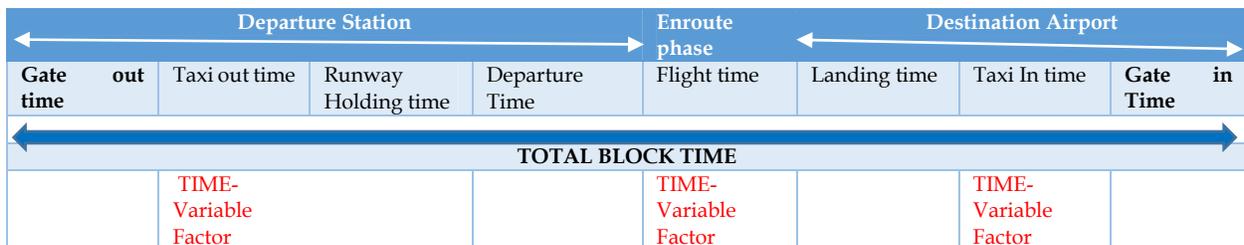


MULTIPLE CITY PAIR SLOT ALLOCATION TO AIRLINES WITH RATIONALIZED BLOCK TIME

Background: India has been experiencing exponential growth of air traffic. Domestic air traffic movements have seen a consistent growth rate of 15% or above since the last couple of years. All the domestic airlines have plans to augment the fleet substantially in the next five years. It is estimated that the air traffic will almost double in the next five years, propelling India as the third largest aviation market. The growth of aviation requires a continued up gradation and improvement in the infrastructure. However the creation of infrastructure has a long gestation period and therefore, airport capacity and air traffic demand needs to be optimally balanced to minimize operational inefficiencies such as serious congestion at Metro Airports/airspace, avoidable aviation fuel burning and carbon emission, etc.

Practice in Vogue: One method of strategic planning of allocation of airport resources is airport departure and arrival slot allocation to various airlines. The process of slot allocation is carried out twice in a year, in the months of October [Winter Schedule] and March [Summer Schedule] each year. For each capacity constraint airport, also called as coordinated airport, based on the specific capacity bottlenecks, the annual and hourly declared capacity have been established in terms of available slots. Each airline needs a slot to operate an air service at the coordinated airport. The coordinator, who is appointed by Government, allocates the slots each season to the airlines in an independent, neutral and non-discriminatory way. The detailed process of slot allocation is available in the “Guidelines for Slot Allocation (revised May 2013) “published by Ministry of Civil aviation, Government of India.

Problem Statement: Presently, the slot allocation process allocates departure slot at an airport. The airline then requests an arrival slot after due consideration of flying time, at the destination airport. If the arrival slot is not available, the next available arrival slot is allotted, thereby adding an artificial “balloon” to the total flight time. The scenario is as shown below;



Slot allocation is done with respect to Gate out Time and Gate in Time for the respective City pair. The variable factors as shown in the last row are adjusted accordingly to meet the requirements of Gate out Time and Gate in Time (Total Block Time). However, the extra padding or buffer time which the airlines add, is based on historic data and not realistic. This results into uneven distribution of air traffic between congested airports.

Seeking for an innovative solution: To carry out the data analytics and to arrive at an innovative solution in the development of an algorithm for slot allocation between two/multiple congested city airports with rationalized block timings.

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