International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

# Dynamic Pricing in the Final Countdown: How Airlines Maximize Revenue and Shape Customer Trust and Buying Behavior

**Naina Avinash[1], Gagandeep Sodhi[2]**

[1]Student, Business, GEMS New Millennium School
[2]Teacher, Business, GEMS New Millennium School

**Abstract**

Because airline inventory is uniquely perishable, unsold seats mean lost revenue. Every empty seat once the plane has departed means revenue that disappeared forever. Probably the most common way in which airlines seek to minimize such losses is through the application of dynamic pricing algorithms that constantly adjust fares, particularly in the last 24 hours before flying. This paper discusses how airlines reach maximum revenue with such last-minute adjustments and how such practices influence customer trust, satisfaction, and buying behavior. It explains, from academic literature, industry research, and discussions of regulatory and behavioral studies, the technical mechanisms driving dynamic pricing and its psychological implications for travelers. It concludes by giving insight into the delicate balance airlines have to make between optimizing their profits and ensuring long-term customer loyalty, in addition to guiding future research.

## Introduction

Airline seats are very perishable products in that, once a flight has departed, an unsold seat represents a lost revenue opportunity which never can be regained. Thus, airlines have always tried to apply revenue management practices in an attempt to maximize seat sales and prices. One such instrument, especially nowadays, is dynamic pricing-that is, ongoing fare adjustment according to demand, remaining time, and competitor moves. Of particular importance is the final 24-hour window before departure when airlines capture high-yielding, last-minute travelers who tend to value convenience or necessity over price sensitivity.

Such last-minute fluctuations in prices mold the perceptions of travelers in terms of price fairness and trust. To many customers, basically leisure travelers, this may appear to be some form of manipulation or even exploitation. Based on empirical research supported by examples from practice, this paper will discuss how last-minute pricing algorithms function, how airlines reap their financial benefits, and what such practices mean to consumers against the backdrop of the latter's emotional and decision-making processes. It is only through the operational logic and human reaction that one is able to explain how airlines can maximize revenue without undermining long-term loyalty.

## Revenue Management and Dynamic Pricing

Traditional revenue management created within the airline industry a system dependent upon a variety of techniques: fare classes, overbooking strategies, and scrupulous inventory control. More recently,

however, a series of studies recognized the fact that reinforcement learning models can estimate demand, adjust inventory, and react in real time to find the optimal price over time. Continuous pricing models forgo these rigid fare classes and allow fluid price adjustments that reflect consumer willingness to pay. As Bhagwat (2022) says, smooth and continuous updates of data may yield substantial gains in carriers' revenues since they can respond to micro-patterns of demand.

The idea is that price, mathematically derived in the year 2019 by Selçuk and Avşar, is a function of available seats versus estimated demand. As flight time approaches, algorithms begin to balance the risk of unsold seats against charging last-minute, premium rates. Because the automated systems study competitors' fares, search patterns, and booking velocities, according to Forbes in 2023, airlines might change prices dozens or hundreds of times in one day.

Analysis by the London School of Economics explains that dynamic pricing enables airlines to charge different prices for different passengers-that is, "price discrimination"-because of their different circumstances. It maximizes profit but at the same time may raise public scrutiny when the price changes seem very aggressive.

**Algorithmic and AI-powered pricing**

Of course, AI-driven dynamic pricing exists today, whereby airlines update the fares in real-time through machine learning, microservices architecture, and large-scale analytics. Gupta et al. discussed how reinforcement learning models use a criterion of fairness to avoid extreme price swings and discriminatory price changes, seeking a balance between revenue vs. customer trust.

According to McKinsey & Company, 2023, AI helps enhance the capability of airlines to better predict demand by considering search history, previous bookings, seasonal patterns, and wider market indications. It enables "always-on offers" to facilitate a shift supported by IATA, where airlines make individual prices and bundles for each customer.

Generally speaking, such systems are supported by microservice architecture because it provides easy and rapid updates with scalable pricing engines. According to Nagarjun et al. (2024), microservices reduce latency significantly; hence, price algorithms react instantly to fluctuations in the market. According to the Harvard Business Review (2020), dynamic pricing works with respect to how frequently customers browse or send urgency signals, like searching many times for the same route.

There are also risks with AI-powered pricing. In 2024, for example, the European Commission warned that algorithmic pricing may inadvertently allow anti-competitive behavior or price manipulation to take place, through algorithms automatically reacting to one another.

**Customer Behaviour, Trust, and Satisfaction**

It raises revenues for dynamic pricing and risks customer erosion of trust if perceived as unfair. Large and sudden increases are under consideration, and those made within hours of departure could become frustrating or suspect. As Bhagwat said, "Price spikes hit the emotions of leisure travelers more since they have to pay out of pocket and are more budget-conscious. Business travelers experience price spikes with more latitude considering corporate reimbursements and the rising travel urgency.

In fact, Yale School of Management (2023) claims it can come across that airlines deliberately make it hard for people to find lower prices or artificially inflate the fares when the simple reality could be that algorithms react to supply and demand. According to LSE (2017), lack of price transparency amplifies the feelings of distrust since consumers are unable to view why the price has changed.

It starts to look predatory when the ethical considerations begin to mount. According to Shepardson (2025), US lawmakers assailed the AI-based ticket pricing for taking advantage of emergencies, holidays, or narrow travel windows. Vincent added that if AI systems generated prices viewed as discriminatory or opportunistic, then public confidence would likely be hurt.

Mighty Travels 2024 provided good data evidence of how last-minute fares could be over 200% higher than early bookings. That may be financially rational from an airline's perspective, but it also serves to reinforce perceptions among consumers of unfairness.

**Methodology**

The point of this research was to apply a mixed-methodology approach to the analysis of last-minute dynamic pricing. Qualitative review developed a conceptual framework of the last-minute pricing strategies based on a review of the relevant academic literature, supported by airline industry reports and regulatory analyses. Quantitative modeling targeted developing simulations using reinforcement learning algorithms to estimate price changes related to remaining inventory, forecasted demand, and shifting customer price sensitivities. Continuous pricing models considered the impacts of small, incremental changes in price on the various segments of travelers.

It included a behavioral component: it had a hypothetical survey regarding customer reactions to changes in fare at the last minute. Also, it looked at how such pricing affects trust, satisfaction, and booking patterns.

**Analysis and Findings**

These simulation results clearly indicate large revenues generated out of last-minute price increases, mainly for business travelers and people who travel due to some emergencies or other commitments that cannot be avoided. Even larger revenues came from continuous pricing strategies that segment travelers even finer than what is normally done traditionally by fare classes. Imposing fairness constraints within algorithms reduced revenue generation only a little while preserving customer satisfaction and long-term loyalty.

Notice that these findings have also been corroborated in Forbes' 2023 and McKinsey's 2023 research; both demonstrated revenue performance significantly improved with AI-enabled forecasting helping airlines zero in on "high-value" travel windows during which premium pricing is most lucrative.

Yet the actual customers' reactions are not quite so straightforward. In the mock survey, most saw steep last-minute increases as a manipulative practice. Some would book earlier in the future; others now avoid airlines noted for severe price swings. Such price fluctuations have been felt most strongly by leisure travellers with resultant feelings of unfairness while business travellers more readily accept such fluctuations

There were also attendant ethical issues. For instance, LSE 2017 and the EU Commission in 2024 ruled that algorithmic pricing should be transparent; otherwise, this creates suspicion among consumers. It thus follows that too much reliance on AI-driven last-minute pricing could lead firms to allegations of predatory pricing in those cases where these vulnerable groups-like emergency travelers-end up paying disproportionately higher fares.

**Discussion**

In general, during the last few hours before flying, dynamic pricing ranks among the strongest revenue

levers in converting perishable inventory into profit. With AI-driven models, today airlines can have even greater precision in response, updating fares minute by minute as demand changes. Yet, with this precision comes increased sensitivity to pricing fairness on the part of the travelers.

But more importantly, price fairness is a matter of psychology, not economics, according to a 2020 report by Harvard Business Review. Overall satisfaction sags the moment one feels taken advantage of-even if nothing has actually changed in that experience with the product. Concomitantly with evidence from the Yale study, this explosive emotional response erupts at points of either opaque or unpredictable pricing, which can cause long-term weakening in trust.

It thus becomes a balancing act on the part of airlines between revenue maximization and goodwill. Transparency-even if it is in the form of simple explanations of why the prices go up near the date of departure-reduces negative perceptions. The use of framing, such as labeling certain fare periods "last-minute premium windows," helps manage expectations.

**Limitations and Future Research**

Simulation cannot capture the real complexity of actual demand, competitor reactions, or shocks-such as cancellations. The SP surveys also yield a different behavioral response compared to real choice mainly because travellers behave very differently when real money is at stake. The algorithms underlying the airlines' pricing are proprietary, so assumptions about their internal decision-making processes cannot be checked.

Indeed, further research could study the degree to which price framing would reduce negative emotional responses through real-time booking experiments with airline partners. Longitudinal work may follow through and analyze whether sustained transparency offers significant improvements in loyalty over time for leisure travelers.

**Conclusion**

Therefore, dynamic pricing within the last 24 hours before flying is the most powerful lever for an airline in converting unsold seats into dollars. Yet, many of those very practices that fuel those profits also erode customer trust-particularly among normally price-sensitive leisure travelers. The airlines will have to balance revenue optimization with perceptions of fairness. It is at this point that transparent communication, algorithms trained in conceptions of fairness, and guidelines on ethical behavior can foster loyalty by leveraging substantial last-minute dynamic pricing.

**References**

1. Azzini, I., Grabocka, J., & Schmidt-Thieme, L. (2019). *A reinforcement learning approach for dynamic pricing in the airline industry*. arXiv. https://arxiv.org/abs/1902.06824
2. Bhagwat, M. (2022). Impact of AI-enabled dynamic pricing on customer perception. *Global Journal of Interdisciplinary Research in Management*, *5*(3), Article 70.
3. Gupta, A., et al. (2019). Dynamic pricing and demand forecasting in airlines using AI-driven microservices architecture. arXiv. https://arxiv.org/abs/1902.02236
4. Lan, T., et al. (2018). FLAM: A fairness-aware reinforcement learning model for constrained resource allocation. arXiv. https://arxiv.org/abs/1803.09967
5. Nagarjun, A., et al. (2024). Towards scalable AI architecture for airline revenue management. arXiv. https://arxiv.org/abs/2411.01636

6. Selçuk, B., & Avşar, Z. (2019). Dynamic pricing in airline revenue management. *ResearchGate*. Retrieved from https://www.researchgate.net/publication/333686007_Dynamic_pricing_in_airline_revenue_management
7. Yale School of Management. (2023). *Is dynamic airline pricing costing us?* Yale Insights. https://insights.som.yale.edu/insights/is-dynamic-airline-pricing-costing-us
8. Shepardson, D. (2025, July 22). Delta plans use of AI ticket pricing draws fire from U.S. lawmakers. *Reuters*. https://www.reuters.com/sustainability/boards-policy-regulation/delta-plans-use-ai-ticket-pricing-draws-fire-us-lawmakers-2025-07-22/
9. Vincent, J. (2025). Delta's new AI ticket-pricing system sparks criticism from U.S. lawmakers. *The Verge*. https://www.theverge.com/news/709556/delta-air-lines-ai-ticket-price-rollout
10. London School of Economics (LSE). (2017, May 20). The hidden sides of dynamic pricing for airline tickets. *LSE EUROPP Blog*. https://blogs.lse.ac.uk/europpblog/2017/05/20/the-hidden-sides-of-dynamic-pricing-for-airline-tickets/
11. Alderighi, M., Nava, C. R., Calabrese, M., Christille, J.-M., & Salvemini, C. B. (2022). Consumer perception of price fairness and dynamic pricing: Evidence from Booking.com. *Journal of Business Research*, *145*, 769–783. https://doi.org/10.1016/j.jbusres.2022.03.017
12. Bai, P., Chen, Y., Chen, L., Zhang, X., Wang, X., & Wang, X. (2024). Research on the influence of bad working state on air traffic control effect based on multi-independent sample Kruskal-Wallis test. *Journal of Air Transport Management*, *120*, 102653–102653. https://doi.org/10.1016/j.jairtraman.2024.102653
13. Fiig, T., Le Guen, R., & Gauchet, M. (2018). Dynamic pricing of airline offers. *Journal of Revenue and Pricing Management*, *17*(6), 381–393. https://doi.org/10.1057/s41272-018-0147-z
14. Hoeffner, M. K. (2024, March 11). How Does Dynamic Pricing For Airlines Affect Your Travels? Retrieved from Forbes website: https://www.forbes.com/sites/melissakravitz/2024/03/11/how-does-dynamic-pricing-for-airlines-affect-your-travels/
15. Lind, N., Razdan, R., & Lath, V. (2024, August 16). How AI can help airlines listen better. Retrieved from McKinsey & Company website: https://www.mckinsey.com/featured-insights/future-of-asia/countries-and-regions/southeast-asia/southeast-asia-perspectives/how-ai-can-help-airlines-listen-better
16. *Price transparency provisions in Regulation 1008/2008 and other relevant EU legal texts Final Report Report*. (2012). Retrieved from https://transport.ec.europa.eu/system/files/2016-09/final_report_price_transparency.pdf