Module 5

MANAGERIAL ASPECTS OF AIRLINES

5.1 Airline Passenger Marketing

- Marketing is certainly one of the most important activities in any company, and the airlines are no different. Approximately one-half of a major or national carrier's employees are engaged in the marketing process.
- Reservations personnel, ticket and customer service agents, baggage handlers, flight attendants, food service representatives, passenger and cargo sales representatives, and pricing and market research analysts are involved in marketing the company's product—air transportation.
- Marketing is that broad area of business activity that directs the flow of services provided by the carrier to the customer in order to satisfy customers' needs and wants and to achieve company objectives.
- Marketing is more than selling: it involves a number of business activities, including forecasting, market research and analysis, product research and development, price selling, and promotion, including advertising.
- Marketing also involves the finance activities such as credit and collection that are associated with ticket sales. Marketing is customer oriented.

5.1.1 Development of the Marketing Concept

- In the early years, emphasis was placed on the carriage of mail, not passengers.
- There was more profit in carrying mail, and besides, the mail didn't complain if it arrived late or was too hot or too cold. Furthermore, people still had a love affair with railroads and automobiles.
- Market demand for air travel was just sufficient to absorb the available capacity. This era was the production-oriented period in airline marketing history—a time when services were so scarce that customers accepted whatever was available.
- For hundreds of years, people had traveled by land and water. The airlines in the postwar period had to offer a higher-quality product than consumers demanded at the time.

- Probably no other product ever offered to the public had to be so perfect, so safe, so convenient, so passenger oriented, and so reliable as did air transportation before public acceptance could be expected.
- As the carriers' capacity increased, many companies assumed much more active roles in convincing consumers to purchase the new services offered.
- At this point, it could be said that the airlines entered their **sales-oriented period.** More often than not, this approach produced services that reflected the operations and selling talents of the company, and only secondarily the needs of the flying public.
- It was basically a shotgun approach to marketing, convincing people to fly rather than drive or take the railroad.
- Unfortunately, the airlines have been plagued with excess capacity ever since the introduction of the wide-bodies in the early 1970s.
- Since that time, many carriers have focused on the marketing concept, which stresses shaping services to meet consumer needs rather than molding consumer needs to fit the available services.
- This concept has played an important part in the emergence of the consumer oriented period in the airline business, with its many tests and new-product surveys designed to discover what consumers really want.
- We have moved from the shotgun approach of marketing air transportation to the target market approach—that is, identifying the specific groups of customers to whom the company wishes to appeal with its services.

5.1.2 The Marketing Mix

- The **marketing mix** consists of the types and amounts of controllable marketing-decision variables that a company uses over a particular time period. Commonly referred to as the **"four Ps,"** these variables are:
    - **Product.** The right product (or service) must be developed for the target market.
    - **Price.** A price that gives good value to the customer and adequate revenue to the carrier must be set for the product.
    - **Promotion.** Personal selling and advertising must be used, both to communicate information about the product to the customer and to facilitate sales.

- **Place.** Appropriate channels of distribution must be found to ensure that the product reaches the target market at the right time and in the right place.

- It must be recognized that the marketer must contend with certain **uncontrollable variables.** Its actions and strategies will be affected by some or all of the following variables:
  - *Cultural and social differences.* These are the traditions and values of various ethnic groups that represent potential customers. Such traits as eating habits can vary considerably in different parts of our own country, to say nothing of different countries.
  - *Political and regulatory environment.* Political climates are constantly changing. New levels of taxation and government spending can affect marketing strategies set by the carriers.
  - *Economic environment.* A good marketing program might be a flop if the economy is going through a recession or rapid business downturn. Airlines are very sensitive to changes in the economy.
  - *Existing competitive structure.* The number and types of competitors the marketing team must face in its target markets may vary considerably.
  - *Resources and objectives of the company*. Top management really controls these variables, and the marketing team must work within the restraints imposed on them.
- In marketing the airline product, certain unique characteristics must be recognized:
  - The product (service) cannot be kept in inventory to match fluctuations in demand. The revenue lost as a result of an unfilled seat when the aircraft departs is lost forever.
  - The service is usually personalized. Two people who take the same flight might come away with completely different opinions about the service, depending on their individual experiences.
  - There is no such thing as replacement of a bad product, as is the case in the sale of other products.
  - It is difficult to check the quality of the service before the final sale. There is no showroom to visit to test the product before purchase.
  - Delivery of the product cannot always be guaranteed, due to mechanical problems or the unpredictability of the weather.
  - The service can be produced only in batches, as opposed to individual units.

- These characteristics have prompted the airlines in today's extremely competitive environment to intensify their efforts in two areas:
    - Offering better qualitative and quantitative service to passengers, and
    - Enhancing their image.
- Qualitative service includes such things as courtesy and efficiency in contacts with passengers. Quantitative service primarily includes such subtle additions as wider variety of on-board magazines and entertainment and greater seat-pitch angle.
- The following discussion directly relates to how airlines market their products and services to the passenger.
    - **Scheduled or Non-Scheduled Service**. For the most part, an airline will offer either a scheduled service or a non-scheduled service. A scheduled airline will fly to different destinations using a published time schedule.
    - **Luxury, Mid-Range, Low-Cost and No-Frills, Shuttle, and Charter**. When building the airline business plan, the developer must know what type of service to operate in terms of the amenities it will offer. Generally, a luxury-oriented airline stands a good chance of failing from the start due to high overhead costs.
    - **First, Business, Economy**. Major airlines offered three types of seating configurations: first, business, and economy. Today, as it becomes more difficult to operate a successful airline from a financial perspective, many airlines are doing away with the three classes and moving toward two classes. First class is being removed and replaced with increased business class seating and increased economy class seating.

5.1.3 The Consumer-Oriented Marketing Concept

- Introduction of wide-body service in the early 1970s marked the climax of the production sales orientation in the air transportation industry. Excess capacity and a shortage of customers changed the marketing concept to a consumer-oriented approach.
- Market research came to the forefront as the carriers began to learn all they could about existing and potential customers for air transportation.
- The purpose was to design products (services) to meet changing customer requirements as they arose, or preferably before they arose.

- During this consumer-oriented period, carriers have begun to focus on increased market segmentation and more intensive growth strategies.

Market segmentation:

- **Market segmentation** is the process of dividing potential customers for a product (service) into meaningful consumer groups, or market segments, in order to identify a target market. This process involves three steps:
    - Finding relevant characteristics that divide a market into smaller consumer groups. For example, an airline market might be segmented by trip purpose (business, pleasure, personal), traveler characteristics (age, sex, occupation, income, flying experience), trip characteristics (length of haul, peak versus nonpeak, day of the week, season), or length of stay (return same day, overnight, vacation).
    - Using these characteristics to identify all significant market segments and to relate them systematically to the services each segment might buy.
    - Selecting target markets—the collection of market segments most consistent with the company's objectives and capabilities.

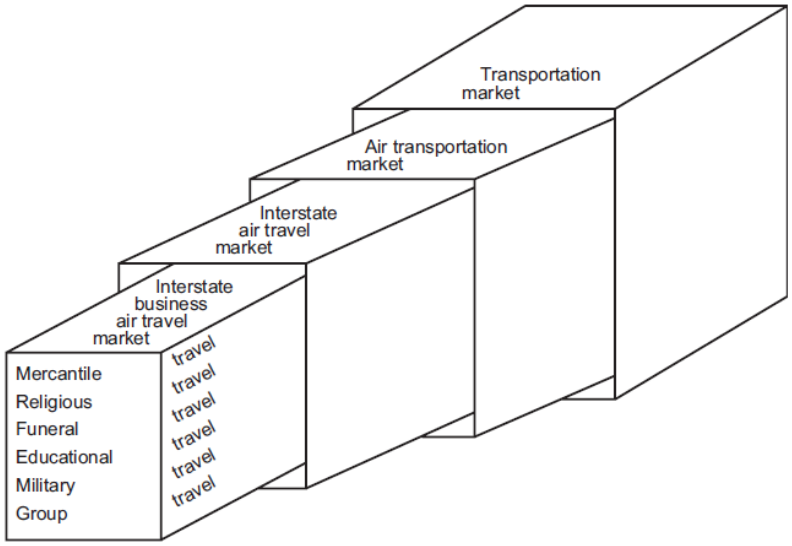

FIGURE 9-1 Market segmentation—groups of customers who share qualities that render the segment distinct and make it of significance to marketing.

- Figure 9-1 gives an example of the segmenting process. Because no two travelers are alike, the markets can be segmented and the marketing mix shaped around their differences and needs.

- **Mercantile Travel**. Retailers, wholesalers, and manufacturers account for a considerable amount of air travel. For example, department store personnel, including buyers, managers, and executives, fly to numerous conferences, trade shows, and special previews of seasonal fashions.
- **Religious Travel.** In addition to recognizing the particular needs of the members of this market segment, carriers must be aware of the special protocol involved in doing business with the various groups. Included in this segment are members of the clergy as well as laypeople traveling for numerous reasons, including retreats, conferences, and school related activities.
- **Funeral Travel.** Some airlines have a close relationship with funeral directors because they are among the best repeat customers. Funeral directors account for not only the revenue from the shipment of human remains but also the revenue from the grieving relatives (an average of three) who choose to accompany the deceased or to travel on another flight. Here again, the marketing staff works very closely with the customers because of the critical timing involved.
- **Educational Travel**. The educational travel market segment includes colleges, universities, secondary schools, and the like. Included are administrative personnel, faculty members, students, athletic teams and their fans, along with others, such as college athletic scouts, members of the news media, and promoters. This is a large market segment that makes repeated use of air travel.
- **Military Travel**. This segment represents a continual flow of travel by personnel on official business, emergency leave, furlough, discharge, and relocation. Some military bases are literally cities unto themselves that provide a significant volume of traffic to carriers servicing nearby airports.
- **Group Travel.** An increasingly important segment of target marketing in recent years has been group travel. The opportunities are unlimited, because most everyone belongs to various groups—amateur athletes, teachers, doctors, post office employees, trade associations, and so on.

Intensive Growth Strategies:

- As the term implies, intensive growth strategies involve a concerted effort to (1) penetrate existing target markets, (2) increase product development, and (3) develop new target markets.

- Market Penetration. One method of penetrating existing markets more deeply is through the use of promotional fares. Promotional fares have been, and still are, an effective way for carriers to fill empty seats with leisure travelers who are being more carefully targeted in specific off-season markets and for off-peak travel periods.
- Product Development. Business travel is not as responsive to changes in the price variable as is pleasure travel, because businesspeople typically must travel during a particular period because of business needs.
- Market Development. Market development is the process of selling current products to new target groups.

5.1.4 Marketing Strategies since Deregulation

Computerized reservation systems:

- Now that the marketplace determines profits, airlines have moved aggressively to expand market share and to hold down costs.
- Computerized reservation systems/global distribution systems (CRSs/GDSs) display airline schedules and prices for use by agents in making reservations.
- Although CRSs create opportunities for the smallest carriers to have their flights and fares displayed for travel agents nationwide, they also provide important marketing advantages to the carriers that own them.
- There are four main systems: Amadeus, Galileo, SABRE and WORLDSPAN.
- CRSs have been expanded to make other types of reservations, such as hotel rooms and rental cars.

Travel Agents:

- Travel agents provide an important service to consumers, especially since deregulation, by supplying efficient access to a complex array of travel options.
- Agents act as brokers of information and sellers of travel services to consumers often closely affiliated with individual air carriers through CRSs and supporting services.
- Over 90 percent of all travel agencies are automated (by means of CRSs), and most carriers rely on a single CRS to influence agents.

- Carriers pay commission overrides, which, combined with CRSs, have had much success in causing agencies to shift travelers to favored suppliers.

Frequent-Flier Programs:

- Frequent-flier programs have been perhaps the airlines' most successful marketing tool.
- When American, under a new management team with extensive experience in marketing, first offered its frequent-flier program in 1981, the other carriers dismissed it as a gimmick.
- The incumbent carriers, who had higher labor costs than the new entrants, soon recognized the importance of retaining business travelers.
- These travelers are less inclined to take advantage of the discount fares offered by the majors, which usually come with a number of restrictions, but they might opt for the no-restriction low fares offered by their upstart competitors

Code Sharing:

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Interactive Marketing Agreements:

- Interactive marketing agreements will soon be a common term used in the airline business.
- Low-cost carriers (LCCs) and point-to-point carriers do not typically participate in codes sharing for various reasons therefore limiting market presence due to simplified route structures.

- However, as LCCs and point-to-point carriers expand, offering destinations outside the simplified network will increase in terms of importance.
- Airlines will form “loose” relationships with other carriers that complement the business model.
- Code sharing involves contractual, liability, connectivity and accounting issues whereas interactive marketing agreements simply relationships.

The hub-and-spoke system:

- The hub-and-spoke system establishes a number of routes connected to a central hub airport where passengers are collected from feeder flights, transferred to other flights on the same line, and then carried to their ultimate destination.
- The traffic pattern at a hub airport consists of closely spaced banks of arrivals and departures.

Advertising and sales promotion:

- Before deregulation, clever advertising and sales promotion material, extolling the service virtues of one carrier over others, tended to be the prime basis of most advertising.
- Ads focusing on schedule, frequency, and equipment also were run.
- The principal difference between carriers, however, was the level and standard of service on the ground and in the air.
- Pricing was a secondary feature under the relatively tight rein of regulation.

5.2 Forecasting Methods

- Every day, at all levels of management within all segments of the air transportation industry, decisions are made about what is likely to happen in the future.
- It has been said that business action taken today must be based on yesterday’s plan and tomorrow’s expectations.
- Call them expectations, predictions, projections—it all boils down to one thing, forecasting. Forecasting is the attempt to quantify demand in a future time period.
- Quantification can be in terms of either dollars, such as revenue, or some physical volume, such as revenue passenger miles (RPMs) or passenger enplanements.
- Forecasting is predicting, projecting, or estimating some future volume or financial situation—matters mostly outside of management’s control.

- Planning, on the other hand, is concerned with setting objectives and goals and with developing alternative courses of action to reach them matters generally within management's control.

The Purpose of Forecasting:

- Each type of forecast serves a particular purpose. Thus, an airline might make a ***short-term forecast*** of total passenger enplanements between a particular pair of cities to provide a basis for determining station personnel and ground equipment needed, gate availability, and expenses related to these items.
- Short-term forecasts normally span a period of one month to one year and cover such day-to-day operations as staffing stations, evaluating current competitive situations in the market, and projecting short-term equipment needs.
- ***Medium-term forecasts*** generally span a period of one to five years and involve such things as route-planning decisions.
- A ***long-term forecast*** spans a period of 5 to 10 years and might involve fleet planning decisions and long-term financial commitments.
- The choice of forecasting methods should be based on several factors, including availability of data, accuracy of available data, management sophistication, intended forecast use, and availability of electronic data processing.
- Sophistication in forecasting methods can easily run ahead of data quality and management ability to use the results. Forecasting passenger enplanements for a one-year period on well-established routes.
- Annual forecasts are provided by various organizations, such as the FAA, IATA, ICAO, aircraft manufacturers, and so on.
- *Analysis:*
    - Every company must make choices among the many markets or submarkets open to it, in addition to deciding on the level of service to offer, the type of aircraft to fly on particular routes, and the type of aircraft to purchase.
    - The choice is greatly facilitated by quantitative estimates of demand.
- *Planning:*
    - Every firm must make short-term decisions about the allocation and scheduling of its limited resources over many competing uses; it must make long-term decisions about rates of expansion of capital equipment and funds. Both short-term and long-term decisions require quantitative estimates of demand.

- *Control:*
  - A company's actual performance (physical volume or revenues) in the market takes on meaning when it is compared to forecasts.

5.2.1 Causal Methods

- **Causal (model) forecasts** are based on a statistical relationship between the forecasted (dependent) variable and one or more explanatory (independent) variables.
- A statistical correlation alone is sufficient basis for prediction or forecasting. **Correlation** is a pattern or relationship between the two or more variables. The closer the relationship, the greater the degree of correlation.
- In general, a causal model is constructed by finding variables that explain, statistically, the changes in the variable to be forecast. Such variables must have the following characteristics:
  - they must be related statistically to the dependent variable,
  - data on them must be available, and
  - there must be some way of forecasting them, or their relationship to the dependent variable must be lagged (must follow the dependent variable by several months).

5.2.2 Time-Series or Trend Analysis Methods

- Another reasonably sophisticated statistical method of forecasting is **time-series analysis,** the oldest, and in many cases still the most widely used, method of forecasting air transportation demand.
- In some situations, this method is referred to **as trend extension**. It differs from causal model forecasting in that less causation is embodied in the time series.
- Time-series models show the dependent variable as a function of a single independent variable, time. This method is used quite frequently when both time and data are limited, such as in forecasting a single variable (for example, cargo tonnage) for which historical data are obtained.
- Like the causal models, time-series models are based on a statistical correlation that does not necessarily reflect a real cause-and-effect relationship between the dependent and the independent variable.

- The values for the forecasted (dependent) variable are determined by four time-related factors:
    - long-term trends, such as market growth caused by increases in population;
    - cyclical variations, such as those caused by the business cycle;
    - seasonal phenomena, such as weather or holidays; and
    - irregular or unique phenomena, such as strikes, wars, and natural disasters.
- These four factors induce the following types of behavior in the dependent variable:
    - trends,
    - cyclical variations,
    - seasonal changes, and
    - irregular fluctuations.

5.2.3 Smoothing the Variations

Cyclical Variations.

- Cyclical variations can be removed by the forecaster by performing a couple of tasks. The first, and most difficult, task is to estimate the relationship between the forecast variable and the business cycle.
- The forecaster selects an appropriate index, such as GNP or the Dow Jones stock average, to represent the business cycle. Then, either subjectively or through various mathematical approaches, the forecaster estimates the elasticity (responsiveness) of the forecast variable with respect to the business cycle index.
- The objective is to determine how much of the fluctuation in the variable was induced by the business cycle.

Seasonal Variations.

- The primary reason for removing seasonal variations is to reflect the actual situation more accurately.
- For example, if Easter week falls in late March one year and in early April the next, increased passenger enplanements, RPMs, revenues, and so forth will appear in the first-quarter statistics one year and in the second-quarter statistics the next year. Unless this is taken into consideration in the forecast, planning for the two quarters will be inaccurate.

- Seasonal variation is eliminated by a process called smoothing. The most common instruments for this purpose are freehand lines, semi-averages, and moving averages.

Irregular Variations.

- Irregular variations are introduced by a major event such as severe weather conditions or a strike and can usually be identified and measured, or at least estimated, with reasonable accuracy. Either an adjustment can be made in the observed values or the observations taken during the event can be deleted.
- For example, an evaluation of the long-term trend in passenger enplanements, load factors, and the like would take into consideration the air traffic controllers' strike during the summer of 1981, when service was cut drastically for a period of time.

5.2.4 Accuracy of the Causal Models and Time-Series Forecasts

- Short-term forecasts are generally more accurate than long-term forecasts because the underlying determinants and the relationships between variables tend to change less in the short run than in the long run.
- However, short-term forecasts are vulnerable to seasonal variations that, if unaccounted for, can make them unrealistic.
- A long-term model is really a trend model, affected only by irregular variations. Developing a trend model is generally the primary objective of the forecaster, because management is interested primarily in the growth or contraction of a particular service.
- Forecasts for the economy as a whole usually are more accurate than those for a particular industry within the economy. Consequently, forecasted revenue for the airline industry typically is not as accurate as forecasted GNP.

5.2.5 Judgmental Methods

Judgmental forecasts

- Judgmental forecasts are educated guesses based on intuition and subjective evaluations. Although they are the least rigorous types of forecasts, they are frequently a powerful factor in decision making.
- Intuition often is the only tool the researcher has, and it can be very accurate. Judgmental methods can be used when either no information or very little historical

data exist. They can also be used to adjust forecasts developed by causal models or through time-series analysis.

Expert Opinion.

- Expert opinion can come from within or outside the company. Forecasts may be developed by simply drawing on managerial experience within the company.
- For example, a prediction of next year's cargo tonnage may be obtained from the vice president of cargo sales. Companies can also tap outside experts for assessments of future market conditions.
- Various public and private agencies issue or sell periodic forecasts of short- or long-term business conditions for different industries. Leading spokespersons, sometimes referred to as "visionaries," from banking or investment houses report on the status of and outlook for the industry.

Sales Force Opinion.

- Sales force estimates have the advantage of coming from those individuals who are closest to the marketplace. Because they work in the field, salespeople generally have a fairly good idea of their company's image with travel agents in their territory and the expected business to be generated from these sources.
- They also have a good feel for the amount of cargo tonnage shipped by freight forwarders and businesses that have been using their services.
- They are in daily contact with the carrier's major customers and can offer valuable information to the home-office forecaster.
- Sales representatives are often the first to learn of a competitor's strategy at the local level and may have more knowledge of or better insight into developing trends than any other single group. This grass-roots approach to forecasting can be helpful in breaking down sales by territory, customer, and sales force.

5.2.6 Usefulness of Judgmental Methods

- The usefulness of expert opinion, sales force opinion, or polls depends on the cost, availability, and reliability of these types of data.
- For cases in which buyers do not plan their purchases carefully or are very erratic in carrying out their intentions, or in which experts or the sales force are not particularly good guessers, a poll or survey of buyers' intentions is preferable.

- A poll or survey also is generally more desirable in forecasting the market for a new product or for an established product or service in a new territory. When a short-term forecast of likely buyer response is desired, an expert opinion may be called for.

5.3 Airline Pricing, Demand, and Output Determination

- During the pioneer days of airline development, the airlines tested the responsiveness of demand for passenger service by adjusting prices so that the resulting volume of passenger traffic, combined with mail revenues, would produce the maximum net return.
- Airline management had to use keen judgment to fix fares that would develop traffic, counter existing competition, and yield revenues that, together with other sources of income, would meet operating and other expenses and generate a reasonable return.

5.3.1 The Trend in Domestic Passenger Airfares

- During the pioneer years of air passenger transportation, the cost of aircraft operation precluded the air carriers from seeking passenger traffic at rates on a price-competitive basis with other forms of transportation.
- Before the awarding of air mail contracts, most carriers engaging in passenger transportation operated in the red, without hope of balancing revenues and expenses.
- Even in the years following the awarding of the air mail contracts, high passenger fares discouraged the growth of traffic, and light traffic caused the costs of operation to be spread over fewer passengers.
- The airlines were caught in a vicious spiral of fares and operating-costs distribution for which a solution was imperative, because despite the fact that prices increased from 1926 to 1929, passengers were better able to pay the fares than they were after 1929.
- Following the autumn of 1929, drastic reductions were made in air passenger transportation fares until the airlines, operating in direct competition with railroad passenger services, established fares at the approximate level of standard railroad passenger fares plus Pullman charges.

- Airlines not in direct competition with railroad service also reduced their fares in many cases, but not so drastically as the lines in competition with railroad services.
- The awarding of mail contracts to air carriers enabled these lines to distribute their costs of operation over mail and passenger traffic and thus reduce the amount of cost borne by the passenger traffic.
- Some of the air transport lines also developed air-express traffic, and this additional revenue made it possible to stimulate passenger traffic by reducing rates.
- The trend in air passenger fares for domestic airlines is shown in Table 10-1. These figures reflect a sharp downward trend from 1929 to 1941.
- A 5 percent federal transportation tax was introduced in 1941; this was raised to 10 percent in 1942 and to 15 percent in 1943.
- Faced with the problem of too much traffic and too little capacity during World War II, the carriers eliminated all special fares and discounts, such as round-trip fare reductions, reduced fares for children, and reductions in fares for those who traveled under the Universal Air Travel Plan (an air travel credit card). Aer the war, as a result of various CAB show cause orders, carriers began to reduce passenger fares and bring back the prewar discounts.

TABLE 10-1 Average Air Passenger Fares for Domestic Airlines, 1926–2004

Prejet Era		Jet Era	
1926–1960	*Passenger Revenue (in cents per passenger mile)*	*1961–1996*	*Passenger Revenue (in cents per passenger mile)*
1926–30	12.0, 10.6, 11.0, 12.0, 8.3	1961–65	6.1, 1, 5.9, 5.8, 5.7
1931–35	6.7, 6.1, 6.1, 5.9, 5.7	1966–70	5.7, 6, 5.6, 5.9, 6.0
1936–40	5.7, 5.6, 5.7, 5.1, 5.1	1971–75	6.3, 6.4, 6.6, 7.5, 7.7
1941–45	5.0, 5.3, 5.5, 5.1, 4.5	1976–80	7.8, 8.2, 8.5, 9.0, 11.6
1946–50	4.5, 5.0, 5.7, 5.8, 5.6	1981–85	12.8, 12.8, 12.1, 12.7, 12.2
1951–55	5.6, 5.6, 5.5, 5.4, 5.5	1986–90	11.0, 11.4, 12.3, 13.1, 13.4
1956–60	5.3, 5.4, 5.7, 5.9, 6.0	1991–95	13.2, 12.9, 13.7, 13.1, 13.5
		1996	13.8
		1997	13.97
		1998	14.1
		1999	14.0
		2000	14.6
		2001	13.2
		2002	12.0
		2003	12.3
		2004	12.1

Source: For 1926–37, Aeronautics Branch of the U.S. Department of Commerce; for 1938–2004, Air Transport Association and Civil Aeronautics Board.

5.3.2 Pricing and Demand

- Of all the marketing variables that influence the potential sales of airline seats and cargo capacity, price has received the most attention since deregulation.
- For over 200 years, economists have emphasized the price variable in describing the level of demand for products and services. Pricing remains a very complex issue in many industries.
- In the case of air transportation, it is even more complex because of the transition in recent years from a highly regulated industry to a deregulated environment.
- Economists have developed a simple yet elegant model of how to set a price. The model has the properties of logical consistency and optimization, but it represents a severe oversimplification of the pricing problem as it exists in practice. There is value, however, in examining the model, because it provides some fundamental insights into the pricing problem and because its very limitations help bring out the complex issues involved in pricing.
- **Demand** is defined as the various amounts of a product or service that consumers are willing and able to purchase at various prices over a particular time period.
- A demand schedule is simply a representation of a series of possibilities that can be set down in tabular form. Table 10-2 is a hypothetical demand schedule for a particular air carrier route.

TABLE 10-2 **An Individual Air Carrier's Demand for Air Transportation per Month Between Two Cities (hypothetical data)**

Price	Estimated Number of Passengers
$75	1,000
70	1,150
65	1,275
60	1,400
55	1,550

- A fundamental characteristic of demand is that as price falls, the corresponding quantity demanded rises; alternatively, as price increases, the corresponding quantity demanded falls. In short, there is an inverse relationship between price and quantity demanded. Economists have labeled this inverse relationship the law of demand.

Determinants of Demand:

- In constructing a demand curve, a forecaster assumes that price is the most important determinant of the amount of any product or service purchased. But the forecaster is aware that factors other than price can and do affect purchases, in our case, of tickets.
- Thus, in drawing a demand schedule or curve, the forecaster must also assume that other factors remain constant; that is, the non-price determinants of the amount demanded are conveniently assumed to be given.
- When these non-price determinants of demand do in fact change, the location of the demand curve will shift to some new position to the right or left of its original position.
- The major non price determinants of demand in the air travel market are
    - The preferences of passengers,
    - the number of passengers in a particular market,
    - the financial status and income levels of the passengers,
    - the prices of competitors and related travel expenses, and
    - passenger expectations with respect to future prices.

Changes in Demand:

- What happens if one or more of the determinants of demand should change? It will change the demand schedule data and therefore the location of the demand curve. Such a change in the demand schedule data, or, graphically, a shift in the location of the demand curve, is called a shift in demand.
- The effect on demand of changes in each of the aforementioned non price determinants,
    - Preferences of passengers.
    - Number of passengers
    - Financial status and income levels of passengers
    - Prices of competitors and related travel expenses
    - Passengers' expectations with respect to future prices.
- A change in demand should not be confused with a change in the quantity demanded. A change in demand is a shift in the entire demand curve, either to the right (an increase in demand) or to the left (a decrease in demand).

Elasticity of Demand:

- The law of demand tells us that consumers will respond to a price decline by buying more of a product or service. But consumers' degree of responsiveness to a price change may vary considerably.
- Economists, forecasters, and airline price analysts measure how responsive, or sensitive, passengers are to a change in the price by elasticity of demand.
- The demand for some air travel is such that passengers and shippers are relatively responsive to price changes; price changes give rise to considerable changes in the number of passengers carried. This is called **elastic demand**.
- For other air travel, passengers are relatively unresponsive to price changes; that is, price changes result in modest changes in the number of additional passengers motivated to fly. This is known as **inelastic demand**.

Determinants of Elasticity:

- **Competition.** Generally speaking, the more competition there is (the more substitutes and alternatives), the more responsive (elastic) consumers will be. For example, if four carriers are operating flights within 15 minutes of one another to a particular city and one offers a lower fare, a passenger likely will fly with that carrier, all other things being equal.
- **Distance.** Long-haul flights tend to be more elastic than short-haul flights. Thus, vacationers will be responsive to a fare reduction of $100 on a $500 fare even if they have to leave between Tuesday and Thursday. Short-haul fare changes tend to be inelastic. A 10 percent increase on a $30 fare is only $3. A carrier will generally not experience a 10 percent or greater decrease in passengers for such a small amount.
- **Business versus Pleasure**. Business fliers tend to be less responsive to price changes than vacationers or individuals on personal trips. Why? Most businesspeople are on expense accounts and have to make their trips within a certain period of time. Nor are they generally willing to take a late-night flight to take advantage of a discount. Vacationers can arrange their schedules and be much more elastic (responsive) to price changes if it is worth it to them.
- **Time.** Certainly, if we have time, we can be much more responsive to price changes than if we do not. On the other hand, if we have little time and must be at a certain place at a particular time, we generally will be very inelastic with regard to price

changes. For example, fares to Los Angeles may be going up by 20 percent next week, but if niece Kellie is getting married there next month, we cannot be responsive by flying out there now to save the extra 20 percent.

5.4 Air cargo – Market for air freight

- A review of the major commodities shipped by air, according to data supplied on an annual basis by the Air Transport Association, gives a good idea of the major markets for air cargo. These commodities include the following:

Auto parts and accessories	Chemicals, elements, and compounds
Machinery and parts	Machines for electronic data storage and processing
Printed matter	Metal products
Electronic/electric equipment and parts, including appliances	Photographic equipment, parts, and film
Fashion apparel	Cut flowers and nursery stock
Footwear	Plastic materials and articles
Tools and hardware	Medicines, pharmaceuticals, and drugs
CDs, tapes, televisions, radios, and recorders	Instruments—controlling, measuring, medical, and optical
Computers and software	Food preparations and miscellaneous bakery products
Fruits and vegetables	Other e-commerce products
Sporting goods, toys, and games	
Live animals	

- Shipping commodities by air is the most desirable form of distribution when one or more of the following characteristics is present:
    - When the commodity is:
        - Perishable
        - Subject to quick obsolescence
        - Required on short notice
        - Valuable relative to weight
        - Expensive to handle or store
    - When the demand is:
        - Unpredictable
        - Infrequent
        - In excess of local supply
        - Seasonal
    - When the distribution problems include:
        - Risk of pilferage, breakage, or deterioration
        - High insurance costs for long in-transit periods
        - Heavy or expensive packaging required for surface transportation

  - Need for special handling or care
  - Warehousing or stocks in excess of what would be needed if air freight were used.

- Air freight is premium service. It projects an image of premium product and company progressiveness. The retailer who advertises “flown in from…” and the salesperson who assures the client that “we’ll fly it in from our main office” understand the value of such an image.
- The various modes of transport represent great differences in quality. Air freight can add a new competitive edge to the marketing effort. Superior service adds value to any product and generates a quality image for the shipper.
- Air freight can stimulate growth in existing markets, and it allows firms to enter new markets without making a commitment to large, fixed investments in warehousing and inventories. Test markets supplied overnight by air allow adjustment to market response as readily as to the demands of a local market.
- The risk of pilferage, breakage, or deterioration is minimized through the use of air transportation because of the lack of en route handling and exposure of goods to long periods under minimum security. Insurance charges tend to be substantially lower for air freight than for surface freight, because there is less risk by air and because the transit time is shorter. Insurance represents a considerable expenditure for many companies.
- Packaging for air freight is usually of minimal cost. Because air transport reduces the risk of jolts and shocks, cardboard cartons usually will suffice, whereas heavy wooden crates may be required for surface transportation. Ground handling is done on a more individual basis than is the case for most other modes of transportation.
- The total costs associated with carrying inventory are high; it includes the cost of capital tied up in warehouse facilities and in stock, insurance, and taxes. In addition, stocked items may become obsolete, and the cost of labor and multiple handlings is a major consideration.

5.5 Principles of Airline Scheduling

- “Anyone without the mind of a computer, the patience of Job, or the ability to compromise need not apply”. This sign should be on the door of every airline’s scheduling department.

- Schedules represent one of the primary products of an airline and certainly the leading factor in a passenger's choice of a particular carrier.

5.5.1 The Mission of Scheduling

- The mission of scheduling is the mission of the airline itself. An airline has the responsibility to provide adequate service to the cities it serves; an airline must also, of course, operate efficiently and economically. Therefore, in its scheduling practices, airline management must continually search for the balance between adequate service and economic strength for the company.
- Airline scheduling can be defined as the art of designing system wide flight patterns that provide optimum public service, in both quantity and quality, consistent with the financial health of the carrier.
- **The public service and economic aspects of scheduling must be balanced with other factors, including these:**
    - **Equipment maintenance**. A separate maintenance-routing plan must be drawn up for each type of aircraft in the fleet. All routing plans must be coordinated to provide the best overall service. Maintenance of airplanes requires that certain stations be provided with facilities and personnel for periodic mechanical checks. Concentration of maintenance at only a few stations is desirable, and it is likewise desirable to utilize fully the facilities provided by planning an even flow of maintenance work.
    - **Crews.** Assuming that all captains, first officers, flight engineers, and flight attendants have had adequate training on each type of airplane and over the routes to be flown, there are always considerations of utilization and working conditions. Certain crew routings must be followed to maintain efficient monthly utilization; crew routings that would require excessive flying without proper rest cannot be used.
    - **Facilities**. Gate space on airport ramps must be adequate. Terminal capacity, including ticket counters, baggage-handling areas, and waiting rooms, must be expanded to meet growing market requirements. Access roadways to and from airports must be adequate. Airport capacity, including runways, taxiways, and navigational aids, establishes an upper limit on operations.

- **Marketing factors.** Marketing factors are numerous, including such characteristics as market size, trip length, time zones involved, and proximity of the airport to the market served.
- **Other factors**. Seasonal variations in wind paerns require differences in summer and winter flying times on certain routes (usually east–west); however, some airlines use constant year-round flying times on routes where variations in wind components are negligible (usually north–south routes). In addition, on many segments, variable times are used to allow, to some extent, for anticipated delays during periods of heavy air traffic.

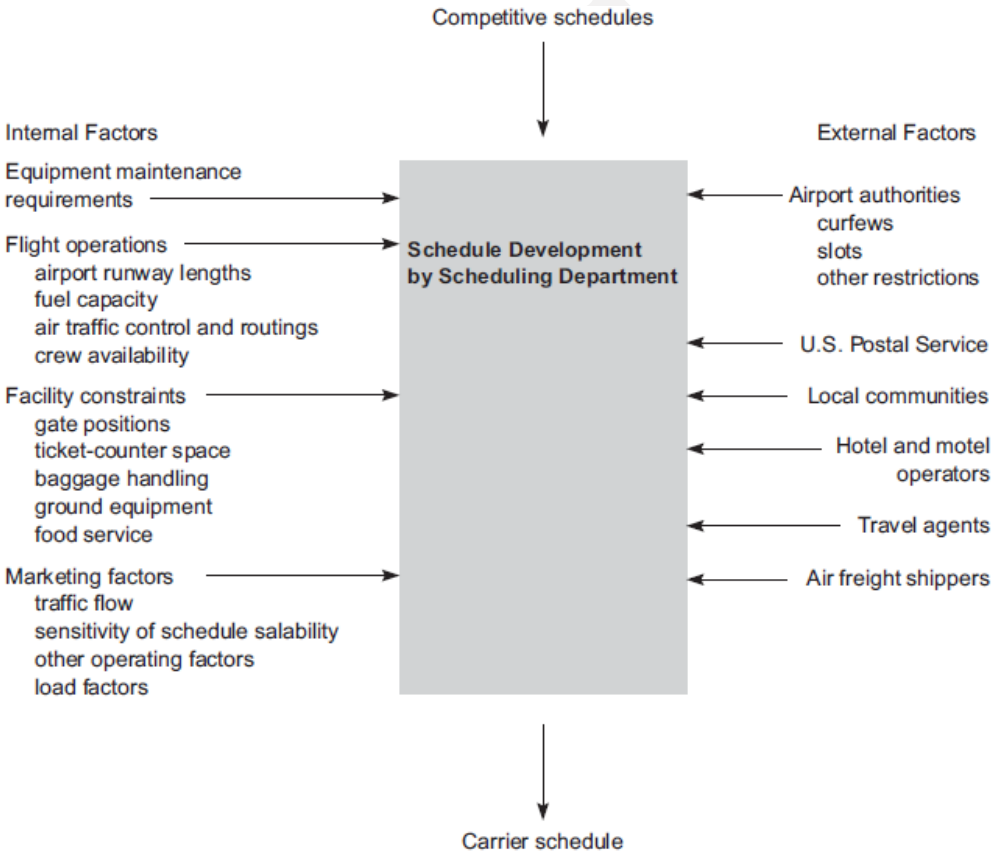

FIGURE 12-1 Conceptual framework for the schedule development process.

5.5.2 Equipment Maintenance

- The primary purpose of the maintenance organization of an airline is, of course, to provide a safe, salable aircraft for every schedule. This would be simple if the carrier had an unlimited number of airplanes, unlimited facilities, and unlimited personnel—all located at every point on the system. But it does not, and so it must strive for a number of **maintenance efficiency goals**:
  - minimize aircraft out-of-service time,

- use up time allowable on aircraft and parts between overhauls,
- seek optimum utilization of personnel and even workload, and
- maximize utilization of facilities.

Out-of-service time.

- Because the profitability of an aircraft depends to a large extent on its daily utilization or availability, the carrier must do everything it can to design a maintenance system that provides a high standard of maintenance yet minimizes out-of-service time. If this can be done only at the expense of safety and dependability considerations, the airline must either reduce planned aircraft utilization to allow adequate maintenance or improve the product until it meets the goals.

Allowable time.

- The carrier should utilize the maximum time allowable in the various inspection and overhaul programs. This item represents a very large cost variable in an airline's operation. Again, however, this must be done with the first objective in mind—minimum out-of-service time.

Personnel and workload.

- In performing any inspection, repair, or overhaul, the carrier requires either FAA-licensed personnel or highly trained specialists—engineers, planners, inspectors, and a host of others. Because the overhaul base payroll for a major air carrier runs into millions of dollars each year, it is important to keep costs down if the carrier is to achieve maximum utilization of its people. An airline also must maintain an even work flow, because these specialists and technicians require a high degree of training and experience and are not readily available in the open labor market.

Use of facilities.

- The carrier must utilize facilities to the maximum extent possible, because of its substantial investment in buildings, tooling, and specialized equipment.

TABLE 12-1 Maintenance System for a Jet Aircraft (hypothetical example)

Inspection	Time Between Inspections	Labor	Duration	Work Performed
En route service	Each stop	1 hour	1/2 hour	"Walk-around" — visual inspection to ensure no obvious problems, such as leaks, missing rivets, or cracks
Overnight	8 hours	Varies	Up to 8 hours	Ad hoc repairs — work varies
A-check	125 hours	60 hours	8 hours	Primary examination — fuselage exterior, power plant, and accessible subsystems inspected
B-check	750 hours	200 hours	Overnight	Intermediate inspection — panels, cowlings, oil filters, and airframe examined
C-check	3,000 hours	2,000–12,000 hours	5 days	Detailed inspection — engines and components repaired, flight controls calibrated, and major internal mechanisms tested
D-check	20,000 hours	15,000–35,000 hours	15–30 days	Major reconditioning — cabin interiors removed, flight controls examined, fuel system probed, and more

5.5.3 Flight Operations and Crew Scheduling

- Because airline schedules, once published, must be flown by the company's flight crews, the flight-operations department must ensure that flights are scheduled in a fashion that will permit them to be safely and efficiently operated.
- The following operational factors are important in schedule planning:
    - Airport runway lengths
    - Aircraft fuel capacity
    - Habitual adverse weather
    - Air traffic control and routings
    - Crew time limits
    - Employee agreements
- Obviously, airport runway lengths, aircraft fuel capacities, and so forth affect scheduling decisions. Other less obvious but equally important factors in drafting schedules include weather, aircraft routings, and flight crew scheduling.

5.5.4 Ground Operations and Facility Limitations

- Ground service can be arranged in any conceivable schedule pattern, provided that there is no limitation on the gate positions, ground equipment, passenger service facilities, and personnel.

- But, of course, there are limitations. First, it is physically impossible to obtain adequate facilities in many instances within a reasonable period of time.
- The objective of ground service, then, becomes to accommodate as many flights as possible and as efficiently as possible, consistent with physical limitations and prudent utilization of personnel and equipment.
- The schedule planner must consider all of the following at every station for every proposed schedule:
    - Are there enough gate positions for the number of planes on the ground simultaneously, including a cushion for early arrivals or delayed departures?
    - Is there adequate ticket-counter space to handle the passengers expeditiously?
    - Is sufficient time provided for on-line or interline transfer of passengers, baggage, mail, and cargo?
    - Can the planned flights be handled efficiently by the present level of ticket-counter, ramp, and food service personnel? If not, will additional revenue from the new flights or the new connection be sufficient to more than offset the cost of additional personnel?
    - Will the proposed schedules introduce a second or a third personnel shift? Conversely, will a minor flight adjustment permit the reduction of one shift?
    - Is there ground equipment of the right type: aircraft starter units, baggage vehicles, cargo conveyors, forklifts, tow tractors? If not, is there sufficient lead time to purchase them, and can they be economically justified? Should the carrier contract these services from another carrier because of the small number of flights into a particular station?
    - Does the proposed schedule overtax food service facilities?

5.5.5 Schedule Planning and Coordination

- Thus far, we have discussed the particular problems faced by maintenance, flight operations, and ground operations. Each offers a multitude of requirements for the schedule planner to take into consideration.
- The responsibility for schedule development is the province of the scheduling department, which is generally within the marketing administration and which oversees the entire system.

- This department must pull together all of the factors discussed so far, plus many more. Just how a carrier goes about this task is the focus of this section.
- Nothing is more basic to an airline than the schedule pattern it operates. All productive resources—planes, trained personnel, and ground facilities—have the one essential function of operating the schedule safely and dependably.
- The complexities of airline scheduling extend far beyond these problems. Many airline marketing problems are unique, stemming from the special nature of the business. Principal among these are
    - the problem of traffic flow,
    - the sensitivity of schedule salability to even minor differences in departure times or other factors,
    - the operational difficulty of accomplishing schedule adjustments as desired, because of problems of time zones, station personnel, equipment turnaround, and the chain reaction effect, and
    - the financial leverage of load factors.

5.5.6 Equipment Assignment and Types of Schedules

- The scheduling department will generally refer to aircraft throughout the system as being operated in either in-service or out-of-service use.
- In-service use refers to those aircraft being flown
    - on scheduled service,
    - as an extra section, or
    - as a charter flight.
- An extra section is an additional aircraft assigned to handle a particular flight because of an unusually large number of passengers. Out-of-service use refers to those aircraft temporarily assigned for major overhaul, maintenance checks, flight training, special projects, such as installing different seats, or line reserves. Line reserves are extra airplanes stationed at major terminals to be called on in the event of a problem with a scheduled flight.
- Airlines use four basic schedule types in assigning their equipment:
    - skip-stop,
    - local service,
    - cross-connections (hub and spoke),
    - Nonstop.

5.5.7 Hub and Spoke Scheduling

- Deregulation has led to significant changes in the routings and schedule patterns of the carriers. A catalyst for these changes has been the greatly increased emphasis on hub-and spoke scheduling.
- Deregulation eliminated airlines' incentive to dissipate their added revenues through wasteful expenditures on extra (and underutilized) flights along the route structure mandated by the CAB.
- In addition, deregulation allowed carriers to create new schedule patterns that lowered the costs of providing new flights.
- In response to competitive pressures following deregulation, carriers rapidly replaced the old structure with a hub-and-spoke system. In hub-and-spoke systems, several points of departure are fed into a single airport (the "hub"), from which connecting flights transport passengers to their various destinations (along the "spokes").

5.6 Fleet Planning

- One of the most difficult decisions airline managements must make is whether to buy new or used aircraft and what type. Alternatively, they must consider whether it makes better financial sense to modernize older aircraft already in their fleet or to acquire aircraft from the outside.
- Many additional factors, including the costs associated with engineering and maintenance, must be weighed. The factors are constantly changing, and their relative importance at each airline depends on the carrier's individual situation.
- From an individual airline's standpoint, the aircraft selection process is an ongoing function coordinated by a generalist group, such as corporate planning, with major help from technical, or specialist, administrations such as finance and property, marketing, line maintenance, engineering and maintenance, and flight operations.
- The existing fleet of an operator also is a significant factor in an operator's fleet-planning decisions. Substantial savings in terms of training, spares inventories, and operations can be achieved by operating a common fleet of aircraft.
- Basically, corporate planning is interested in information on four different areas in the fleet-planning process:
    - the carrier's current resources,

- corporate objectives,
- projected industry environments, and
- Marketing strategy.

The Fleet-Planning Model,

- Computer models have been developed to translate this information into a fleet planning model that is used in determining future aircraft acquisition requirements, aircraft assignment requirements, financial requirements, and operating conditions over various planning periods (2 and 3 years ahead for order versus option decisions, 4 and 5 years ahead to ensure that the purchases made in years 2 and 3 were consistent with long-term developments, and possibly 7 to 10 years ahead to ensure consistency and to gain insight into financial and facility needs in the long term).

System Constraints,

- The next step in the fleet-planning process is the application of system constraints to the model output that has been derived.
- Generally, system constraints become more amenable to relief as lead time increases. In other words, over a 10-year period, the normal period for a fleet-planning model, the original constraints might be eliminated.
- Some constraints are external to the airline, such as facility requirements at airports into which the airline flies, including runway capacity, gate capacity, terminal capacity (parking, ground access, passenger processing), and community noise.

Aircraft Evaluation

- The aircraft evaluation process can be broken down into five areas:
  - consideration of design characteristics,
  - physical performance,
  - maintenance needs,
  - acquisition costs, and
  - operating economics

Tentative Fleet Planning and Financial Evaluation

- After the aircraft evaluation, corporate planning prepares a projected earnings statement and cash flow for the expanded fleet. Then it makes recommendations for

specific aircraft additions to and retirements from the fleet over a given time period, generally up to 10 years.

- Included with the recommendations is an order-option-plan mix. Orders include proposed firm orders; options (to purchase) permit the acquisition of relatively favorable delivery positions but provide flexibility to meet changing circumstances.
- Options enable the carrier to change its plans without as severe a financial penalty as might otherwise be the case in the event that the option is cancelled.
- Plan aircraft are long-range future aircraft acquisitions that permit activation of long-lead-time items, such as facility renovations, while permitting further study of shorter-lead-time elements.
- Also included with the recommendations are a forecast of new funds to support the fleet purchase and a preliminary appraisal of the alternative methods of financing (equity, debt, lease, mix).

Presentation and Management Approval

- Progress reviews are done periodically during the fleet-planning process, which not only ensures the full input of management's views but also minimizes the amount of new material to be covered during the final presentation.
- Major capital commitments normally must be cleared by the board of directors. Upon approval of the plan (in adjusted form if necessary), negotiations with the manufacturers and finance community move into their final phases.
- The fleet plan also becomes a key source of other planning data, including personnel and facilities.