Discussion Paper

Advances in Airline Pricing, Revenue Management, and Distribution

Implications for the Airline Industry

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EXECUTIVE SUMMARY

The creation of an airline fare quote for a specific itinerary at any given moment is the result of decades of scientific development in pricing and revenue management (RM), complex information technology, and hard-earned practical experience. In the past several decades, airlines have served as leaders in making new advancements in pricing and RM, as well as developing new types of products to offer to their customers.

In 2017, the state of airline pricing, revenue management, and distribution is at a notable inflection point. Airlines are creating increasingly numerous and complicated product offerings, and distributing them on an ever-growing variety of channels. Moreover, technological advancements are giving airlines access to more information about the characteristics of their customers.

At the same time, next-generation pricing, revenue management, and distribution mechanisms are currently under development within the airline industry. If implemented, these mechanisms could have wide-ranging implications for airline revenues, competition, internal processes, and external interactions with customers and regulators. However, the mechanisms themselves and their potential effects remain poorly defined and are often misunderstood.

In this discussion paper, we explore advances in airline pricing, revenue management, and distribution, beginning with the development of early RM systems following airline deregulation and ending with the development of next-generation pricing capabilities. We do *not* endeavor to prescribe a single pricing or revenue management approach that is best for all airlines, but rather to present a full spectrum of technologies, implications, and viewpoints to enable each airline to evaluate the extent to which investment in next-generation pricing is appropriate for its unique position and corporate strategy. In this executive summary, we present the high-level findings from our review.

Current airline pricing and revenue management practices evolved in response to technological constraints and industry structures

Airline pricing and revenue management has a rich history dating back to the deregulation of the U.S. airline industry in 1978. With more freedom to vary the fares charged on each flight, airlines began developing scientific techniques to adjust prices based on the remaining capacity on each flight and a forecast of future demand-to-come. Later advancements in revenue management would expand optimization approaches to full networks of flights through O-D control, and to less-restricted fare structures through fare adjustment and hybrid forecasting.

In the past four decades, the filed fare class and automated fare quote process has remained central to airline pricing, revenue management, and distribution. As they begin to sell more complex products, airlines have started to run into limitations with current systems, which allow up to 26 reservation booking designators or RBDs in each market. New distribution technology is beginning to emerge to give airlines more control over the information they communicate to the marketplace, which has started to enable the development of next-generation pricing mechanisms.

The sophistication of airline pricing is best-in-class among travel-related industries, but other industries have started to develop more complex pricing mechanisms

In the 1980s and 1990s, airlines were pioneers in developing sophisticated pricing and revenue management methods that were well-suited for an industry with limited, perishable inventories. We call these practices *assortment optimization,* since they involve selecting prices for a given product from a relatively small and finite assortment of pre-defined price points.

Hotels, passenger rail operators, and rental car agencies have all experimented with pricing and RM practices adapted directly from those used in the airline industry. Unlike airlines, many of these industries are not required to publicly file the price structures they use for assortment optimization, and may not be limited by the same technological constraints faced by airlines.

In other industries without these constraints, new pricing mechanisms have started to emerge. These include *dynamic price adjustment,* in which a firm applies increments or decrements in certain situations relative to a pre-defined price point. For example, the online retailer Amazon.com often uses dynamic price adjustment to mark down the prices of books from the manufacturer's list price.

Another advanced pricing mechanism is *continuous pricing,* where firms freely select prices from a continuous range of possible values instead of from a small set of previously-defined options. At the limit, prices could be computed uniquely for each transaction. The ride-hailing app Uber uses transactional continuous pricing, since it computes fares for each ride individually and can change these prices from moment to moment in response to market demand.

Next-generation mechanisms are already under development to advance the state of pricing and revenue management in the airline industry

The airline industry has begun to develop new mechanisms for pricing and RM to advance the state of the practice from assortment optimization toward transactional continuous pricing. These new mechanisms generally aim to increase the number of price points available in any given market; to increase the velocity at which these price points are updated; and/or to increase the frequency at which prices are changed from transaction to transaction.

These next-generation mechanisms include:

- *More frequent updating of fare structures,* typically through automation technologies tofile fares more rapidly with ATPCO. With these technologies, each airline could createunique fare structures for each market for each departure day;
- *Dynamic availability of fare products,* in which the RM availability of fare products couldbe adjusted for specific customers or in specific situations;
- *Additional RBD capabilities,* which could increase the current limit of 26 possible price points available to airlines in each market;
- *Dynamic pricing engines,* which apply dynamic price adjustments (increments or discounts) to filed fares in certain situations;
- *Continuous pricing,* in which each airline would select prices from a continuous range ofpossible values instead of from a small number of pre-filed price points; and
- *Dynamic offer generation,* which merges the product creation process and the price selection process into a single step. An airline would dynamically create and price bundles of itineraries and ancillary services, potentially at a transactional level.

Continuous pricing and dynamic offer generation would require significant changes to existing revenue management optimization and forecasting practices, as well as to distribution and IT capabilities. Airlines deciding to implement next-generation pricing will likely proceed incrementally to ensure that these mechanisms are compatible with existing practices and technologies in the short term.

Next-generation pricing mechanisms have the potential to increase airline revenues, but also will disrupt the status quo

An airline will only choose to practice next-generation pricing if these mechanisms have the potential to increase revenues. Studies of several next-generation pricing mechanisms have suggested revenue gains are possible, either through an increase in yield from offering higher price levels in certain situations, or through stimulation of new demand by offering discounts to certain customers. However, the implementation of next-generation pricing in the airline industry is likely to disrupt the status quo and could increase the incentive for an airline to engage in discounting until it reaches its marginal cost.

There may also be implications of next-generation pricing for consumers and regulation. Consumers would likely react negatively if transactional pricing mechanisms resulted in an identified individual receiving a higher price than an anonymous shopper. There is also the possibility that customers would try to game the pricing engines to obtain prices for which they are not eligible. Furthermore, while regulators have to date been relatively permissive of new pricing technologies that "better match capacity with demand", some new pricing mechanisms could trigger regulatory reviews with uncertain outcomes.

Different viewpoints exist on whether next-generation pricing will be a net benefit for the airline industry

Given the wide range of implications next-generation pricing will have on the airline industry, stakeholders have divergent views on the prudence and feasibility of moving beyond existing mechanisms. We present different viewpoints on the potential rewards and risks of next-generation pricing, reflecting the wide spectrum of views that appear to be emerging in the industry. These positions do not necessarily reflect the viewpoints of the authors of this study, ATPCO, or any particular airline.

One common viewpoint sees next-generation pricing as a chance to break free from existing technological constraints, giving airlines more control over the prices and products they offer their customers. From this perspective, the potential revenue gains from next-generation pricing outweigh the potential for instability. Markets for information will emerge to enable airlines to make rational pricing decisions, and first-mover advantages will exist for airlines that are first to implement next-generation capabilities.

An opposing view proposes that the inherent risks of next-generation pricing are too high to justify its development. From this perspective, next-generation mechanisms are seen as an unnecessarily disruptive force to the status quo. New types of pricing could lead to instability in the marketplace and increase incentives for airlines to discount.

Stakeholders at each airline will have their own views on next-generation pricing that fall somewhere between these two extreme viewpoints. As mentioned previously, development of next-generation pricing mechanisms will likely proceed incrementally, both to avoid disruptions with existing legacy practices and to test the effects of these systems in a limited implementation.

The airline industry can take several steps to start preparing for a world of next-generation pricing and revenue management

There are airlines that will begin (or have already begun) experimenting with next-generation pricing mechanisms in the near future. The airline industry as a whole can take several steps towards managing this transition.

These steps include more investigation and research into forecasting and optimization methods centered around customers' conditional willingness-to-pay, which will likely be required by many next-generation techniques. Airlines and technology providers will also need to consider how to develop systems and data sources that can function with existing technologies, diverse pricing goals, and practices like interline pricing, corporate contracts, and group sales.

Core competencies will also need to be developed among pricing, revenue management, and distribution professionals to use and tune next-generation pricing mechanisms. Next-generation pricing will not only require fluency with new systems and automated technologies, but also an understanding of the complexity of pricing in a new competitive environment. At the same time, the accuracy of the fare calculation process and the ability to meet regulatory requirements will have to be maintained.

CONCLUSIONS

The development of next-generation pricing mechanisms represents an exciting and uneasy time for the airline industry. There still exists significant uncertainty regarding what these new mechanisms will look like, how they will be implemented, and what impacts they will have on the status quo. One certainty is that the landscape of airline pricing, revenue management, and distribution will look much different in five years than it does today. This paper aims to provide some common definitions and concepts to guide this evolution, and to help airlines and technology vendors prepare strategies for transitioning to this new commercial environment.

For a copy of the full report, please contact ATPCO.

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