Flight Price of Bangladesh Analysis

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Executive Summary

This report analyzes flight pricing data from Bangladesh's aviation sector to identify actionable strategies for maximizing profitability. Key insights include:

- **Winter Holidays** drive a 20–30% price surge, while Regular Season prices remain stable.
- **First Class** tickets yield 5x higher price than Economy Class.
- The **Saidpur–Bangkok** route has the highest profit margin (60% under current cost assumptions).
- **Booking platforms** (website, agents, OTAs) do not significantly affect base fares.

Recommendations:

- Implement **dynamic pricing** during peak seasons.
- Prioritize **upselling to premium classes** and optimize fleet allocation.

Introduction

Objective: To determine how Bangladesh-based airlines can adjust ticket pricing strategies to improve revenue and operational efficiency.

Dataset: Analysis using public dataset form Kaggle: Flight Price Dataset of Bangladesh. This dataset include: 57000 rows with 17 attributes

Scope:

- Data covers domestic and international routes (2025–2026).
- Focus on seasonal trends, ticket classes, aircraft types, and booking channels.

Methodology

1. **Data Preprocessing**

(Feature selection, Handling missing data & duplicates, Data type adjustment)

2. **Exploratory Data Analysis (EDA)**

(Feature engineering, Seasonality, booking timing, class, aircraft type, route & source)

3. **Statistical Validation**

(Normality (Shapiro-Wilk), Variance homogeneity (Levene's), Correlation (Spearman's), Group differences (Kruskal-Wallis & Dunn's post-hoc))

4. **Key Insights**

Findings & Implications

Average Fare Changes

Seasonal Price Trends

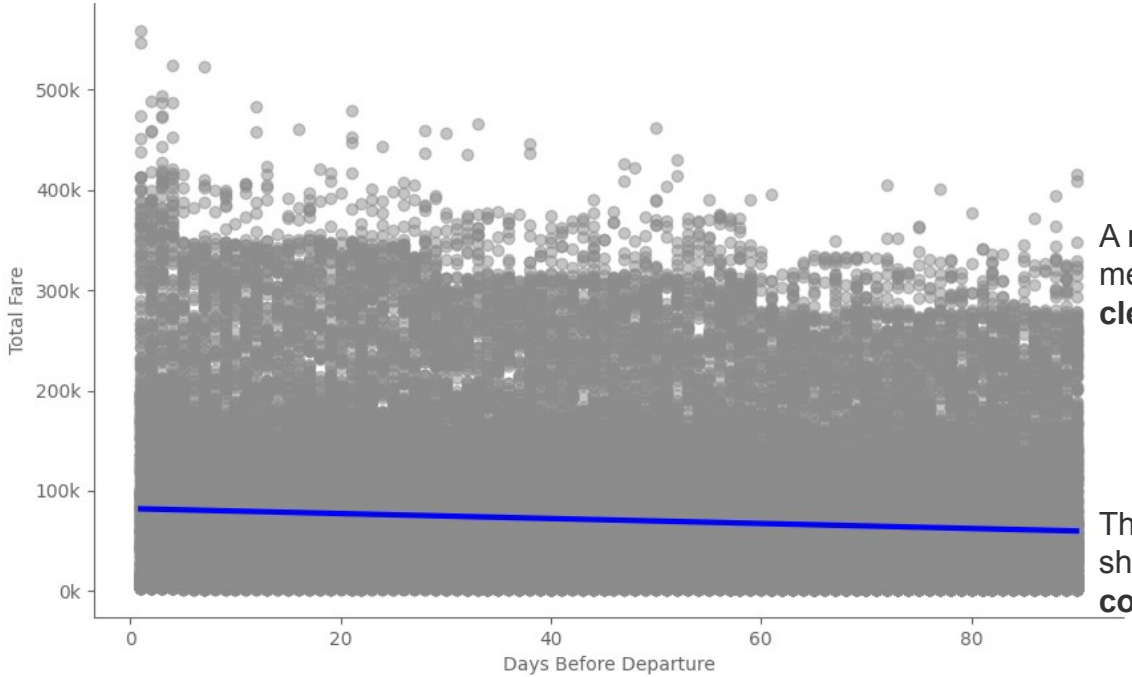
Findings:

1. **Winter Holidays** exhibit the highest ticket prices, indicating strong demand during this period. This presents a prime opportunity to maximize revenue through increased margins.
2. **Regular Season** maintains stable pricing with no extreme fluctuations, making it a suitable phase for implementing controlled dynamic pricing strategies without significant risk.

Implications:

1. For **Winter Holidays**: Capitalize on peak demand by optimizing pricing strategies to enhance profitability, such as implementing premium pricing or limited-time promotions.
2. For **Regular Season**: Introduce gradual dynamic pricing adjustments to maintain competitiveness and steady revenue, avoiding drastic changes that could deter customers.

Relationship between Days Before Departure and Ticket Prices



A random pattern means there is **no clear relationship**

The straight line shows a **very weak correlation** (-0.07)

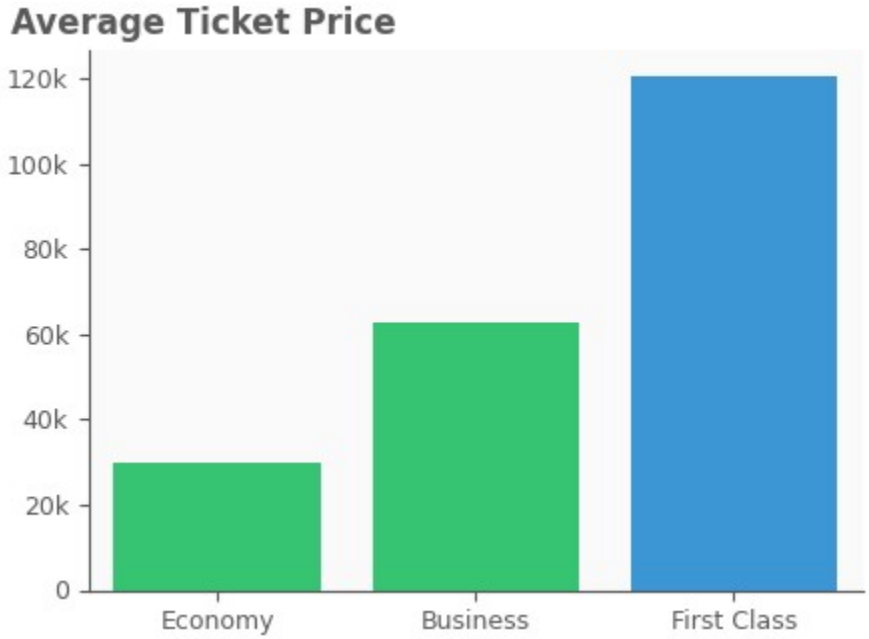
Impact of Booking Timing

Findings:

A statistical correlation between Days Before Departure and Total Fare (ticket price), the effect size is negligible. This means that the timing of ticket purchases relative to the departure date does **not significantly influence price variations**.

Implications:

1. **No Need for Time-Based Dynamic Pricing,** Since the impact is minimal, strategies like "the closer to departure, the higher the price" lack justification. Companies can save effort by avoiding price optimization models based on this factor.
2. **Re-evaluate Time-Based Segmentation**,If early-bird discounts or last-minute pricing premiums exist, these policies should be reassessed, as they contribute little to revenue.



First Class 2x more expensive than Business and 5x more than Economy

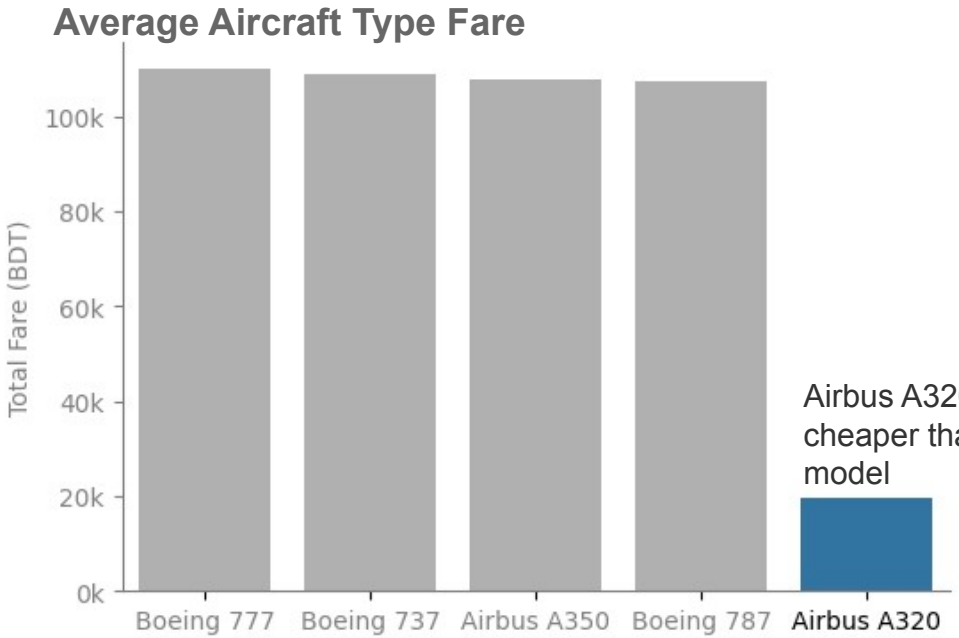
Class-Based Pricing Differences

Findings:

1. **Price Disparity Between Classes**: First Class tickets are priced at 2x Business Class and 5x Economy, indicating a significant markup that reflects perceived value differentiation.
2. **Market Segmentation Potential**: The wide pricing gap suggests that airlines can effectively segment customers based on willingness to pay, targeting premium travelers for higher-margin cabins.
3. **Upselling Opportunity**: The steep price increments (especially from Economy to First Class) highlight an opportunity to aggressively upsell customers to higher classes through tiered pricing strategies or bundled perks.

Implications:

1. **Dynamic Pricing Adjustments**: Airlines can optimize revenue by dynamically adjusting First and Business Class prices based on demand, ensuring premium cabins remain profitable without excessive discounting.
2. **Enhanced Tiered Offerings**: Introducing intermediate tiers (e.g., "Premium Economy") could bridge the gap between Economy and Business, capturing more customers at mid-range price points.
3. **Targeted Upselling Campaigns**: Leveraging data on customer spending habits, airlines can personalize offers (e.g., paid upgrades, loyalty rewards) to encourage upgrades, maximizing per-passenger revenue.
4. **Value Perception Management**: Maintaining the 2x/5x ratio requires justifying the premium (e.g., exclusive services, luxury amenities) to prevent customer resistance to steep price jumps


Average Aircraft Type Fare
Total Fare (BDT)
100k
80k
60k
40k
20k
0k
Boeing 777
Boeing 737
Airbus A350
Boeing 787
Airbus A320
Airbus A320 fares cheaper than others model

The Airbus A320 is cheaper because, out of the total 23.970 flights, it is primarily used for short-distance flights, specifically those lasting **1 to 3 hours**.

Aircraft Type Influence

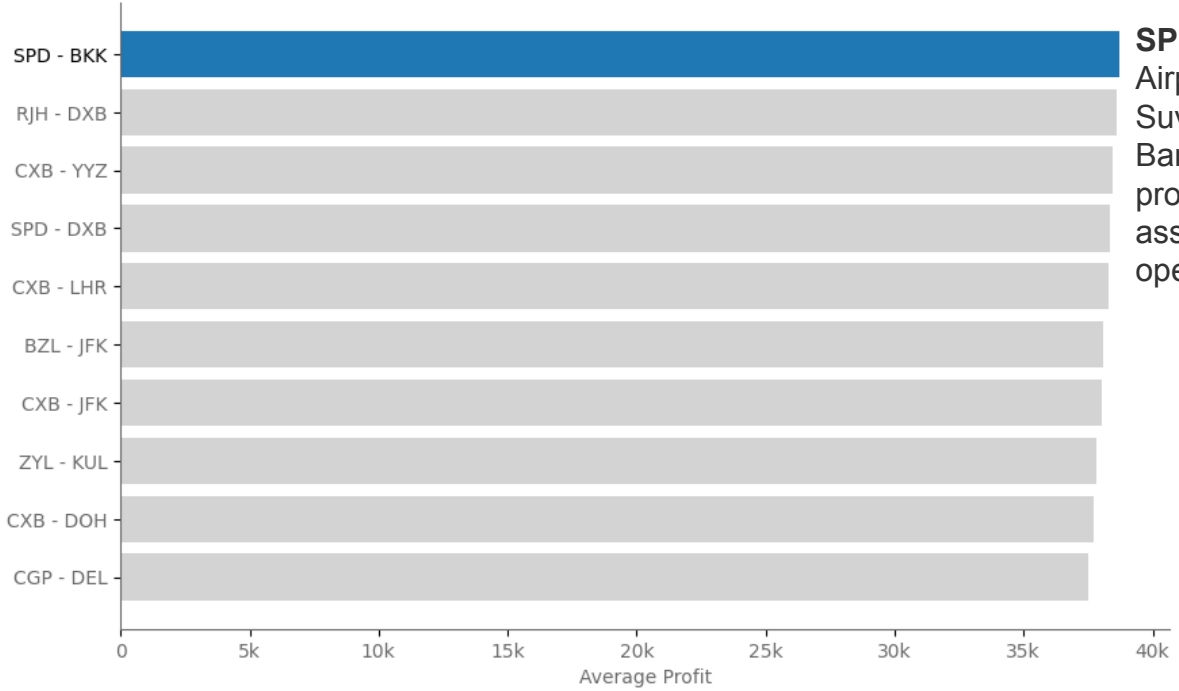
Findings:

1. **Competitive Pricing of Airbus A320 for Short-Haul Flights**, The Airbus A320, used for flights with a duration of 1-3 hours, demonstrates more competitive pricing compared to other aircraft in the same category. This suggests that the A320 may have cost advantages in terms of fuel efficiency, maintenance, or capacity utilization.
2. **Potential for Fleet and Route Optimization**, The pricing competitiveness of the A320 indicates that airlines could improve profitability by strategically deploying this aircraft on high-demand short-haul routes. This may involve reallocating A320s to replace less efficient aircraft or adjusting flight frequencies to maximize revenue.

Implications:

1. **Profitability Improvement through Fleet Adjustment**, Airlines should consider increasing the proportion of A320s in their short-haul fleet to capitalize on its cost efficiency. This could reduce operational costs per seat and enhance profit margins.
2. **Route Optimization for Revenue Maximization**, Routes with high passenger demand and a flight duration of 1-3 hours should be prioritized for A320 deployment. By aligning aircraft capacity with route demand, airlines can minimize empty seats and optimize ticket pricing dynamically.

Top 10 Highest Average Profit



SPD – BKK, Saidepur Airport (DAC) to Suvarnabhumi (BKK), Bangkok is the highest profit margin with an assumed 60% operational cost

Most Profitable Route

Findings:

1. **Most Profitable Route**: DAC (Saidepur Airport) to BKK (Suvarnabhumi, Bangkok) generates the highest profit margin.
2. **Assumed Cost Structure**: Operational costs account for 60% of revenue, leaving a 40% profit margin.
3. **Opportunity**: Since this route is highly profitable, there is room to maximize revenue further through pricing strategies or increased flight frequency.

Implications:

1. **Promotions:**

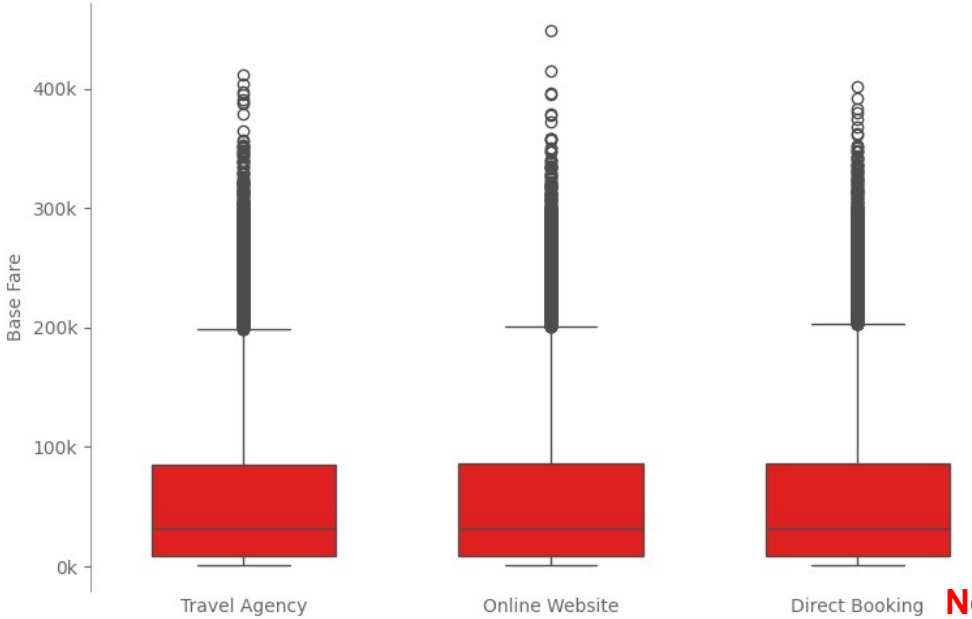
- Offer limited-time discounts or bundled deals to attract more passengers without significantly reducing profit margins.
- Target high-demand seasons (e.g., holidays) with dynamic pricing to balance demand and profitability.

2. **Flight Frequency Optimization**:

- Increase flight frequency if demand data shows consistent high load factors (e.g., >80% seat occupancy).
- Adjust pricing based on peak/off-peak times—higher prices during peak demand, lower prices to fill seats during slower periods.

3. **Competitive Pricing Analysis**: Introduce tiered pricing (e.g., economy, premium economy) to cater to different customer segments.

Base Fare Distribution to Booking Source



No Significant Effect

(Kruskal-Wallis test, α = 0.05; non-significant.)

Booking Source Analysis

Findings:

Booking Source Does Not Influence Base Fare: Analysis shows that the booking platform (channel) has no significant impact on the base fare price. This means prices remain consistent regardless of whether customers book through a website, app, and travel agent

Discussion & Conclusion

Discussion

Limitations:

- This is **imitation** data that is made as similar as possible to the real thing
- Data Limited to 2025 -2026
- There is no data on external factors

Conclusion

1. Seasonal Trends:
- Winter Holidays: Highest prices → Leverage premium pricing or exclusive promotions.
- Regular Season: Stable prices → Implement gradual dynamic pricing to maintain competitiveness without drastic fluctuations.
2. Booking Timing:
- Negligible Impact: Avoid time-based pricing strategies (e.g., "early-bird discounts" or last-minute price hikes). Focus on more impactful factors.
3. Flight Classes:
- Premium Segmentation: Maintain the 2x (First vs. Business) and 5x (First vs. Economy) price gaps by emphasizing exclusive value propositions.
- Aggressive Upselling: Use price disparities to promote upgrades or bundled perks (e.g., luggage, lounge access).
4. Aircraft Type:
- Prioritize Airbus A320: Deploy for short-haul routes (1–3 hours) to maximize cost efficiency and profit margins.
5. Most Profitable Route (DAC - BKK (Bangkok):
- Increase flight frequency if demand is consistently high.
- Apply tiered pricing (economy, premium) and seasonal promotions.
6. Booking Source:
- Consistent Pricing Across Platforms: Avoid price discrimination between channels; focus on service quality or non-price promotions.

Disclaimer

This report is still being refined, your feedback means a lot!

Full Project

https://taufikhidayah.my.id/project_3

Data Source

https://www.kaggle.com/datasets/mahatiratusher/flight-price-dataset-of-bangladesh

Analysis code

https://taufikhidayah.my.id/code_3

THANKS!

Do you have any questions?

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