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BAG OF HIGH-TECH TRICKS HELPS TO KEEP AIRLINES FINANCIALLY AFLOAT

BY SCOTT MCCARTNEY

These should be turbulent times for airlines. Jet-fuel prices have doubled in 12 months, labor costs are up sharply, and passenger revenue has weakened as the big carriers have added planes to the skies faster than demand warrants.

In similar though rougher weather in 1992, major airlines tallied $4.8 billion in losses. This week, U.S. airlines are reporting 1999 earnings expected to total about $4.8 billion -- not far off the industry's record of $5.17 billion.

Why? Airlines, those heavy-metal symbols of old-line industry, have become one of the biggest beneficiaries of the new economy. An industry that pundits predicted would be hurt by new technologies such as video-conferencing has instead turned technology to its advantage, blunting the impact of economic jolts such as the fuel-price rise. Amid the debate over whether a new economic order really matters, the airline industry offers potent evidence of deep and widespread change.

"Technology has made all the difference in the world between airlines making money and airlines losing money," says Gregory D. Brenneman, president of Continental Airlines. "We used to go bankrupt when oil prices got this high and supply and demand got out of whack."

Pain, but More Gain

To be sure, higher fuel costs still matter. Continental's fourth-quarter results were half of last year's, and fourth-quarter operating earnings for the 10 major airlines are expected to be down 22% because of oil and light turn-of-the-millennium bookings. This year, airlines will pay about $4 billion more for jet fuel than in 1999, predicts David Swearinga, chief economist at the Air Transport Association, a trade group.

But the increase will continue to be partially offset by productivity gains, and as a whole, the industry is expected to earn about $3.5 billion in 2000, according to Mr. Swearinga's preliminary estimates.

The shift reflects widespread changes in almost every area: How tickets are sold, how passengers are seated and fed, and how planes and gate agents are allocated. Carriers are now squeezing more dollars out of each airline seat while cutting costs elsewhere. And new projects promise even more substantial savings. Continental, for example, is testing software that will shift around aircraft as often as several times a

day to match seats to bookings -- something not possible today.

A Slew of Improvements

In the past, airline cost-cutting was rather crude and obvious: cramming seats closer together, for example, or removing olives from salads, then removing salads altogether. Technological improvements were mostly limited to behind-the-scenes operations such as crew scheduling and cockpit duties.

But in recent years, faster and smarter computers, the Internet and a simple shift in attitudes about how things are done have produced a slew of improvements. Just a few years ago, travel agents sold most airline tickets -- travelers needed agents to print and deliver paper tickets -- and they had access to information about schedules, fares and availability. Then airlines began to roll out "ticketless" travel. They posted fare and schedule information online. And they cut travel-agent commissions to 5% from 10%, forcing many agents to charge directly for their advice.

Last November, ticket sales at travel agents increased 4%, but the commissions paid for those sales fell 25%, according to Airline Reporting Corp. As a whole, the industry cut commission costs last year to $5.8 billion from a 1993 peak of $8.1 billion, the Air Transport Association says. Commission costs at AMR Corp.'s American Airlines were $569 million less last year than they would have been at 1993 rates. That's equal to about three-quarters of its 1999 profit of $737 million, excluding one-time items.

"Technology hasn't changed flying -- airplanes are the same. What's changed is the cost of performing some of the functions associated with flying," says Scott D. Nason, American's chief information officer.

Internet Sales

Southwest Airlines, which pioneered ticketless travel among major carriers, hasn't built a reservations center in four years, though the carrier has grown 57% during that period. Southwest says 75% of its customers now travel ticketless, and Salomon Smith Barney estimates Southwest now receives an industry-leading 15% of its revenue from Internet sales. (Southwest says only that sales through its Internet site are "very substantial.")

Hoping to trim costs further, four airlines have banded together to develop their own Internet ticket-selling site to compete online with Sabre Group's Travelocity (www.travelocity.com), Microsoft Corp.'s Expedia (www.expedia.com) and other booking systems, which charge airlines transaction fees as high as 3.5% for each booking. Continental has launched a project to persuade corporate accounts to book directly with the airline. If successful, the system will allow the airline to bill corporate accounts, eliminating both a credit-card fee of 2% to 2.5% on each transaction and the reservation fees.

"We don't want to pay another middleman if we don't have to," says Gordon M. Bethune, chairman and chief executive of Continental.

In fact, eliminating the middleman altogether is

next. Airline executives say privately that travel-agent commissions are likely to go to zero in the next few years.

For Continental, in particular, technology played a major role in its financial turnaround. Reorganized through bankruptcy proceedings in both the 1980s and the early 1990s, it had only rudimentary information-management systems when a new team of executives arrived in 1994. There was no e-mail, and only a couple of offices had voice mail.

That gave Continental the advantage of starting from scratch. The airline spent $75 million on new technology. It went on a hiring binge for programmers, taught them about the airline industry, developed new software and built its operations-critical systems -- all at once. "Some people would have called that foolhardy," says Janet P. Wejman, Continental's chief information officer, who was recruited from UAL Corp.'s United Airlines. "But we didn't really have a choice."

Running an airline has never been easy: People change plans, competitors' pricing can change seven times a day, an empty seat can't be stored in inventory for a markdown sale later on. Profits often come simply from filling an extra seat here and there. In 1998, the industry's best year ever, the nation's 10 major airlines had a net profit margin of just 5.5%.

Under Continental's old system, data used for making decisions were often weeks old. Typically, the airline knew how many passengers it was flying, but compiling fare information off paper tickets took several weeks. Markets were tracked with pencil and paper, or with rudimentary mainframe systems that spit out results market-by-market, not flight-by-flight, so poor-performing flights were hard to spot. By the time good information was available, fares might have changed, demand might have shifted or competition from another carrier might have increased.

"We couldn't tie the pieces together," says Lawrence W. Kellner, Continental's chief financial officer.

Tracking Flight Profitability

Continental's new systems break down results for each flight each day, and factor in new variables, such as the cost of fuel in each city. For instance, Continental discovered that 18% of its flights were losing money. The Greensboro, N.C., hub had shown a profit of $15 million in 1993 under the old calculations, says Mr. Brenneman, the president. But with more detail available, Greensboro turned out to be losing $60 million a year. Continental closed the hub.

With a system that tracks flight profitability, the airline also found that its Monday, Thursday and Saturday trips to Santiago, Chile, from Newark, N.J., were money-losers, while the rest of the week did well. Eliminating the weak flights made the market far more profitable, as did having planes carry extra fuel to minimize purchases in Latin America.

The flight-profitability system prompted Continental executives to shift some of their airplane orders at Boeing Co. to

larger models, and even to embark on an ambitious three-year plan to expand the airline's capacity by 30%.

Some of the biggest gains -- and goofs -- for airlines come in the Byzantine area of "yield management," the never-ending effort of trying to decide how many seats to sell for cheap leisure travel and how many to hold back for high-paying walk-up customers. Seats are sorted into fare "buckets," each at different price levels, and each airline has scores of yield-management analysts constantly adjusting inventory and trying to extract every dollar possible out of each flight.

Last spring, United said its new system overestimated demand for full-fare tickets and rejected reservations for cheaper tickets. Second-quarter revenue was set back at least $22 million.

A Pricing Guru

On Continental's old mainframes, a question such as "What happens if prices are raised 5%" typically took three weeks to calculate. Now, pricing guru Bill Brunger sits in his glass-walled office in downtown Houston zapping through hundreds of scenarios on a personal computer. Spotting a slow-selling market, he asks the computer to use past experience to estimate the result of opening more seats to frequent-flier rewards, or posting the market as an Internet special. As a result, seats in one market get filled without having to offer an across-the-board fare sale that could erode profits in many markets.

"We can be a lot smarter," Mr. Brunger says. "Revenue management is all of our profit, and more."

Rather than running calculations flight-by-flight, the latest generation of yield-management systems evaluates thousands of possible connections for each flight. Continental, for example, offers about 30,000 possible routings with its 2,200 daily departures. It now evaluates whether a seat on an Austin-Houston flight should be sold to a local customer for $100 or to a customer paying $1,000 to connect from Austin to New York through Houston. Sometimes, it's better to take the local $100 Austin-Houston passenger if the airline can fill the Houston-to-New York seat with a higher-paying Houston-New York customer, or maybe an even higher paying Mexico City-New York customer making a connection in Houston.

If it works, airlines fill as many seats as possible with leisure passengers who buy tickets weeks in advance while leaving just enough for their best customers: last-minute, high-fare business travelers. The new system has yielded an additional 0.5% to 0.7% in revenue, or about $50 million, for Continental.

At the Airport

In subtle ways, the computer tricks are also changing what airlines do at the airport. Electronic ticket-readers at gates, for example, have made boarding airplanes simpler and reduced duplicate seat assignments that cause delays.

To make its employees more efficient at hubs, where waves of airplanes come and go, Continental

has one computer system that considers 400 parameters to calculate staffing in five-minute blocks of time, juggling airport staff to match the peaks and valleys. Early-morning westbound flights out of Newark have late-arriving crowds, while midday Latin American departures at Newark draw early-arriving passengers with lots of luggage to check. How much freight will a flight have? How many first-class passengers will be checking in at 4:15 p.m.?

The computer system, which began running in 1998, is even credited with shortening lines at Continental's Houston hub and improving baggage handling. Overall boost in productivity: 2%. "It takes waste out of the business," says Mr. Kellner, the CFO.

To keep the planes moving, Continental installed new systems at its operations nerve center in downtown Houston that drastically improve the airline's recovery after snowstorms and hurricanes. A one-day storm used to disrupt flights for several days, as the airline worked to straighten out crew schedules and overnight maintenance work.

Now, it can come up with two or three potential recovery plans in a matter of minutes, and get back on schedule in about six hours. Hurricane Floyd cost Continental $15 million, even though it tore its way up the East Coast, disrupting flight operations for several days. In the past, storms cut $40 million to $50 million from earnings.

Special Treatment

The same system evaluates the consequences of canceling or delaying a flight. A cancellation may mean a plane doesn't get required overnight maintenance work, or it could mean losing high-fare business travelers. The system, which can show instantly the amount of revenue on each flight, even makes suggestions, such as holding a flight five minutes because several high-fare passengers are trying to connect. Flights with VIPs onboard are flagged for special treatment.

Even the quality of meals is sometimes adjusted based on passenger load: hot lunches for flights with lots of business travelers, but snack sacks for a planeload of cheap-ticket vacationers. "There's a 'goodwill' piece to the decision-making," says Mark Erwin, senior vice president, airport services.

Even with the recent efforts, Continental executives say they have touched only the tip of possible productivity enhancements. Currently, the carrier is at work on an project that would allow it to swap airplanes on routes every 24 hours to maximize passenger loads.

The airline has amassed a large fleet of Boeing 737 jets, from 104-seat models to 155-seat versions. If a particular route is overbooked, Continental says it hopes to be able to put a larger plane on that segment, and switch the smaller 737 to a lightly booked trip.

That, Mr. Brenneman says, may add $75 million to $100 million to the bottom line. "About 80% of the flights won't change," he said. "But that 20% could result in a huge increase in dollars."