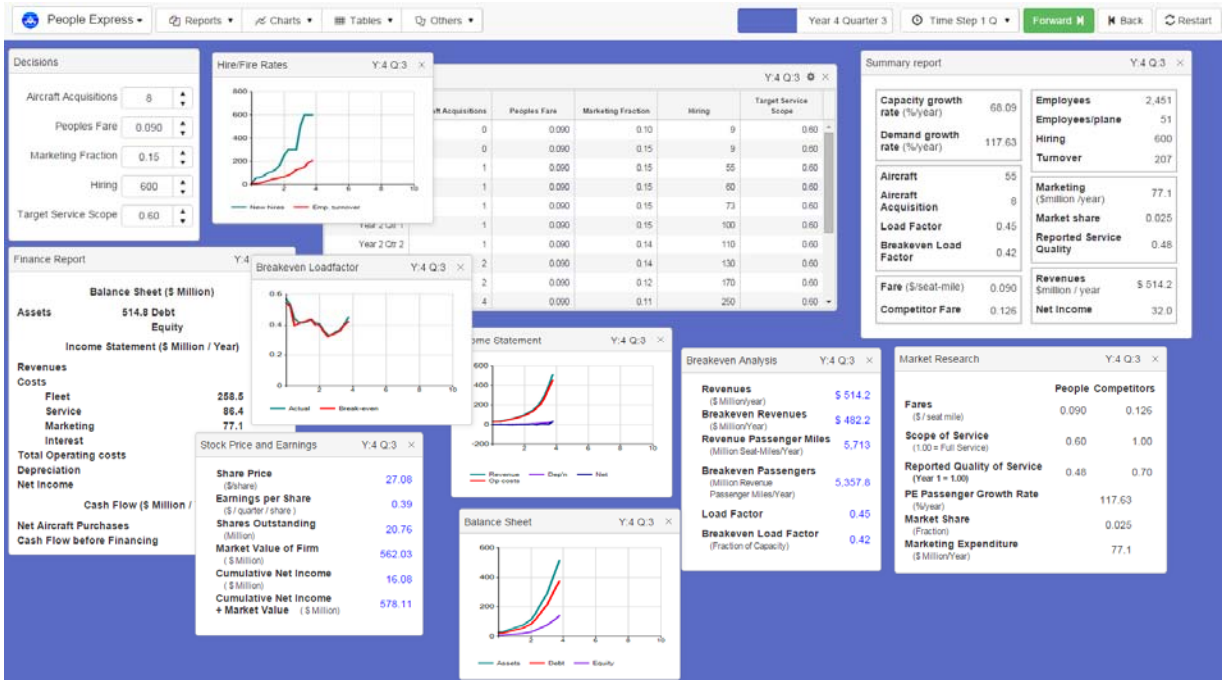
People Express

Management Flight Simulator



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Contents

User feedback is welcome. Feedback can cover any aspect of the simulator, from suggestions for additional software features to classroom use and student reaction. Additional flight simulators are planned, and suggestions for simulators based on new cases are also welcome. Send your comments and suggestions to: contact@strategydynamics.com

1. The *People Express* MicroWorld

1.1 Introduction

Our increasingly interconnected and dynamic world challenges managers to find new ways to understand and control change. The accelerating rate of technological, organizational, and social change means managers are faced with situations that are in many ways new, and must increasingly deal with the unexpected. Managers are not alone in facing such daunting tasks. Modern society is built upon systems of enormous complexity, from nuclear power plants to jumbo jets. A pilot, for example, must also control a system of great complexity and be prepared for the unexpected. There is, however, one significant difference between the pilot of a jet and the manager of a business. No airline would dream of sending a pilot up in the real thing before they had had extensive training in the flight simulator on the ground. The simulator allows the pilot to learn, to make mistakes, to experience the unexpected without risk to passengers or aircraft. Yet managers are expected to fly their organizations into unknown skies with their only training being management 'ground school' or experience as junior crew members.

The People Express Management Flight Simulator gives you the opportunity to 'fly' a company yourself. The simulator functions just as an aircraft simulator does. You will take command of the firm and pilot it from startup to success. Each simulated time period you will make strategic and operational decisions, and receive feedback from your past decisions. You will decide how fast to grow, how to set prices, how aggressively to advertise. Your hiring policies will influence morale, productivity, and turnover; your marketing efforts will shape the growth of demand; your competitors will fight back. You may be surprised by side effects and delayed consequences of your own decisions. You may face financial crises or unexpected opportunities. You may go bankrupt, or grow to dominate the industry. But there is no winning or losing. The purpose of the simulator is to give you insight into the issues raised by the particular case; to illustrate the difficulties of coordinating operations and strategy in a growth market; and to understand the dynamic interconnections among a firm, its market, and its competitors. More fundamentally, the flight simulator is a laboratory in which you can systematically explore the consequences of various strategies without risking the fortunes of the real enterprise.

Most of all enjoy yourself. Experiment. The first time or two you will want to try to succeed ,using the strategies you think best. In later trials you may wish to systematically vary aspects of your strategy to identify high-leverage policies. Don't worry if you bankrupt the company. The beauty of a simulator is that you can 'crash' as many times as you wish and walk away every time. Indeed, most of the time real pilots spend in simulators is spent in extreme conditions. You can learn more from piloting the aircraft through rough weather, poor visibility, and with unexpected mechanical failures than in clear skies. Most of your learning will come from understanding what goes wrong. Have fun; you are cleared for takeoff.

1.2 Overview of the Flight Simulator

The flight simulator represents People Express Airlines. Before you climb into the cockpit, you should become familiar with the structure and history of People Express, for example by reading the Harvard Business School case (HBS #483-103, by Debra Whitestone and Leonard Schlesinger). You will take command of the airline in the first quarter of 1981, when the real People Express began service, and pilot the firm from startup through success and maturity. The simulator consists of three parts: the *microworld*, the *information system*, and the *simulator controls*. The microworld represents the structure of People Express, including the fleet, human resources, financial system, market and customer base, competition, and so on. The microworld consists of a model of each of these components, and will generate dynamics over time as you make decisions. The information system reports to you the current state of the system and allows you to review the history of the firm. For example, you will be able to monitor the financial performance of your firm quarter by quarter, and receive reports on flight operations, human resources, the competition, etc. The controls allow you to make strategic and operational decisions to achieve your goals.

The Simulation: The heart of the simulator is a microworld or simulation model of People Express and its environment. The model has been extensively tested and calibrated. However, like any model, it is a simplification of reality. A number of factors have, of necessity, been omitted or simplified, just as an aircraft flight simulator uses a model of the aircraft's structural and aerodynamic properties and cannot portray every circumstance or detail. *Figure 1* provides an overview of the microworld. You will note that the sectors are highly interconnected. Decisions made in one sector may create opportunities and problems in other areas. You may wish to refer to this overview as you formulate your strategy and interpret your results. The remainder of the briefing book describes each of these sectors in more detail.

Information System: The simulator contains a sophisticated information system which allows you to monitor developments in all areas of the firm and market. You will have access to a number of reports which detail the current status of your fleet, market, competitor actions, and financial status. You may also review the history of your flight in tabular or graphical form. As in many real situations, you will be flooded with information and will have to decide how to select the most important and useful data to assist you in making your decisions.

Simulator Controls: Each game lasts up to 10 years. Each quarter year you will have the opportunity to make five decisions. These are:

1. **Aircraft Acquisition** – how many aircraft will you add to your fleet?
2. **Hiring** – how many people will you hire?
3. **Marketing** – what fraction of revenues will you allocate for marketing?
4. **Fares** – what average fare will you charge?
5. **Target Scope of Service** – what services will you offer?

1. **Aircraft Acquisition:** To grow, you must expand your fleet. In reality, PE's fleet consisted of a number of different types of used aircraft. In the simulator, you will be acquiring a standard aircraft. Section 3, Fleet and Capacity, describes the capacity, operating costs, and purchase price of aircraft in more detail.

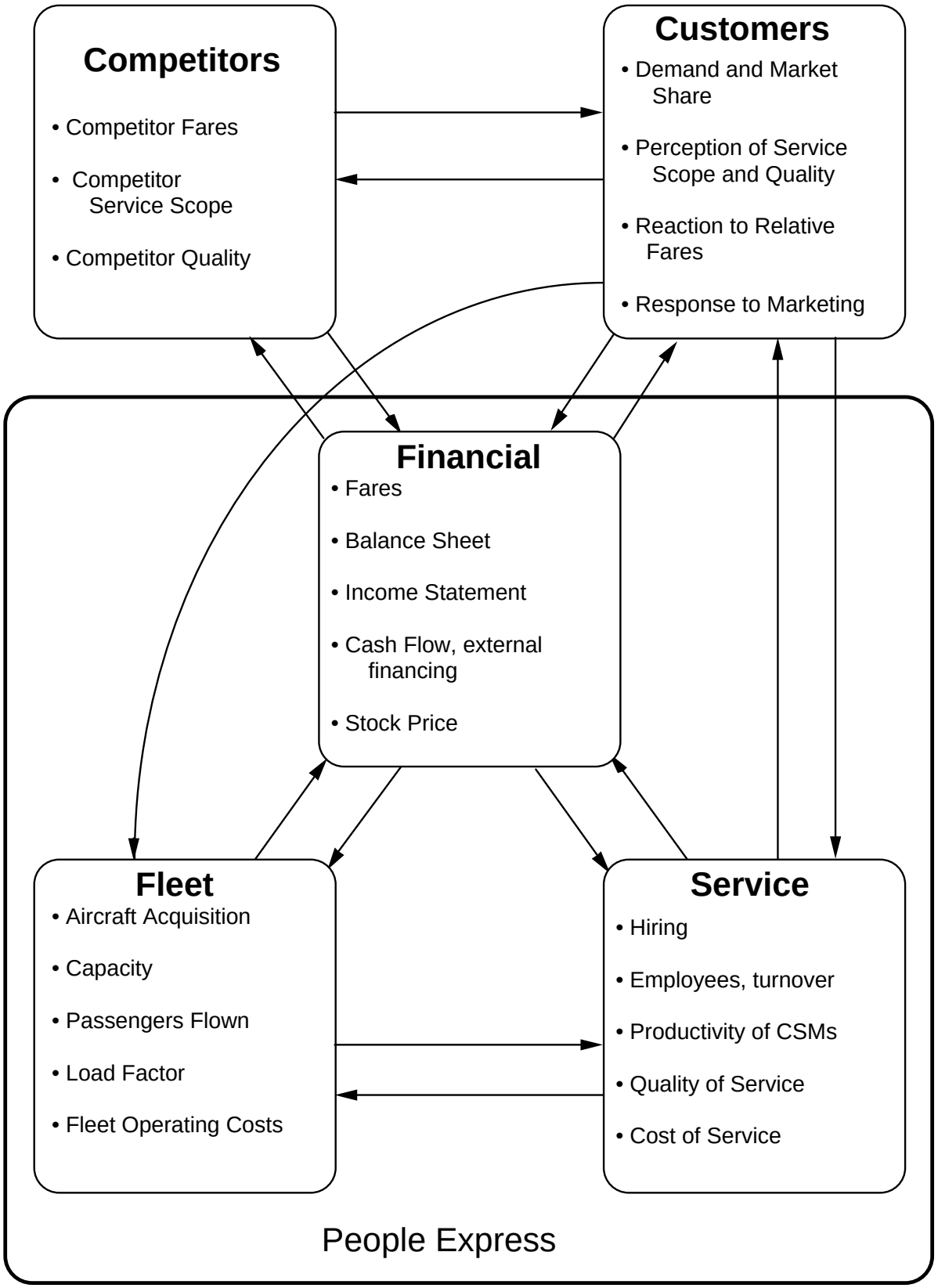
2. **Hiring:** Each quarter you must decide how many people to hire. Your decision should take into account how many people are leaving the firm. If, for example, you wish to expand the staff by 50 people, and turnover in the present quarter is 10, you must hire 60. Section 4, Human Resources, describes the hiring process and the determinants of employee productivity, morale, and turnover.

3. **Marketing:** You will set the marketing budget by allocating a fraction of revenues to the marketing function. For example, you may decide that each quarter you will spend .10 (10%) of revenues on marketing. Section 7, Market Research, describes the role of marketing in stimulating demand.

4. **Fares:** You must choose the initial fare you will offer, and may maintain it at that level or change it each quarter. The fare decision, along with the scope of service decision, help position your airline in the market. Your fare decision should also reflect your operating costs, employee productivity, and financial status. Sections 5 (Cost Structure), 6 (Capitalization and Finance), and 8 (Competition) will be helpful here.

5. **Scope of service:** The scope of service represents the range of services you offer. Scope of service in the simulator is measured as the ratio of PE's service scope compared to full service. For example, People Express was a low-cost, no-frills airline. PE did not offer first- or business-class, free on-board meals, or free baggage checking. As described in section 7 (Market Research), this represents a service scope of roughly 0.60. You may wish, however, to position the product somewhat differently. You can do so by changing the target scope of service. Of course, it takes time to implement such changes, and offering a higher service level raises operating costs. The costs of and delays in implementing higher service scope are incorporated in the microworld. *Changing* the scope of service is also costly. Service scope represents a part of the organizational culture and image of the firm. It is not possible to offer business class one quarter, eliminate it the next, and then bring it back the following period. Changes in target service scope should be gradual. Section 7 (Market Research) describes the role of service scope in product positioning.

Figure 1. *Overview of the People Express Microworld*.



1.3 Fleet Capacity

We cannot expect to become a major airline without building our fleet and route system aggressively. We are committed to rapid, profitable growth of routes and seat capacity through high utilization of a cost effective fleet. The difference between numbers of aircraft and available passenger capacity lies in maximizing the number of flight hours per day and service days per year through effective route selection and maintenance. Low fleet operating costs will be achieved through purchase of fuel efficient aircraft and hiring of highly productive flight service and maintenance managers to be compensated and motivated as owners rather than employees.

- **Passenger Capacity:** We intend to average 210 million seat miles per aircraft per year. This will be accomplished by improving the flight hours per day from the industry average of 7 to 10 hours per plane, by reducing maintenance down-time, and by eliminating first class and business class, thus increasing available seats per aircraft.
- **Aircraft Acquisition:** We always look for opportunities to add high quality, economically efficient aircraft to our fleet. It costs us, on average, $10 million to purchase each aircraft, taking into account the aircraft itself and the total supporting capital investment needed to place each aircraft into service (gates, terminal space, spare parts, support equipment). Operating costs for each aircraft are $5.5 million per year, and include fuel, aircraft maintenance, and facilities. These costs do not include depreciation or interest to service the debt acquired to finance the fleet.
- **Capacity, Customers, and Load Factor:** It is useful to distinguish between available capacity (the number of available seat miles in any period), the number of potential customers (the number of prospective passengers who wish to fly with us), and passengers carried (the number of revenue passenger miles actually flown during each time period). The ratio of passengers carried to available capacity is the load factor. The industry average load factor is about 58%. We will make every effort to expand capacity to provide service to our potential customers. However, it is not possible to accommodate all passengers who will want to take advantage of People Express flights. Because it is impossible to match our flight schedule perfectly with the schedules of our customers, it is inevitable that potential customers will exceed total passengers carried. In particular, maintenance downtime and daily and seasonal variations in demand mean that available capacity can exceed demand on average yet we will not be able to serve every potential customer. For example, weekday rush hour flights may be overbooked while mid-day or late night flights remain only partially filled. No-shows exacerbate the problem.

Figure 2 shows our estimate of the load factor we can achieve as it depends on potential customers relative to passenger capacity. When the number of prospective customers is small relative to capacity, nearly every passenger can get a seat on the flight they wish. As the ratio of prospective customers to capacity rises above about .40, an increasing number of customers find that the flight

they wish to take is sold out. The curve begins to fall away. To reach an average load factor of .67 requires potential customers equal to 80% of capacity. An average load factor of 75% (well above the industry average) requires potential customers equal to capacity, and means 25% of all potential customers will not be served. To achieve load factors higher than 75% requires ever greater degrees of overbooking and will clearly cause passenger resentment. Due to our low costs, our initial breakeven load factor at anticipated fare levels is about 60% – low enough to generate profits without relying on overbooking to a greater extent than the industry as a whole.

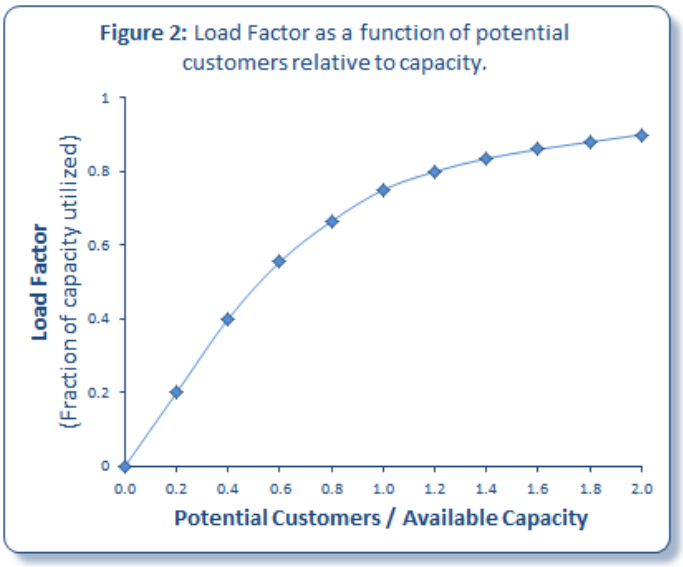


Figure 2: Load Factor as a function of potential customers relative to capacity.

1.4 Human Resources

At People Express we believe that attitude is as important as altitude. Of all of our basic strategies none is more important than our people policies. Our unique spirit and service are the value we add to the commodity of an airline seat. People Express is designed to be a low-cost, no-frills high quality air carrier. To achieve the cost advantage we require, we expect our people to be much more productive than the industry average. Productivity in the airline industry is often measured by the number of revenue-passenger miles flown each year divided by the number of employees. However, we should note that such a measure does not reflect the quality of the experience enjoyed by those passengers. Simply cutting back on employees may boost apparent "productivity" while lowering the quality of the service provided to the passengers. At People Express, we will generate high revenue passenger miles per employee *and* maintain the highest standards of quality. Exceptional quality and higher productivity will be produced by a unique approach to human resource management:

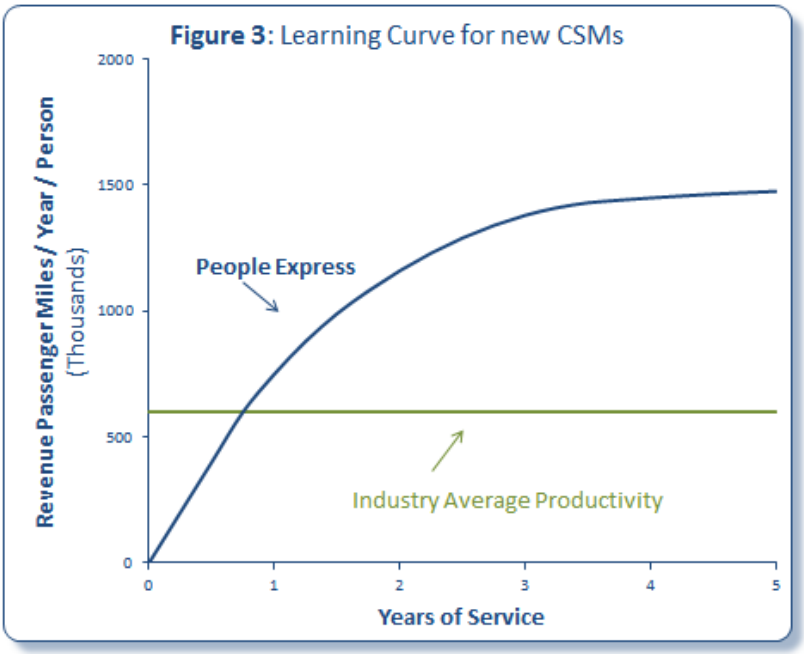
- **No Frills Service**: We will offer a no-frills service, but deliver that service with the highest standards of quality. By eliminating first and business classes, not offering meals or baggage checking as a part of the ticket price, and handling reservations ourselves, we can substan-

tially cut operating costs. We estimate that our service scope will be .60 of the full service industry standard, but that it will reduce the attractiveness of our product to the price-conscious traveller only slightly (see the market research report).

- **Ownership**: Since every employee is an owner and participates in profit sharing, our employees will be highly motivated. As the company grows and the market value of each employee's holdings rises, people will be motivated to work hard and will be willing to put in long hours, if necessary. We also expect that turnover will be reduced by the ownership system: the better the company does, the less likely it is that our most experienced and most productive employees will quit.
- **Cross-utilization and job rotation** will ultimately yield higher productivity by avoiding a "work-rules" mentality. By training people in all aspects of the operation they will be able to solve problems systematically and not piecemeal. Cross utilization adds flexibility by permitting people to be directed to trouble spots without costly and time-consuming hiring and training.
- **Self-Management:** Because we have few layers of management, we will have fewer employees per aircraft than the industry average, while still maintaining high quality. Because the CSMs will review their own performance and set their own goals (within the framework of the corporate direction), people will be motivated and more productive than at traditionally managed, union-shop airlines.
- **CSM recruitment, hiring, and training:** We will seek to hire people who fit the vision and direction of People Express. We will not seek to hire persons with prior airline experience. By recruiting people with talent, creativity, initiative, and a desire for personal responsibility and growth, we will enhance productivity and reduce employee turnover. The training we will provide focuses on team-building. We understand, however, that the multi-phase screening and training process required to implement these recruitment goals is time consuming and requires a significant commitment of resources. Our recruiters and trainers are drawn from the most experienced CSMs on our team. We should ensure that our experienced workforce is sufficient relative to the rate of hiring we require so that we can adequately screen, select, and train the new people we hire.
- **The PE Learning curve:** We believe these human resource policies will substantially boost the productivity of our employees compared to the industry average. However, we recognize that there will be a learning period for our new CSMs. The service capability of our organization, that is the total capability of our employees to deliver quality service, will depend on the number of employees and their productivity. The productivity of new hires ("Rookies") will be significantly below that of CSMs who have been with us for six months to a year ("Novices"). As people gain even more experience with our system, they will become seasoned "Pros" with still higher productivity. There will, of course, be turnover out of each category, though as discussed above, we expect that our human resource policies and

financial success should reduce turnover, allowing us to keep our most experienced and productive employees longer.

The process described above implies a strong learning curve for new hires. We estimate that the learning curve for our new CSMs will be approximately that shown in *figure 3*. Of course, actual productivity will depend on the length of the work week, the experience level of our employees, and the motivating effects of financial success. The long-run productivity of our system is estimated to be approximately 1.5 million revenue passenger miles per person per year, compared to the industry average of about 600 thousand. With estimated costs of $42,000 per year per employee (including benefits and taxes), we will have a large cost advantage, allowing us to price our routes significantly below the competition.



1.5 Cost Structure

In the People Express' Income Statement, we see that total operating costs consist of fleet operations, service, marketing, and interest.

- **Fleet costs** are the costs of operating our fleet and routes, including fuel, maintenance, airport fees, etc. In total, these costs amount to $5.5 million per aircraft per year.
- **Service costs** are the costs of our human resources. In addition to wages, benefits and taxes, service costs include related facilities such as computers, telephones, etc. Service costs amount to **$42,000** per employee per year.

- **Marketing expenditures** are determined as a fraction of revenues. That fraction is a strategic variable which we may manipulate to achieve our goals for growth and load factor. As described in the Market Research section, we estimate that under normal conditions 10% of revenues will be sufficient to provide adequate coverage of our target market. Initially, however, we will need a higher percentage as a *kickoff* marketing effort in order to increase customer awareness of our airline.
- **Interest on our debt is 10 % per year**. In case we are able to retire all debt and accumulate financial assets (reported as negative debt), these assets will earn 5 percent per year.
- **Depreciation** is a non-cash charge. Aircraft are depreciated at **6.25 % per year**.

SUMMARY OF COST STRUCTURE

Item	Unit Cost
Fleet Operations	$5.5 million/aircraft/year
Service (Human Resources)	$42,000/employee/year
Marketing	Strategic Variable; normally 10% of revenues
Interest on Debt	10%/year

1.6 Capitalization and Finance

• Balance Sheet:

Assets	Liabilities
Assets(Value of Fleet, other capital equipment)	Debt Equity

Assets are the value of our fleet and associated capital equipment. Liabilities include our debt and shareholders' equity. Debt here aggregates long and short term borrowing.

- **Cash flow** is determined as follows:

  Revenues
  – Cost of Fleet Operations
  – Cost of Service (employees)
  – Marketing Expenditure
  – Interest
  – Net Aircraft Purchases

  Net Cash Flow before financing

- **External Financing:** While we expect to be profitable, we also plan to grow rapidly, indicating that cash flow may be negative, requiring external capital. We can finance our cash needs by issuing bonds and borrowing against our line of credit, and/or by issuing shares. Borrowing increases our debt, which carries an average interest rate of 10%/year. We expect to borrow 75% of our capital requirements and issue shares to cover the remaining 25%. The number of shares issued will be determined by price of the shares at the time of issue. We do not plan to pay dividends, preferring instead to retain earnings to help finance our growth. If we succeed in paying off our debt, our cash reserves will earn 5%/year.

- **Determinants of Share Price**: We must be prepared for volatility in the price of our stock. As a startup company in a newly deregulated market, there are few guidelines available to investors and stock analysts to assist them is valuing our firm. And the stock markets are always unpredictable. Nevertheless, we believe the market will value our firm as follows.

1. The price of a share will equal the market value of shareholders' equity divided by the number of shares outstanding. The valuation of the firm will depend on the assets and debt, on the present value of the profit stream, and on the growth in profits investors expect for the future.
2. As in any new business, we expect an initial period of losses caused by the need to invest in capacity and hire employees before the public becomes aware of the product and revenues begin to come in. After a startup period during which the capital markets will expect and discount these "green business effects," we expect the market to set the value the firm equal to the present value of the profit stream we are able to generate.
3. In addition, we believe the markets will pay a premium for growth. If we demonstrate, through growth of revenues, that we are becoming a much larger airline and will

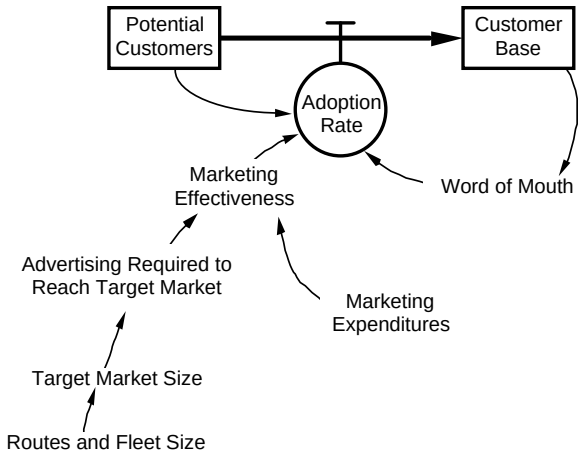
generate much larger profits in the future, our share price and Price/Earning (P/E) ratio should rise to reflect the present value of the expected future profits.

1.7 Market Research

By keeping our prices low and providing quality service, People Express has significant growth potential. The key to our market growth is to make airline travel affordable to segments of the market that have previously had to travel by other modes of transport or travel by air only infrequently. These segments will be attracted by low fares. Our target market can be made aware of our service through focused advertising and will also respond to positive word of mouth from satisfied People Express customers.

- Causal structure of market growth: People's customer base grows through advertising and through word of mouth. Advertising and word of mouth are distinct processes driven by different factors (*figure 5*). Advertising accelerates the rate at which people learn of and become willing to try a new product or service, thereby leading to growth in customers. Favorable word of mouth also promotes customer growth.

Figure 5. Structure of Market Growth



- The figure shows the causal relationships relating marketing and word of mouth to our customer base. The initial potential customer base is the segment of the market we could command, based on the attractiveness of our product relative to that of the competition. The actual number of customers may be less than that potential until everyone in the target market has had a chance to learn of and try our service. Thus the growth of our customer base can be thought of as a diffusion process in which people in the target market gradually become aware of and then adopt People Express. If our product offers value relative to the competition, we will retain their patronage; if they are disappointed, we will not. The two chief avenues by which

people can become aware of and induced to try our service are advertising and word of mouth from passengers.

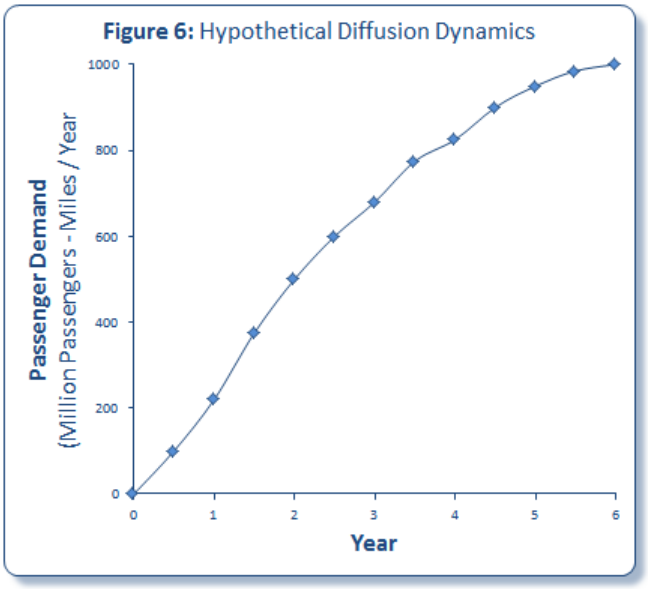
- **Word of mouth:** The more passengers we fly, the more potential passengers these customers will come in contact with, increasing the adoption rate and further boosting the customer base. Initially, when there are very few passengers, the number of people they come in contact with and induce to try us is small, and the word of mouth effect is weak. As the number of passengers grows, the strength of the word of mouth feedback builds. Ultimately, this bandwagon effect is limited only as the number of people who have not yet tried us declines.

- **Marketing:** Word of mouth can be very powerful once there is a sizable customer base, but will be weak when we begin service. Advertising and marketing efforts are required to stimulate adoption of the product as new markets are opened up. Advertising boosts awareness of our service among people in the potential market and induces a fraction to try PE each time period. The effectiveness of marketing will be highest when the bulk of the target market are not yet aware of our service, that is, when we first launch service in a new market (region or city). As advertising and word of mouth increase the customer base, the number of potential customers who have not yet become aware of or tried People Express will fall, slowing the adoption rate.

- **Marketing effectiveness:** The fraction of the potential market induced to try us each time period depends on how effectively our marketing covers the target population. As the target market grows with expansion of our routes and fleet, marketing expenditures will have to grow to maintain sufficient exposure. The size of the target market we seek to reach depends on the number of cities we plan to serve and thus grows as our fleet grows. If advertising expenditures are small compared to the size of the target market, the exposure provided will be insufficient to induce many to try our service. Increasing relative marketing expenditures will speed the rate at which people learn of and try PE. Ultimately, however, continued increases in marketing saturate the target market and cause diminishing returns. Because the target market grows roughly with the number of routes we offer (and therefore the size of the fleet), we allocating a fraction of revenues to marketing should maintain the proper balance between marketing and the size of the target market. Given our expected load factor, costs, and pricing, we estimate that approximately 10% of revenues should provide a sufficient long-run marketing budget. That fraction may be increased during startup to provide a marketing 'kickoff' before word of mouth becomes effective, and can be varied to meet competitive challenges or financial pressures.

- **Diffusion dynamics:** The dynamics of advertising and word of mouth are different and must be coordinated in a successful growth strategy. Aggressive marketing is important in the early phases of growth when there are few customers to fuel word of mouth. As the word of mouth effect develops, advertising can become more selective

in support of developing new routes and geographic markets, and in responding to competitive thrusts. With aggressive marketing, we estimate a market diffusion curve as shown below for the hypothetical situation where People Express has capacity to serve a potential customer base of 1000 million passenger miles per year:



As shown in *figure 6*, at year 0, service in the target market is new and there are no customers. Advertising induces some air travellers to try PE, and growth begins. Growth soon accelerates due to favorable word of mouth, which further increases the customer base. After several years, growth begins to slow. The number of potential customers who have not yet tried PE is diminishing; those who have not yet tried us are the least prone to change their travel habits. Eventually, the customer base saturates at the assumed level of 1000 million passenger miles. Of course, this example assumes the target market is fixed. The actual shape of the curve in reality depends on the dynamics of the target market, marketing expenditures, price, and other competitive variables. In the long run, continuing growth depends on increasing potential customers. To do so we must grow capacity while continuing to provide a service that is attractive in the marketplace. The key to understanding how PE can achieve growth in potential passengers lies in understanding the different market segments we can reach.

Two Key Market Segments: The core of People's market strategy is to reach a segment of potential air travelers who are not presently in the market. We can call these "new" travelers to distinguish them from "established" air travelers. The new, or downscale, air travelers are especially price sensitive. They are prohibited from entering the market at present due to the excessive cost of air travel compared to their disposable incomes and the costs of alternate modes of transport.

No one knows how large this potential market is nor the price elasticity of demand among these customers. Based on our market research, we estimate that the new traveler market could be as high as 135 billion passenger miles per year at an average fare of $.09 per seat mile. In contrast, the current established passenger market is 95 billion passenger miles per year at the average industry

fare of $.16 per seat mile. We also estimate that the price elasticity of demand for the new market is twice that of the established market, 0.6 versus 0.3. We also estimate that both markets would grow at 4% per year if the price of air travel remained constant.

The share of each segment that People achieves will depend on its attractiveness relative to the other carriers in the competitive variables that influence consumers' choices.

What Makes People Express Attractive in the Market Place: The key competitive variables that affect air travelers' choices among carriers are (1) availability of flights to desired destinations at convenient times, (2) fares, (3) the scope of service offered, and (4) the quality of service provided. Overall attractiveness can be thought of roughly as the product of the attractiveness on each of these dimensions. Thus we can offset the reduced attractiveness of a no-frills service with the high attractiveness of low fares.

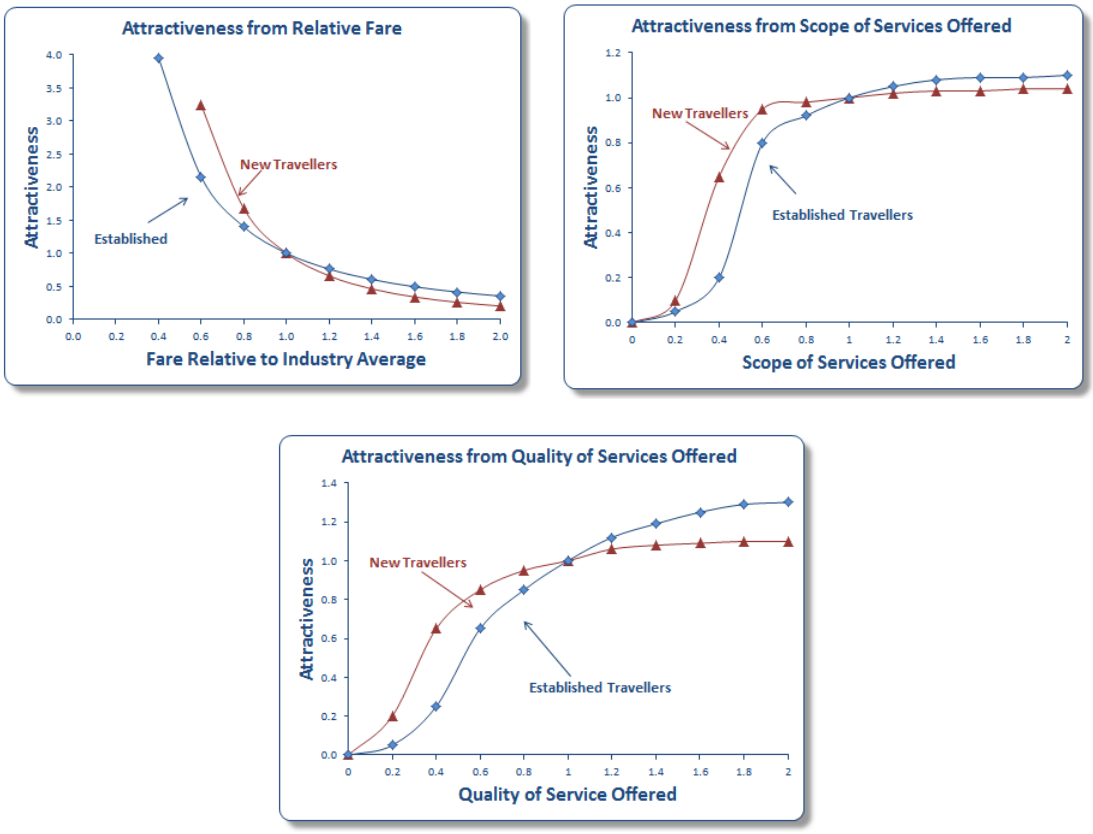
1. **Routes and Schedule** – Research shows the most important competitive variable is the availability of a flight to the consumer's destination. Available flights grow with expansion of the route system and fleet. We expect People's schedule to be at least as convenient as the competitors along the routes we choose to serve. Thus roughly speaking, if PE's service were as attractive as the competitors', PE would receive a share of the market about equal to its share of total flights offered on any route. To gain market share, however, PE's service must be more attractive than the competitors', based on the combination of fares, services offered, and the quality of the service provided. The graphs in *figure 7* summarize the relative sensitivity of the two market segments to these competitive variables .
2. **Relative Fare** – is the fare PE charges relative to the industry average. The industry average is $.16 per seat mile; People can be profitable at $.09 per seat mile. The attractiveness of the product from price would be quite large. We estimate that new passengers are substantially more sensitive to lower fares than established passengers.
3. **Scope of Service** – is the range of services offered as part of the standard fare. To keep costs down, People does not offer first- or business classes, in-flight meals at no extra charge, or baggage handling at no extra charge. People also does all ticketing on board so that advance purchase of tickets and cross-linking with competitor tickets are not offered. Our market research suggests that People's initial scope of service (about 60% of the average scope of services provided in the industry) reduces the attractiveness of our service by about 20% among established passengers, but only 5% among the new, downscale customers. These estimates assume that the services that *are* provided are provided at a service quality on a par with the competition. These reductions are small compared to the attractiveness of our low fares.

4. **Service Quality** – is the friendliness, effectiveness, and promptness of the services that a carrier chooses to provide. Service quality is distinct from service scope. For example, People's initial service scope is only 60% of the industry average while the industry provides full service (100%). Market research reveals that customers rate the quality of the full service offered by the competition as only 70% of acceptable. The low rating reflects customer perceptions of and reactions to overbooking, delays, unresponsive flight attendants and ground personnel, lost luggage, unappetizing meals, etc. People is committed to highly responsive service and a high quality flight experience. By offering a reduced scope of services but delivering those services with exceptional quality, we believe our flights will be more attractive than the full service, low quality flights offered by our competitors. As with service scope, modest reductions in the quality of service reduce product attractiveness only slightly while large declines in quality (corresponding to a high rate of delays, lost baggage, crowds, etc., can ultimately reduce attractiveness significantly. Quality above the normal level of 1.00 produces higher attractiveness, but with rapidly diminishing returns. How many drinks, pillows, and “have a nice day’s” does a person need?

Overall, both segments are most sensitive to price, and less sensitive to scope of service and quality of service. However, the sensitivity of the different market segments to these competitive variables varies substantially. The new, downscale customers are especially price responsive. Conversely, customers in the established market are more responsive to changes in scope of service and service quality than customers in the new, downscale market. These relative sensitivities reflect the incomes and lifestyles of the different segments. The downscale customer is choosing between deep discount air travel and travel by bus, train, private car – or staying home. These customers will be attracted to a deep discount air carrier provided they receive adequate service – safety, flights approximately on schedule, minimal overbooking. Like any passenger, they appreciate friendly, courteous service, but they will be more willing to suffer poor service than established passengers.

Established passengers are choosing between People and alternative air carriers. They are more discouraged by a reduced scope of service. It is estimated that People's product positioning (no free baggage service, no free meals, no first- or business-class service – scope of 0.6) would, by itself, reduce attractiveness to the established market by 20%. (By contrast, it is estimated that a scope of services of 0.6 costs People only about 5% of the new market.) Established passengers are, likewise, more sensitive to the quality of the services offered. Lost baggage (especially when baggage service is a paid extra), overbooking, delayed flights, and other problems are significant discouragements to the established air traveler.

Figure 7: Market Response to Competitive Variables



1.8 Competition

Deregulation has substantially increased the competitiveness of the airline industry. People Express will be going head to head with major carriers who currently dominate the markets we plan to enter. There is no doubt that our competition will not sit idly by while we succeed. However, we believe that our cost advantage will create a window of opportunity of up to several years during which we can grow and establish ourselves before our competitors catch up.

Current Industry Fare Structure: The industry average fare is currently $.16/seat-mile. Through our innovative organization, human resource policies, and aircraft acquisition strategies, our costs are low enough that we can be profitable at $.09/seat mile (assuming an average load factor of about 60%). This is such a large advantage that the competition will not be able to match us by cutting their profit margins alone. To match us, the competition will have to lower their breakeven points. To do so will be painful, difficult, and time consuming for them.

Long Run Industry Fare Structure: In the long run we must expect serious price competition. Over time, our competitors will probably be able to lower their costs through various measures such as wage concessions and efficiency improvements. They can also be expected to imitate at least some of our human resource policies. However, it will probably take at least a couple of years for them to

close the gap. If we succeed, we can expect other new airlines to be formed and to enter the market. If we are successful in our core markets on the East coast, however, most of these new players should be located in other markets such as the Southwest.

Dynamics of Competitive Response: As long as People Express is only a small player in the market, we do not expect the competition to worry much about us. So long as we remain small, the costs to the competition of lowering prices will be prohibitive: to punish us by cutting their prices will reduce revenues across their much larger customer base. However, as we grow and our market share increases, we can expect the competition to intensify their cost-cutting efforts. They will probably be more willing to lower their profit margins or suffer short term losses to stem erosion of market share as well. Thus, the larger our market share, the faster we expect our competitors to respond. Nevertheless, even at its most vigilant, we believe it will take the industry a couple of years to match our fares.

2. User Guide

Note that a quick start guide for the interface is also provided as part of the online documentation.

Before you enter your first decisions, let's take a look at some of the reports available to us through the information system.

Under the reports menu (icon ) menu you will find the status reports. Select the **Summary report.** This report summarizes the crucial information you will need to run your airline. Take a look at some of the other reports if you wish. See the information system glossary for definitions of the quantities shown on each report.

The current date is reported at the top of the Summary window. You are taking over at the beginning of "Year 1". Thus the summary report gives you the results for the last quarter of "Year 0". When you take over, People Express has 3 aircraft and 165 employees, or 55 employees per plane. Reported service quality is high.

Game 1: A 'base case' strategy

1. To illustrate how to use the simulator, let's see what would have happened if PE had followed managing officer Hap Pareti's strategy, back in 1981. The Harvard case on People Express quotes Pareti: "We thought we'd start by leasing three little DC-9's and flying them for a few years until we made enough money to buy a plane of our own." Pareti's strategy means no additions to the fleet or staff, low prices and moderately aggressive marketing.

2. To implement Pareti's strategy, enter the following decisions. See pages 4-5 for more detailed explanations of the decisions.

Aircraft Acquisitions	0	(Stick with your initial fleet of three.)
Peoples Fare	.09	(Price your routes at an average of $.09/seat-mile, compared to the competitors' average of $.16/seat-mile.)
Fraction Marketing	.10	(10% of revenues will be allocated to marketing.)
Hiring	9	(Try to keep your staff constant by hiring replacements for the 9 employees who left during the last quarter.)
Target Service Scope	.60	(You are a no-frills airline; 1.00 would be full service.)

3. After you've entered your decisions, click once on the green "Forward" button. If the summary is not showing, click on Summary on the reports menu to display it.

4. You'll now see the results for the first quarter of year 1. Since you kept your fleet and staff constant, little has changed. You did attract enough customers to generate a load factor of 53%, and are generating profits at a rate of $2 million/year. Explore some of the other status reports. Take a look at the **Financial report**, which shows your balance sheet, income

statement, and cash flow. Look at the **Stock Price and Earnings**, which shows that your stock is selling for $2.72/share and that you earned $0.14 per share in your first quarter of operations. Check out the **Market Research data**, which compares you to the competition.

5. Now make the next set of decisions. To stick with your strategy, you don't need to change anything. Simply run forward one more quarter, then look at the Summary.

6. You'll see that demand grew rapidly, lifting your load factor. You are still profitable. Note that employee turnover rose from 9 to 11, so your staff has now dropped from 165 to 163. Continue to pursue Pareti's strategy. To keep your staff constant, you must now hire 11 to replace turnover, plus two to get back to 165. Enter 13 for the Hiring decision. The other decisions can remain unchanged.

7. Load factor rises still further, and so do profits. However, the additional workload required to serve the larger number of customers caused employee turnover to rise to 15, reducing your staff to 161. Service quality is now reported at .94, still much higher than the competitions' average of .70.

8. Continue the strategy: Try to maintain your staff by hiring enough people to replace turnover, plus any difference between your current staff and the target of 165.

9. Continue with this strategy for a year or two (the 4th quarter of year 3 is far enough). You will find that your airline has become a profitable niche carrier. Because you are so small, the competition has largely ignored you, lowering average fares only slightly. You offer low prices and low quality (note that your service quality is reported as about 50-60% of acceptable). Your low fares offset your poor quality, however, and attract enough downscale passengers to give you a very high load factor approaching 80%. Your stock price has risen to nearly $25 per share. You can probably stick with this strategy for a while.

10. Before turning to your own strategies, review the dynamics of Pareti's strategy by exploring the Graphs and Tables from the menus. Note that you can access additional graphs from the tables: double clicking on the table headings produces a graph of that item. The information system glossary in this booklet lists all the graphs/tables and identifies the quantities displayed in each.

Developing your own strategies

1. You are now ready to try your own strategies. Before you do, consider the results of Pareti's cautious approach. By keeping the fleet and staff constant, PE became profitable quickly and was generating cash which could be used to grow later (see the financial report). Note, however, that there are a number of stresses which indicate the potential for, and indeed, the need for growth even within the first year. Your high load factor means there are many more people wishing to fly People Express than you can accommodate. You are overbooking and bumping potential customers who could generate revenue if you had the fleet to serve them.

Checking the Financial report you will see that you have succeeded in paying down your debt, so that you have the financial strength to grow. However, your overworked staff and low service quality are clear liabilities to growth. As you can see from the Employees report, the average workweek is a brutal 60 hours. As a result, turnover has risen from its initial level of 9 per quarter out of 165 to about 17 per quarter. This means your employees aren't staying with the firm long enough to become fully productive, and you are constantly replacing the experienced employees who quit with inexperienced rookies (check out the "Rookie Fraction" on the Employees report).

Thus the no-growth, niche strategy does not appear to be very satisfactory. It is possible to grow and prosper. Yet it is also possible to go bankrupt, as did the real People Express. Your task is to find a strategy for success. Along the way, you should be learning why the real People Express failed.

2. You are now ready to try your own strategies. To start a new game, select the Restart option, at the top right of the screen. Restarting clears all data returns you to the beginning of year one . Some helpful hints:

3. You should select a strategy *before* playing. You may wish to use the strategy record sheets to note down your strategy, and keep a log of the major events that occur as you play.

4. The essence of the scientific method is *controlled experimentation.* You will learn more from playing several games quickly rather than one slow game. Stick to your strategy in each game unless good business judgment requires you to improvise. Then vary one aspect of your strategy in the next game. Reflect upon the dynamics you generate. Ask “Why?” – it will be the key to your learning.

5. A good starting point for your first game is to mimic Don Burr's strategy for People Express. In this case, you would keep prices low ($.09/seat-mile) from the beginning, and set the target scope of service at .60. You would then expand the fleet aggressively (about 100%/year), hiring people at a comparable rate. You would market aggressively, particularly in the beginning (say, 12% of revenues at the beginning, falling to 10% as load factor rises).

6. After playing Burr's strategy, you may then play again with the same price and service scope, but choose a different growth rate, *or* a different target for employees per aircraft, *or* a different marketing strategy. By comparing the two games, you will be able to evaluate the role of the factor you varied in the success or failure of the firm. As you come to understand the dynamics of the firm and market, including the long-term consequences of your actions, delays in the response of the system to change, and side-effects, you will be able to design a strategy for success. There is no right answer, and many successful strategies are possible. Careful experimentation will speed learning and the development of a successful strategy.

Helpful Hints

1. You may sell airplanes as well as buy them. To sell airplanes, simply enter a negative number for the purchase rate. Of course, the software will not allow you to sell more than you have.

2. You may fire employees as well as hire them. Simply enter a negative number for hiring. You may not fire more employees than you have.

3. If you make a typographical error, you can move back a time step  or restart  . Note though that if using the game in a class your teachers may disable the go back option.

3. Information System

Reports

Accessed from the reports menu these provide information about the current quarter. There are 7 reports which in summary cover:

Breakeven Analysis	Breakeven revenues, load factor
Capacity and Load	Fleet size, costs; load information
Employees	Employees, turnover, productivity
Financial report	Balance Sheet, Income Statement, Cash Flow
Market Research	Demand, Competitor information
Stock Price and Earnings	Stock Price, Earnings per Share, Cumulative Profits
Summary report	Overview of firm, market, and competitors

A sample of each report appears on the following pages, with definitions of terms. You may access any or all of these reports at any time during play.

Graphs

Provide a history of the play to date in graphical form. There are 18 graphs accessible from the menu bar and, in addition you can access graphs of any item that is in the tables by double clicking on the table heading.

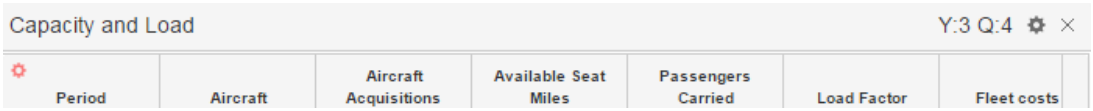
Graph: Information Displayed

Balance Sheet	Assets, Debt, Equity ($ Million)
Breakeven Loadfactor	Breakeven Load Factor, Actual Load Factor (fraction of available capacity)
Breakeven Passengers	Breakeven Passengers Carried, Actual Passengers Carried (Million Rev. Pass. Miles/year)
Breakeven Revenues	Breakeven Revenues, Actual Revenues ($ Million/Year)
Cash Flow	Cash Flow before financing ($ Million/year)
Competitors - Fares	People's Fare, Competitor Fare ($/seat-mile)
Cost Fractions	Fraction of Costs for Fleet, Fraction of Costs for Service, Fraction of Costs for Marketing, Fraction of Costs for Interest
Costs $ m/year	Fleet Costs, Service Costs, Marketing, Interest ($ Million.year)
Cumulative Profits	Cumulative Net Income + Current Market Value, Cumulative Net Income ($ Million)

Customer Service	PE's Perceived Service Quality (1981=1.00)
Flight Operations	PE Rev. Pass. Miles, Available Seat Miles (million seat-miles/year)
Growth Rates	Demand Growth Rate, Capacity Growth Rate, Revenue Growth Rate (%/year)
Hire/Fire Rates	New Hires, Employee Turnover (people/quarter)
Income Statement	Revenues, Operating Costs, Depreciation, Net Income ($ Million/year)
Productivity	Rev. Pass. Miles per year per Employee
Rookie Fraction	Fraction of employees with <6 months experience
Stock Price	Stock Price ($/share)
Average Workweek	Average hours worked

Tables

Accessed from the Tables menu these provide information about the current quarter. There are 9 tables. Seven of these provide the historical data for the reports and in addition there is a table of user decisions and a table of all public data to enable ease of transfer of historical data to spreadsheet.



Note that you can select the columns displayed on each table – click the orange cog icon at top left of the Period column. To download the data to a spreadsheet select the grey icon at top right, by the date. The table will download in CSV format.

Detail of reports:

Breakeven Analysis

PE's Total Revenues from passenger fares on an annualized basis, in millions of dollars per year.

Yearly revenues required to break even at current cost levels, in millions of dollars per year.

Millions of miles traveled by PE customers on an annualized basis.

Millions of Revenue Passenger Miles per year necessary for PE to break even at current cost and fare levels.

Fraction of total available seat-miles occupied by PE customers.

Load Factor required for PE to break even given current costs, fares and capacity.

Capacity and Load

Total number of aircraft owned by PE.

Number of planes acquired by PE during the quarter.

Total capacity of PE's fleet, in millions of seat-miles per year.

Millions of miles actually traveled by PE customers on an annualized basis.

Fraction of available capacity occupied by PE customers.

Total cost of operating PE's fleet;, hangar rentals, maintenance, fuel costs, etc., in millions of dollars per year.

Employees

Total employees at People Express.

Fraction of employees who have been at PE six months or less.

Number of employees hired by PE in the quarter.

Number of employees leaving PE in the quarter.

Net change in PE employment per quarter.

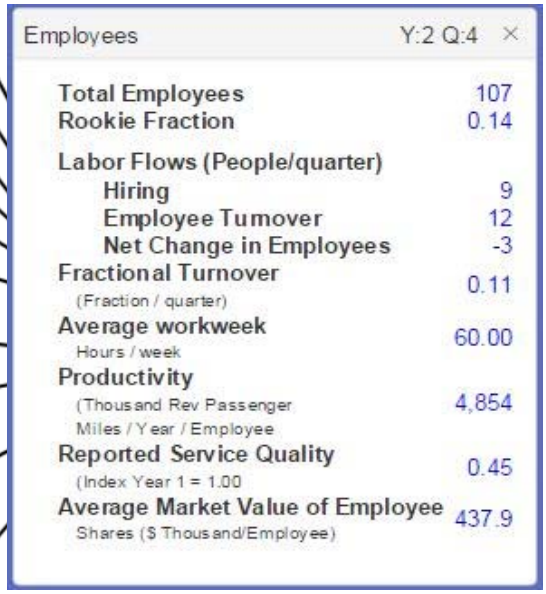
Fraction of total PE employees who left PE in the quarter.

Average hours worked per wek by PE employees.

Productivity of PE employees, in terms of thousands of passenger-miles served per year.

Quality of PE's service as reported by market research, relative to the quality level reported in 1981.

Average market value of employee-owned PE stock, in thousands of dollars per employee.



Financial Report

Balance Sheet statement of PE's total assets and liabilities.

Millions of dollars owned by PE to banks and other creditors

Total shareholders' equity in the firm (assets less debt).

PE's total assets, such as cash, planes, equipment, land and buildings, in millions of dollars.

Statement of PE's income in the quarter, on an annualized basis.

PE's total income from passenger fares in millions of dollars.

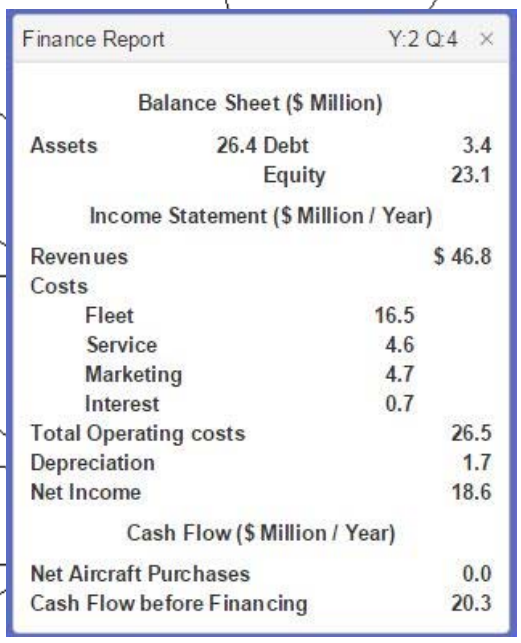
PE's costs of operation by department, in millions of dollars per year.

Depreciation of PE's capital plant and equipment on an annual basis in millions of dollars.

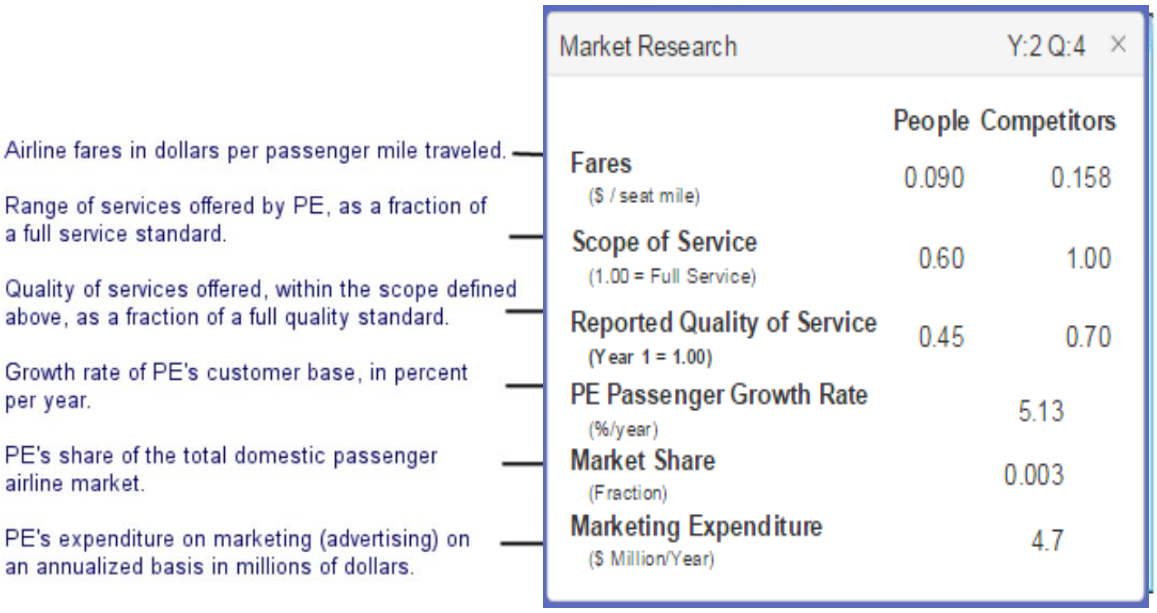
Net income from operations is revenues less operating costs and depreciation, in millions of dollars per year.

Net aircraft purchases is the cost of planes purchased less revenue from planes sold, in millions of dollars per year.

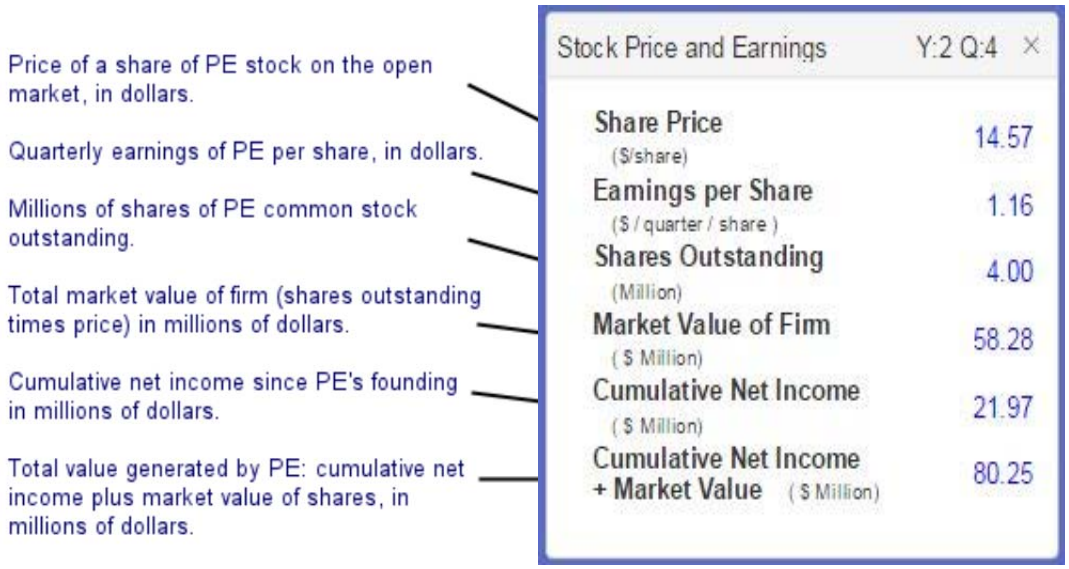
Net cash flow before external financing is revenue less total operating costs less net aircraft purchases, in millions of dollars per year.



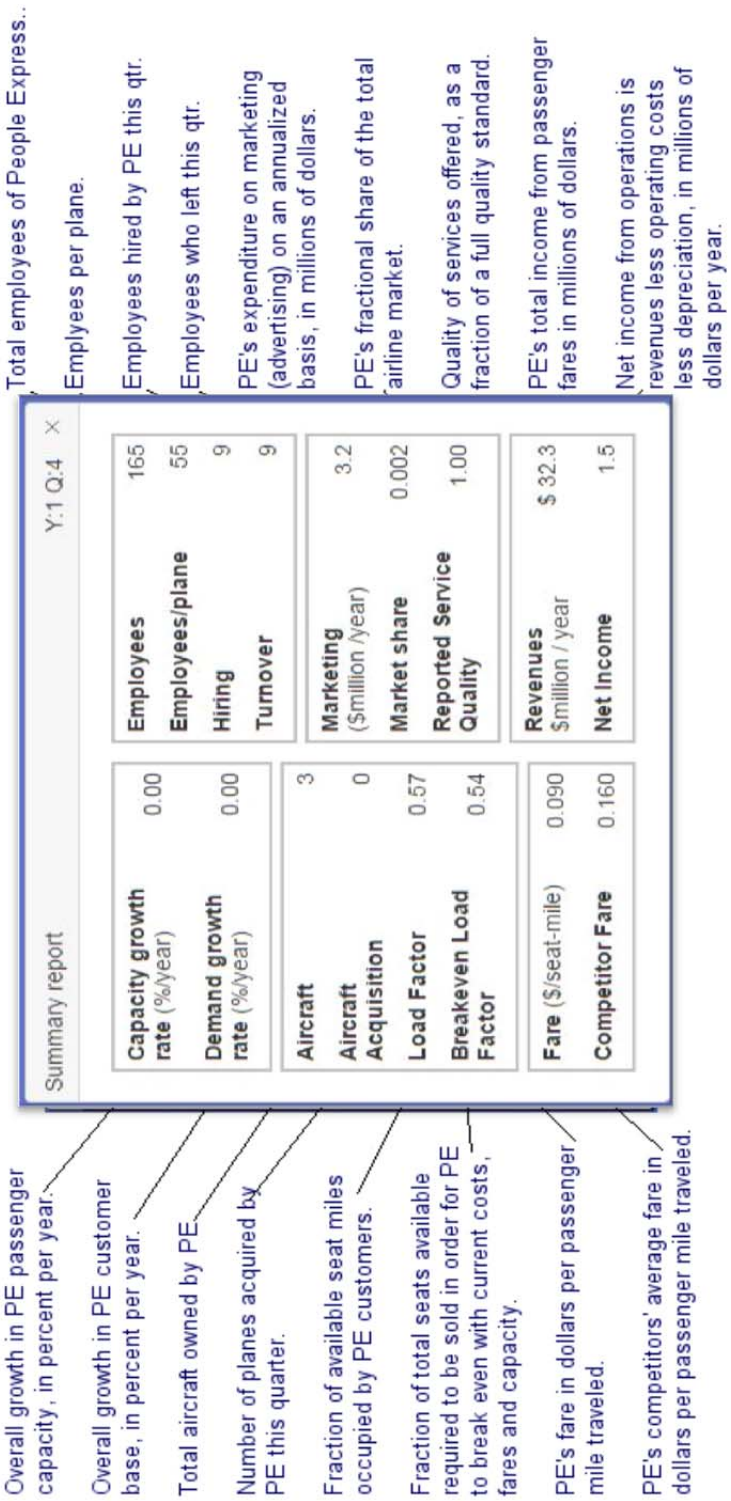
Market Research



Stock Price and Earnings Report



Summary Report



Group No._____ Game No. _____

People Express: 5 Year Strategy

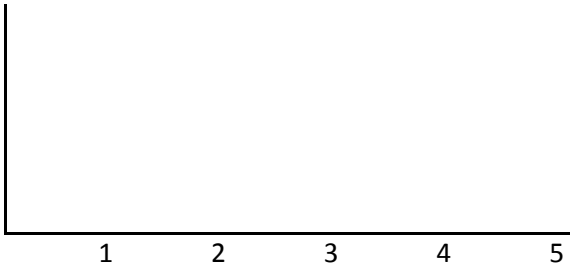
Overall Statement of Objectives

Initial product positioning

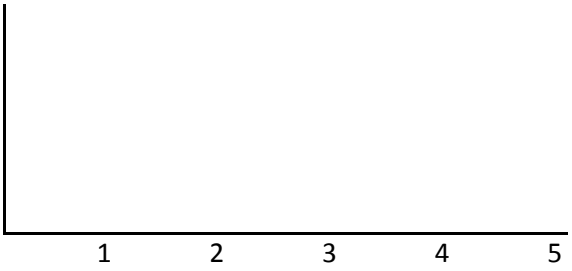
	People Express	Competitors
Fares	_____	0.16
Service Scope	_____	1.00
Target Quality	_____	0.70

5 Year Plan (Sketch planned decisions)

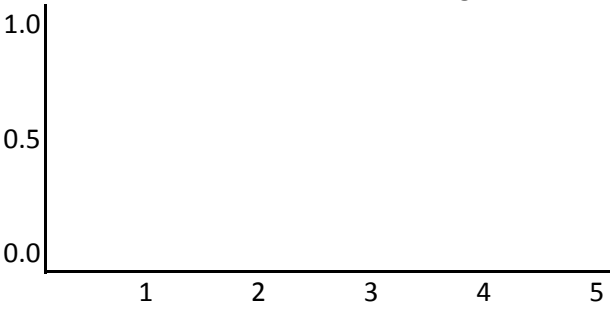
Number of aircraft



Employees

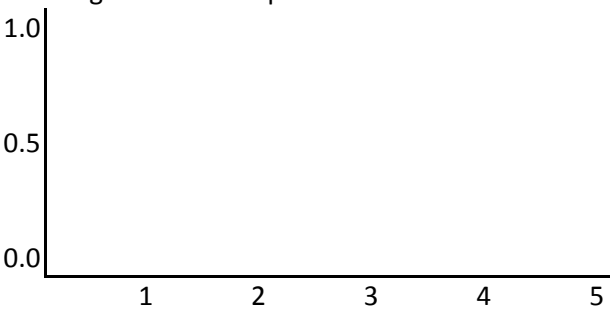


Fraction of Revenues for Marketing



Peoples Fare $/Seat Mile

Target Service Scope



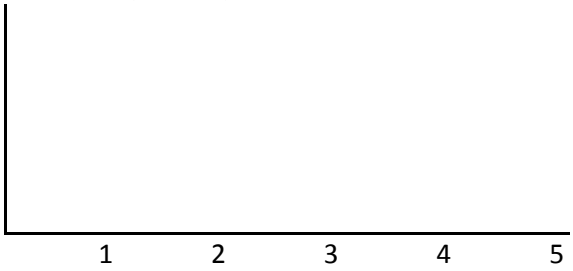
Group No._____ Game No. _____

People Express: Long Term Results

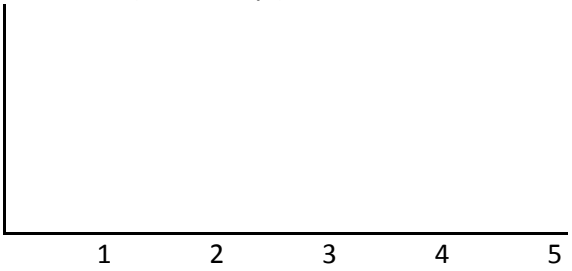
Evaluation of Strategy:

Why was it successful / unsuccessful?

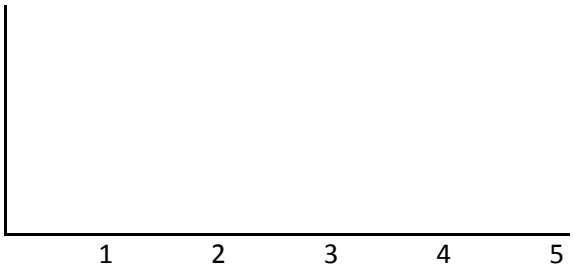
Fleet size (aircraft)



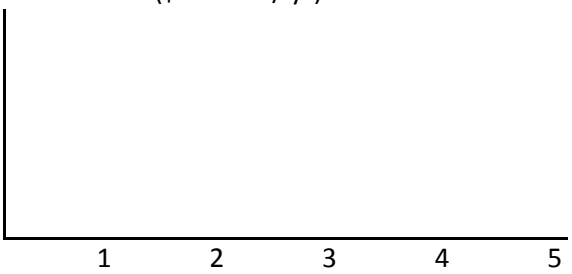
Revenues ($million /yr)



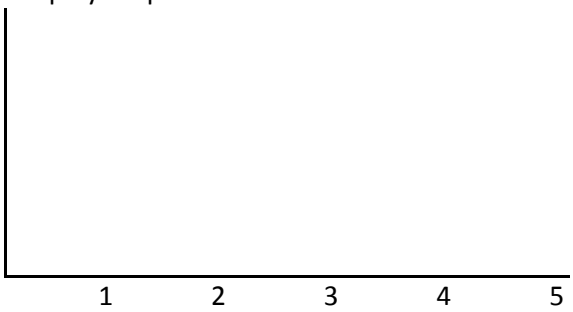
Load factor %



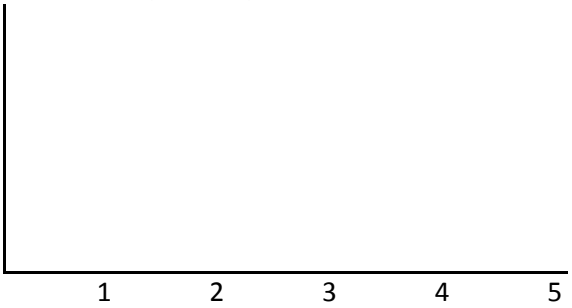
Net Income ($ million / yr)



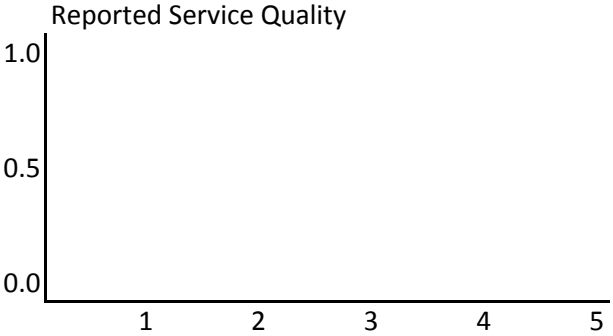
Employees per aircraft



Stock Price ($/share)



Reported Service Quality



Fare (Pex / Comp) $/Seat Mile