TRAN 274 – SAMPLE Case Analysis

Robust Airline Schedule Planning

I. Summary

The construction of timetables for an airline is composed of aircraft and crew (Dunbar, Froyland, and Wu, 2012). Crew cost is the biggest controllable expenditure for an airline, and effective crew assignment is a very important aspect of planning (Gopalakrishnan and Johnson, 2005). Wensveen (2011) defines "airline scheduling as the art of designing system wide flight patterns that provide optimum public service, in both quantity and quality, consistent with the financial health of the carrier" (p. 360). An airline's decision to offer certain flights is dependent on market demand forecasts, available aircraft operating characteristics, available work force, regulations, and the behaviour of competing airlines (Bazargan, 2010, p.31).

II. Problem

The problem is that the airline scheduling process in its entirety is very complex (Dunbar, et al., 2012). Flight scheduling is the starting point for all other airline planning and operations (Bazargan, 2010, p.31).

III. Significance of the Problem

The significance of the problem is that a vast number of rules and regulations associated with airports, aircraft, and flight crews combined with the global expanse of air traffic networks, require airline scheduling to be broken into manageable, traceable pieces (Dunbar, et al., 2012). In 2006, the North American airline industry experienced a total of 116.5 million minutes of delay, totalling a $7.7 billion increase in operating costs (Dunbar, et al., 2012).

IV. Development of Alternative Actions

Alternative Action 1. Airline and railway mode of transportation industries to form an intermodal alliance (Iatrou and Oretti, 2007, p.88).

Advantages. Access to airports through dedicated public transport could reduce problems associated with road traffic and air quality around airports (Iatrou & Oretti, 2007, pp. 88-89). Iatrou & Oretti (2007) suggest an intermodal alliance near airports for better access to city centers (p.89).

Disadvantages. The absence of interconnectivity, where air and rail industry have different infrastructures with common rules and facilities (Iatrou & Oretti, 2007, p.89). High-speed rail links to airports are not profitable in the short-term (Iatrou & Oretti, 2007, p.90).

Alternative Action 2: Increase flight schedules by extra minutes to boost on-time performance (McCartney, 2012).

Advantages. Passengers would spend less time on aircraft (McCartney, 2012). Airlines will have fewer planes sitting at terminal gates awaiting connecting passengers (McCartney, 2012).

Disadvantages. An aircraft departing late for a flight will run late for the rest of its flight pattern for that day, and delays can grow exponentially (McCartney, 2012). A flight off the gate late may find a long line of planes waiting to take off, or may find that the gate is no longer available at its destination resulting in an extended wait period (McCartney, 2012).

V. Recommendation

Sequential airline schedule planning of aircraft routing and flight crew-pairing decisions are to be made simultaneously. Sequential airline schedule planning may maximize profit by minimizing flight crew and aircraft operating costs. If airline schedule planning increased utilization of one resource, it would result in removal of slack, providing flight crews with less time to connect between their flight legs, and aircraft would have a reduced time on ground between flying.

References

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