AI Generated Customised Pricing: Promises and Pitfalls

Janek Ratnatunga

Abstract

The potential benefits of AI-driven pricing are clear. By utilising detailed data analytics, industries like the airline industry can optimise their revenue streams, ensuring that each seat is priced according to real-time market conditions and individual willingness to pay. This not only maximises profitability but also allows for dynamic pricing strategies that can adapt to ever-changing consumer behaviours and external factors. However, as with any technological advancement, the deployment of AI in pricing strategies is not without its challenges. Concerns about privacy, data security, and potential bias in algorithmic decision-making must be addressed proactively. Industries experimenting with AI based targeted pricing must commit to ethical AI practices, ensuring that their systems are transparent and free from discrimination. This involves regular audits, updates, and the implementation of comprehensive compliance mechanisms that align with legal standards and consumer expectations. Moreover, transparency and consumer education are vital. For example, in the airline industry, passengers must be informed about how AI influences pricing and the benefits it brings to their travel experience. Clear communication can help mitigate concerns and foster trust, ensuring that consumers feel comfortable and confident in the airline's pricing practices. Finally, collaboration with regulatory bodies and industry groups will be essential in shaping the future landscape of AI-driven pricing. By working together, airlines, regulators, and technology providers can establish guidelines that protect consumers while allowing for continued innovation and growth.

This paper uses the pricing practises being tested in the airline industry to consider the promises and pitfalls of AI generated customised pricing.

Introduction

In recent years, artificial intelligence (AI) has emerged as a transformative force across various industries, offering the potential to revolutionise how businesses operate and engage with consumers. One such application of AI is in the realm of pricing strategies, where companies like Delta Air Lines are moving towards individualised pricing models to enhance profitability. This approach involves the use of AI to dynamically set prices based on a variety of factors, moving away from traditional static pricing models. While the potential for increased revenue and operational efficiency is significant, this strategy also raises concerns about privacy, fairness, and the ethical implications of such practices.

The Evolution of Airline Pricing Models

Historically, airlines have employed a variety of pricing strategies to optimise revenue, including dynamic pricing, where fares fluctuate based on demand, time of booking, and other variables. However, these models still relied on generalised data and assumptions about consumer behaviour. The advent of AI allows for a more granular approach, where prices can be tailored to individual passengers based on a comprehensive analysis of data points.

Delta Air Lines has been at the forefront of this shift towards AI-driven pricing. As part of a long-term strategy to boost profitability, Delta has implemented a pilot programme that uses AI to determine

3% of its fares, with plans to increase this to 20% by the end of the year. This approach, described as "amazingly favourable" by Delta, represents a significant departure from traditional pricing models. Delta's president, Glen Hauenstein, has emphasised the transformative potential of AI, likening it to a "super analyst" capable of continuously optimising price points in real time (Ivanova, 2025).

The partnership with *Fetcherr,* an Israeli company that specialises in AI-driven pricing solutions, underscores Delta's commitment to leveraging cutting-edge technology to refine its pricing strategies. Fetcherr's expertise in machine learning and data analytics enables Delta to simulate various pricing scenarios and identify the optimal price point for each passenger.

The Mechanics of AI-Driven Pricing

AI-driven pricing involves the use of machine learning algorithms to analyse vast amounts of data and identify patterns that inform pricing decisions (Dritsas and Trigka 2025). These algorithms consider a multitude of factors, including:

Historical Data: Analysis of past booking behaviours, fare trends, and seasonal fluctuations.

Consumer Behaviour: Insights into individual purchasing habits and preferences, often gleaned from online interactions and loyalty programmes.

Market Conditions*:* Real-time analysis of supply and demand dynamics, competitor pricing, and government regulation.

Demographic Information*:* Data on a passenger's location, travel history, and other personal details that might influence their willingness to pay.

External Factors*:* Consideration of macroeconomic variables, fuel prices, and geopolitical events that could impact travel demand.
By synthesising these data points, AI systems can set individualised prices that reflect a passenger's perceived value of the flight, maximising revenue for the airline while potentially offering personalised discounts to encourage bookings.

Advantages of AI-Driven Pricing for Airlines

The implementation of AI-driven pricing models offers several advantages for airlines:

Revenue Optimisation*:* By tailoring prices to individual passengers, airlines can maximise revenue per seat, charging higher prices to those willing to pay more while filling empty seats with discounted fares for price-sensitive travellers.

Increased Efficiency*:* AI systems operate continuously, providing real-time pricing adjustments that human analysts cannot match. This leads to more efficient and responsive pricing strategies.

Enhanced Customer Insights*:* The data-driven nature of AI allows airlines to gain deeper insights into customer preferences and behaviours, inform broader business strategies, and enhance service offerings.

Competitive Advantage*:* Early adopters of AI-driven pricing can gain a competitive edge by offering more precise pricing, potentially capturing market share from competitors relying on traditional pricing strategies.

Case Studies and Examples

To illustrate the impact and potential of AI-driven pricing in the airline industry, consider the following hypothetical examples:

Case Study: *Business Traveller*: A frequent business traveller is booking a last-minute flight. The AI system recognises that the traveller is less price-sensitive due to the urgency and offers a price slightly higher than the average for that route. However, it also offers an upgrade to business class at a discounted rate, knowing that the traveller values comfort during flights. This results in increased customer satisfaction while maximising airline revenue.

Case Study: *Family Vacation*: A family planning a vacation months in advance is looking for the best deals. The AI system detects their price sensitivity and offers competitive fares if booked early, with options for bundled services like baggage and in-flight meals at a discount. This incentivizes early booking, ensuring the airline fills seats well in advance while providing value to the family.

Case Study: *Student Traveller*: A student looking for an affordable flight to return home during a holiday period encounters a higher-than-average fare due to peak demand. However, the AI system, recognising the student's previous searches and financial constraints, offers a limited-time discount as an incentive to book immediately, balancing affordable travel with demand management.

AI-Driven Individualised Pricing in Other Industries

AI-driven, individualised pricing is gaining traction across various industries, beyond airlines. Here are five industries that are utilising AI to customise prices for individual consumers:

Online retailing (e-commerce): Online retailers use AI to analyse customer data, such as browsing history, purchase patterns, and demographic information, to set personalised prices or offer targeted discounts. For example, *Amazon* employs complex algorithms to adjust prices in real time based on factors like competitor pricing, demand, and individual consumer behaviour, ensuring competitive pricing while maximising profits (Tiutiu and Dabija, 2023).

Hospitality: Hotels and other accommodation providers use AI to dynamically adjust room rates based on factors such as booking time, customer loyalty status, and even weather conditions. For example, *Marriott International* uses AI to optimise room rates across its portfolio, taking into account demand forecasts, local events, and customer preferences to offer tailored pricing (Zahidi et al., 2024).

Ridesharing: Companies like *Uber* and *Lyft* use AI to implement surge pricing, where fares increase in response to higher demand. Additionally, they analyse user data to offer personalised fare estimates and discounts. Uber's pricing model adjusts fares based on real-time demand and supply data while also considering user history and location to offer personalised promotions or discounts (Yaiprasert and Hidayanto, 2023).

Retail: Brick-and-mortar and online retailers use AI to customise pricing and promotions based on individual shoppers' data, including purchase history and loyalty programme activity. For example, the department store Target uses AI to personalise promotions for customers based on their shopping habits, offering unique discounts and recommendations to increase sales and customer loyalty (Kumar, 2024).

Telecommunications: Telecom companies use AI to offer customised pricing plans and promotions based on customer usage patterns, contract histories, and competitive offers. For example, in the USA, the telephone company *Verizon* employs AI to analyse customer data and offer personalised

plans and discounts, aiming to retain customers and attract new ones by catering to their specific usage needs and preferences.

These industries leverage AI to enhance their pricing strategies, offering personalised experiences that improve customer satisfaction and loyalty while optimising revenue. As AI technology continues to advance, the potential for individualised pricing will likely expand to even more sectors.

Concerns and Ethical Implications of using AI for Targeted Pricing

While the benefits of AI-driven pricing are clear, the approach also raises significant concerns. The collection and analysis of personal data required for individualised pricing can raise *privacy issues*. The extent of data used to determine prices may unnerve passengers. Concerns about *fairness and discrimination* can also arise. The use of demographic and behavioural data in pricing decisions can unintentionally lead to discriminatory practices. For example, if algorithms use data that correlates with protected characteristics (like postcodes that might indicate race or socioeconomic status), it could result in biased pricing.

There is also the issue of *transparency:* the opacity of AI algorithms makes it difficult for consumers to understand how prices are determined, leading to perceptions of unfairness and potential legal challenges. Furthermore, as personalised pricing becomes more prevalent, consumers may become suspicious of pricing practices, leading to a loss of trust in industries that use them extensively (e.g., airlines and accommodation booking platforms).

Regulatory and Legal Considerations

The shift towards AI-driven pricing places industries like the airline industry in a *legal grey area*, as current regulations may not fully address the nuances of algorithmic pricing. While differential pricing is not inherently illegal, regulations prohibit charging different rates based on protected characteristics such as *race, gender,* or *ethnicity*. As AI-driven pricing relies on a complex web of data, ensuring compliance with these regulations is critical. Airlines must implement robust safeguards to ensure their pricing models do not inadvertently discriminate against certain groups.

Therefore, as AI-driven pricing becomes more widespread, regulatory bodies may increase scrutiny on how airlines set prices. This could lead to new guidelines or laws aimed at protecting consumers from unfair or discriminatory practices.

Consequently, airlines need to develop and maintain *compliance mechanisms* that can audit and verify that their AI pricing models adhere to legal standards. This might involve regular reviews of the algorithms and the data they use, ensuring they do not rely on biased or inadequate data sets. Further, regulators might require airlines to be more *transparent* about how prices are determined. This could involve providing consumers with explanations or breakdowns of how their fare was calculated, potentially increasing consumer trust.

To mitigate risks, airlines and their AI partners must prioritise the development of ethical AI platfo. This includes building models that are explainable, fair, and accountable, ensuring they do not perpetuate existing biases or create new ones.

The Impact on Consumers of AI-Driven Pricing

For consumers, AI-driven pricing presents both potential benefits and drawbacks: On the positive side, AI-driven pricing can result in personalised offers and discounts for consumers who might not

otherwise consider travel. By understanding individual price sensitivity, airlines can offer fares that match a passenger's willingness to pay.

Conversely, consumers who are perceived to have a higher willingness to pay might face higher prices than they would under traditional pricing models. This could be particularly frustrating for frequent travellers or those who book flights at the last minute.

As consumers become more aware of AI pricing strategies, they may adopt new tactics to secure better deals. This could include using VPNs to mask their location or clearing cookies to avoid personalised pricing based on browsing history.

The biggest issue is an erosion of trust. If consumers feel that AI-driven pricing is unfair or opaque, it could lead to an erosion of trust in airlines, prompting them to seek alternatives or pressuring airlines to revert to more traditional pricing methods.

Balancing Innovation with Ethical Considerations

While AI-driven pricing offers numerous benefits, it is crucial for airlines to balance innovation with ethical considerations and consumer protection. As this technology becomes more sophisticated, airlines must address several key areas:

***Data Privacy**:* Ensuring robust data privacy measures is paramount. Airlines must be transparent about what data is collected, how it is used, and provide consumers with control over their personal information.

***Fairness and Non-Discrimination**:* Airlines must ensure their AI systems do not perpetuate biases or result in unfair treatment of certain consumer groups. This requires ongoing monitoring and adjustment of algorithms to prevent discriminatory outcomes.

***Transparency and Consumer Education**:* To foster trust, airlines should strive for transparency in how prices are determined and educate consumers about AI-driven pricing. This could involve clear communication about the factors that influence pricing and the benefits of personalised offers.

***Regulatory Collaboration**:* Engaging with regulators to establish best practices and standards for AI-driven pricing is crucial. By collaborating with government bodies and industry groups, airlines can help shape policies that protect consumers while allowing for technological advancement.

***Ethical AI Development**:* Airlines and their technology partners should commit to ethical AI development. This includes ensuring that AI models are designed to be transparent, accountable, and free from bias, with regular audits and updates to maintain ethical standards.

The Future of AI in the Airline Industry

As Delta and other airlines continue to explore and implement AI-driven pricing, the technology is likely to evolve in several key-ways, impacting not only pricing but also various other aspects of airline operations and customer service. Some likely evolutionary directions that could evolve are:

***Wider Industry Adoption**:* As Delta's initial results with AI-driven pricing prove favourable, more airlines are expected to adopt similar technologies. This could lead to a widespread shift across the industry, with dynamic, individualised pricing becoming the norm rather than the exception.

***Integration with Other Technologies**:* AI-driven pricing could be integrated with other emerging technologies, such as *blockchain* for secure and transparent transactions or augmented reality for

enhanced customer engagement during the booking process. This could further personalise and streamline the travel experience.

***Enhanced Customer Experience**:* Beyond pricing, AI can be used to enhance the overall customer experience. For instance, predictive analytics could be employed to anticipate customer needs and preferences, offering tailored recommendations for flight upgrades, in-flight services, or loyalty rewards.

Operational Efficiency: AI's role in optimising operational efficiency could expand beyond pricing to include areas such as route planning, fuel management, and crew scheduling. By analysing data patterns, AI can help airlines reduce costs and improve punctuality, contributing to a more reliable and cost-effective operation.

Continuous Learning and Improvement: AI systems have the ability to learn and improve over time. As more data is collected, algorithms can become more accurate in predicting consumer behaviour and setting optimal price points. This continuous learning loop will enable airlines to refine their pricing strategies continually.

Conclusion

The adoption of AI-driven pricing by airlines like Delta represents a significant shift in how airfares are determined and reflects broader trends in the use of technology to enhance business operations. While the potential benefits for revenue optimisation and customer experience are substantial, airlines must navigate complex ethical, legal, and consumer trust issues to implement these systems effectively.

By prioritising transparency, fairness, and collaboration with regulators, airlines can harness the power of AI to transform their pricing strategies while maintaining consumer confidence and ensuring equitable passenger treatment. As the industry continues to evolve, the lessons learned from early adopters like Delta will be invaluable in shaping the future of air travel and pricing models.

The journey towards AI-driven pricing in the airline industry is a microcosm of the broader digital transformation taking place across sectors. Delta's pioneering efforts in this space highlight both the opportunities and challenges of leveraging advanced technologies to redefine traditional business models.

As the airline industry continues to navigate this complex terrain, the experiences and insights gained from early adopters like Delta will be invaluable. Their journey serves as a roadmap for other airlines looking to implement AI-driven pricing, highlighting the importance of balancing technological advancement with ethical considerations and consumer protection.

In summary, the evolution of pricing strategies in the airline industry exemplifies the transformative power of AI. While challenges remain, the potential for enhanced efficiency, personalised customer experiences, and increased revenue is significant. By addressing these challenges head-on and prioritising ethical practices, airlines can successfully integrate AI into their pricing models, paving the way for a new era of air travel that is both innovative and consumer friendly.

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