distinguish between line and staff responsibilities. Why are line workers referred to as volume-related? How did staff organizations get started?

6. What is an organizational chart? What is its purpose? The organizational charts shown in this chapter are fairly comprehensive and reflect the organizational plan for a major carrier. Suppose that you were charged with the responsibility of developing an organizational chart for a medium-size commuter carrier. Develop a chart, including appropriate line and staff departments. (Remember, you are dealing with only a couple hundred employees.)

7. How does the organizational chart of a new-entrant or low-cost carrier compare to a legacy or established airline? What are the main advantages and disadvantages to this type of organization?

8.. Which major administration would the following staff departments fall under: telecommunications, corporate insurance, accounts payable, facilities and airport planning, investigation and security, employee suggestion program, management appraisal and development, publicity, industrial engineering, and fleet planning?

9. Describe the four major departments under flight operations. What is the role of flight dispatch? Briefly describe the flight-crew functions from the time they report to the airport until they arrive at their destination. Why do the major carriers have their own meteorologists?

10. What is the primary role of the E & M administration? Most carriers divide their stations into various classes of maintenance service. Describe the classes. Distinguish between routine scheduled maintenance and nonroutine maintenance. What is the difference between checks A through D? Discuss some of the maintenance problems associated with aging aircraft.

11. What is an overhaul work report? How have major carriers' jet overhauls changed since the early 1960s? Give several reasons air carriers have increased contract maintenance in recent years.

12. Describe the relationship between the following marketing departments: marketing services, services planning, sales planning, and sales and services. Which department would the pricing and schedule planning divisions fall under? Why are they, along with market research and forecasting, so important? Describe the dual role of flight attendants as marketing representatives and safety coordinators. Discuss the importance of teamwork and coordination on the ramp area once an aircraft has been parked.

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