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Memo: Airline Fares

SYSTEM AT THE BRINK
THE SOFTWARE THAT DECIDES WHAT SEATS SHOULD BE SOLD FOR WHAT PRICE HAS AIRLINES SCRAMBLING TO MAKE ADJUSTMENTS. THE PROCESS, CALLED 'YIELD MANAGEMENT,' CAN MAKE THE DIFFERENCE AS AIRLINES LOOK TO RECOVER FROM ATTACKS. COMPLEX SOFTWARE NOT DESIGNED FOR BOOKINGS AFTER SEPT. 11

SHAWN NEIDORF, Mercury News

In ordinary times, airlines rely on the powerful software that manages air fares to wring the most money out of every flight. But now, desperate for every dollar, U.S. carriers are urgently trying to teach the software a new trick for which it was never designed: how to factor in the Sept. 11 hijackings and the resulting blow to Americans' appetite for air travel.

The software's historical data and mathematical models weren't intended to deal with airborne terrorism that only two months ago had been unthinkable. So the people who manage the machines have taken over, using whatever economic models, market observation and gut feel they can assemble to reprogram their computers to cope with the new reality. ''The software systems themselves, left alone, cannot cope with this kind of disruption to the historical database,'' says Peter Belobaba, principal research scientist at the Massachusetts Institute of Technology and airline fare expert. The entire math, all the forecasting, all of the optimization models are based on the naive assumption that the past can predict the future and that everything is stable, he said.

This type of software, used by all the major airlines, assumes that the way people make travel decisions remains largely constant, based on how much it would cost to make a trip and how important the trip is – not on fear of terrorism.

Though somewhat arcane, the highly secretive and highly sophisticated process airlines use to make these fare decisions can easily be the difference between profitability and loss for an airline. The process, called ''yield management,'' can increase an airline's revenue anywhere from 5 percent to 10 percent.

That's more important now than ever, as passenger traffic remains off about 30 percent and experts worry that even major airlines could go bankrupt.

For example, UAL, the parent company of United Airlines, announced Nov. 1 that it had lost $1.16 billion in the third quarter, more than half of that in ''special charges'' related to the impact of Sept. 11. James Goodwin resigned as chairman and chief executive of the company Oct. 28 after angering employees -- who own more than

half the company – with a doom-and-gloom letter of his fears for the airline's future. Goodwin was replaced by UAL board member John Creighton.

Forecasting seat demand Keith Taylor, Southwest Airlines' vice president of revenue management and pricing, insists that his people are as important as the technology they use to forecast seat demand. These days, he sits down with his team every day to review what they know, trying to determine whether more seats -- or fewer -- should be offered at lower fares.

Taylor says ''any system would have difficulties dealing with the times we're dealing with.'' He says he and his staff are reading their tea leaves ''very carefully.''

Before deregulation in the late 1970s, airlines could offer fares based only on the class of service and the actual cost of the flight. After deregulation, airlines began using the complicated ''yield-management'' system to decide which seats on which flights should be sold at what fares.

Under normal conditions, the fare-assignment process is largely automated. Software programs churn through enormous databases of historical travel patterns and recent bookings to match supply and demand -- and put fares to seats accordingly. The system then tracks demand for tickets, reviewing the data every night and making adjustments: If a flight starts booking faster than expected, more seats will shift from lower to higher fares. If a flight is booking more slowly than expected, more seats will be changed from higher to lower fares.

Human analysts watch for irregularities and tweak the system to account for special situations such as the Super Bowl -- a recurring event, but one that takes place in a different city with varying teams each year. Managing those variables requires a human touch. Michael E. Levine, a former airline executive and regulator who now teaches at Harvard Law School, says airlines faced by the unprecedented terrorist attacks in the skies likely are counting on human intervention more than ever.

Yield management -- also called revenue management -- might sound arcane. But it's really just an elaborate form of inventory control. An often more rudimentary form of the practice is used in many other businesses, such as golf courses that charge more for Saturday tee times than Tuesday slots and restaurants that offer early bird specials to fill tables at a less popular dining time.

For airlines, inventory is the total seats on each flight. And those seats are perishable commodities -- once a plane takes off, an unfilled seat is ''spoiled.''

A plane loaded with low-fare passengers would not generate enough revenue to be worth flying. A plane that offered only high-fare seats wouldn't garner enough takers to be worth flying either, says Jim Barlow, a senior vice president at Sabre, a travel-industry technology company that spun out of American Airlines in 2000.

High-priced seats

Though the end result can be confusing to the flying public, the airlines' goal is simple: to make as much money on each flight as possible by offering as many high-priced seats as customers are likely to buy while filling the rest of the plane with lower-priced seats.

Southwest's Taylor calls it high-tech fortunetelling.

''In a perfect yield-management system, the last seat would be sold at full price to a passenger running, out of breath, five minutes before the flight. You obviously don't achieve that very often,'' says Harvard's Levine. Still, airlines want to keep available several seats at those lofty prices for last-minute travelers.

Airline analysts overrode the computer programs immediately following the Sept. 11 attacks. Otherwise, the dearth of bookings might have led the software to allocate far more cheap seats on all flights to stimulate demand.

The analysts knew that it wasn't price that was cutting off sales: People were scared, and no cut-rate fare was going to fix that. As David Swierenga, chief economist for the Air Transport Association, an airline trade group, puts it, ''I can lower my prices, but if people are not flying not because of price but for some other reason, then whatever I do with price may not have the intended result.''

Yield-management analysts knew that the only people who would fly immediately after the terrorism were business travelers who could not avoid it -- and cutting prices for them would do no good for the airlines. That's why they did not slash fares right away.

Even in normal times, the yield-management system can be baffling to travelers. ''Most airline pricing makes no sense whatsoever,'' says Pat Sunk, vice president of operations at the Consumer Travel Rights Center.

Dorian Stonie, president of the Bay Area Business Travel Association and travel technologies manager for Hewlett-Packard, says the frequent changes in which fares are available can be frustrating for consumers, but ''travelers are learning.'' The large difference in seat prices can make some passengers feel gouged, Stonie says.

Multiple fares

Richard Copeland, president of the American Society of Travel Agents, thinks fliers, leisure travelers in particular, have learned to work the system. They wait for fare sales and then book several trips at once, he says. ''You've so conditioned the traveler to have the ability to have all kinds of fares and all kinds of manipulations.''

The fare-management system is not likely to change. Given the airline industry's low margins, yield management is ''the difference between being in business and not,'' Barlow says.

He estimates that yield management increases airline revenue 7 percent to 10 percent. Another expert put it at about 5 percent to 8 percent.

Looking ahead, yield-management practitioners already know they will have to toss out fall 2001 data when planning for flights in fall 2002. But what happens in the meanwhile is still uncertain for both the yield-management analysts and the people who make the technology they use.

No matter how well they respond, though, they probably cannot save an imperiled airline themselves, says economist Swierenga. No matter how much they fiddle with

fares, yield-management experts can't make people fly. And only a big boost in the number of passengers will keep endangered airlines out of bankruptcy.

''I think it's an issue of confidence, not an issue of price, ''Swierenga said.

Passenger traffic has plateaued in recent weeks at 30 percent less than normal, even with domestic airline fares down a dramatic 19 percent in September, Swierenga said. He hopes the federal government's $15 billion aid package will stave off disaster for airlines, but he isn't certain it will. ''They're losing their shirts.''

Illustration: Photo, Diagram

DIAGRAM: MERCURY NEWS
FLIGHT PLANS
PHOTO: GARY REYES -- MERCURY NEWS ARCHIVES
Travelers pass through the International Terminal at San Francisco International Airport.
