

## Chapter 62

# An Empirical Analysis of Delhi – Mumbai Sector Flight Fares

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### ABSTRACT

*Revenue management is the art and science of making the right product or service available to the right customer at the right time through the right channel at right price. Dynamic pricing plays a crucial role in the implementation of revenue management in passenger airline reservation system. The liberalization of domestic aviation sector in countries such as India has seen many new market entrants resulting in higher competition while setting the flight fares. The variation in flight fares of Delhi – Mumbai passenger airline sector is studied for a departure date based on the number of days in advance the booking is made. Descriptive and inferential statistical analyses of the fares reveal the impact of airlines, booking channels and departure time windows on the pricing decisions of flight fares. The analysis framework of this study could be used as a basis for a continuous tracking study of flight fares by airline revenue managers to help them arrive at the right fare for each fare class of a flight.*

### INTRODUCTION

The ability to balance additional revenue generation and capacity utilization through revenue management principles has found its applications both in travel and hospitality industries. Revenue management is the art and science of providing the right service to the right customer at the right time at the right price and through the right channel. Passenger airline reservation system is a classic example for revenue management where one could book a seat at a lower fare or at a higher fare based on the number of days in advance the booking is made in reference to the departure date of the flight. Airlines create fare classes for ensuring increased revenue generation by imposing restrictions on the number of seats to be sold at discounted and premium fares. The highly competitive nature of this industry along with the fact that a ticket could now be booked by anyone from any third-party travel websites are adding more dimensions to the revenue management system.

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In most developing countries such as India, revenue management practice is restricted to just few sectors as people are generally very sensitive to prices. Most of the hotels in India except for upscale chain display tariffs that do not change for the entire year. However, the hotels near tourist attractions practice variable pricing based on whether it is season or off-season. The private bus players in India have an unorganized revenue management system. During weekdays, passengers are arbitrarily offered discounts to fill up the seats while on weekends there is an arbitrary premium on the base fare. The Indian Railways, one of the largest in the world, is the backbone of country's transportation. The passenger train fares are subsidized to make it as an affordable means of transportation for the common man. One of the major changes in the Railway reservation system was the introduction of 'Tatkal' system where there is a fixed known premium to the base fare and the booking window opens just two days before departure. More recently, Indian Railways has introduced dynamic pricing in the Tatkal system where the premium amount dynamically increases with the reduction of number of seats (Verma, 2014).

The pre-liberalization era in Indian aviation sector had only two airlines, Air India and Indian Airlines, both national carriers. Air India served international routes while Indian Airlines served domestic routes. The liberalization of domestic routes in 1989 saw many new private entrants and by 1995-96, more than 40% of the domestic passengers were carried by private airlines (Hooper, 1997). However, the increase in travel demand over the years saw a stiff competition between airlines. Bhaumik (2002) used a game theoretic approach to analyze the competitive strategies available to a domestic airline in India when other private airlines enter the competition due to liberalization. O'Connell and Williams (2006) analyzed how the liberalization of domestic air sector in India has transformed the supply of domestic airlines. Their study also included a survey to understand travelers' individual choice behavior between airline carriers.

The concept of low cost carriers is catching up in many developing countries such as India and is posing a threat to full-fledged services as the fares are highly competitive. To maintain market share, many full-fledged service providers have launched a low-cost carrier, where the revenue from the full-fledged service is used to subsidize the low-cost carrier flights. Pearson and Merkert (2014) came up with key reasons for success and failure for an airline-within-airline model to work and determined the necessary criteria for an airline to create a successful low-cost subsidiary by analyzing existing literature and airline data. The growing number of booking channels for a flight through third-party travel booking websites has added a newer dimension to competition. Airlines use promotions to evade competition and deciding the timing of promotion could be a challenge. Mumbower et al. (2014) estimated price elasticities based on online fares and seat map displays, which could be used to design the timings of promotions.

Determining the number of fare classes and fixing the price for each fare class is the heart of airline revenue management. Li (2001) demonstrated that the optimal policy in a revenue management system would have at most three price points. However, with increased competition and factors other than just fares are making the pricing problem very complicated. Obeng (2008) analyzed airline fares in a medium-size travel market and developed fixed effect models of airline fares that take into account departure times, flight time, layover time, number of discounted seats and plane capacity. Bilotkach et al. (2010) analyzed the New York to London route and found that airlines employ different pricing strategies and as departure date approaches, fares increase at an accelerated rate. Obeng and Sakano (2012) classified fare discount-discount seat strategies used by airlines as part of yield management and claimed that they are a function of demand elasticity and plane capacity.

Setting the right price for each fare class of a flight and updating it dynamically could actually decide the effectiveness of an airline revenue management system. Burger and Fuchs (2004) predicted that

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