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Evaluation of level of service for transfer passengers at airports

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Abstract

Transfer passengers have quite different needs than those of originating and terminating passengers. For example, they do not make use of airport access roads. Other facilities may or may not be used depending on the type of transfers, the airport's operational configuration and the airline services. Despite the increasing importance of transfer passengers for airport operations, little research has been done to determine their needs. This study analyses transfer passengers' views on the quality of services at the terminal building, using data collected at Bandaranaike International Airport in Sri Lanka, which aspires along with the airline 'Sri Lankan' to be a major hub for South Asia. Regression analysis was used to identify the transfer passenger facilities and services with the strongest effect on the overall perception of level of service. The application of regression analysis to the data collected at Bandaranaike International Airport shows that the courtesy of the security check staff and the quality of the Flight Information Display are among the most valued by transfer passengers at that airport.

Keywords: Transfer passengers; Airports; Level of service; Linear regression

1. Introduction

The trends of de-regulation and privatisation in air transportation over the past three decades have led to increasingly globalised hub-and-spoke networks of airports. In the US, the concept of hub-and-spoke operations has been applied for a number of decades in the domestic market. In some American airports, up to 70% of the passenger traffic is comprised of direct transfers between flights (de Neufville and Odoni, 2003). This trend has also been observed in many large international airports, which serve as hubs for transfers between international flights. A few examples of such large international hubs include London/Heathrow, Paris/Charles de Gaulle, Amsterdam/Schiphol, Frankfurt, Singapore and Tokyo/Narita.

The needs of transfer passengers are quite different from those of originating and terminating passengers. For example, transfers do not make use of airport access roads. Other facilities may or may not be used depending on the type of transfer, the airport's operational configuration, and the services provided by the airline. Typically, intra-airline domestic transfers—i.e. passengers transferring directly from one domestic flight to another domestic flight operated by the same airline—are not required to leave the boarding area and therefore will not make use of check-in counters, security checkpoints and baggage claims. The same applies to intra-airline international transfers at several international hubs. In both cases, transfer passengers will travel directly between the arriving flight and the departing flight, though in many cases a security check is conducted to comply with local regulations for screening. Even continuing passengers on refuelling flights are made to disembark and be screened at many international airports. Some inter-airline transfers, as well as transfers between international and domestic flights, will most often require the passenger to leave the boarding area for processing and return for boarding, thus requiring an additional security check in between.

Despite the increasing importance of transfer passengers for airport operations, little research has been done to determine their needs. There seems to be a general consensus among airport planners that transfers should not be forced to walk long distances. Thus much of the

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existing body of research on transfers is focused on minimising walking distances. One reason for this is that short walking distances are not only convenient for passengers: they also allow for shorter connecting times, improving the efficiency of airline operations. Walking distance is certainly important for domestic hubs with very short connecting times, but its importance will decrease as connecting times increase. In this case, passengers will have discretionary time that will be spent at airport facilities and they will likely value their experience in those facilities more than domestic transfers.

Here we analyse factors that affect level of service for transfer passengers. Data from a survey carried at Bandaranaike International Airport is used. The coefficients from the regression analysis are used to approximate the relative value passengers give to the quality of their experience at the different airport facilities listed in the survey. Although the value of these coefficients is likely to change from airport to airport based on the mix of passengers that transfer, this study will provide important insight about the airport services and facilities that should receive attention from medium-sized airport operators.

2. Literature review

Most of the existing literature on air passenger level of service concerns originating and terminating passengers.[1] In many airports, these categories of passengers comprise the majority, and the major source of revenue for the airport and the airlines operating therein.

Very little literature exists on the specific needs of transfer passengers (Correia, 2004). Most of the existing literature focuses on minimisation of walking distances. Bandara and Wirasinghe (1992) evaluated several different configurations for the airport passenger building, so as to minimise the average walking distance weighted by the split between originating/terminating and transfer passengers. They showed that parallel piers, with longer piers located closer to the main processor, provide the best configuration for airports with higher transfer rates. Similarly, de Barros and Wirasinghe (2003) evaluated optimal terminal configurations and the optimal location of gates for the new large aircraft (NLA), also weighting the average walking distance by the transfer proportion. De Neufville et al. (2002) evaluated terminal configurations that can reduce passenger walking distances when airlines make use of intelligent gate assignment, i.e. when they purposely park aircraft with high transfer rates close together. They compared the distribution of walking distances for several different terminal shapes, concluding that midfield linear terminals are the best configuration for domestic airports with high transfer rates but no additional security check. In many cases, minimisation of walking distances may also be required to shorten connecting times and increase operational efficiency.

Other attempts have been made to quantify and classify factors that are important to transfer passengers. Dada and Wirasinghe (1999) developed a methodology to quantitatively evaluate passenger orientation at airport terminals. The methodology is useful to determine how easily passengers find their way at the terminal, and has been used to evaluate the level of service relative to orientation (Dada, 1997).

Defining the relative importance of individual terminal facilities for arriving and departing passengers was the object of the work by Correia et al. (2005, 2006). They developed a methodology for data collection and analysis of level of service at airports and used linear regression to correlate the ratings for individual facilities to the overall airport rating declared by passengers. In their work, the experiences at the curb and with orientation were found to have the greatest contribution to the overall airport rating given by originating passengers.

3. Methodology

For the evaluation of level of service for transfer passengers, this work has used the passenger responses to a questionnaire survey. The questionnaire included questions about several different facilities and services commonly used by transfer passengers. Passengers were asked to rate their experience at each facility and with each service. The ratings were classified into six categories, ranging from 1 (excellent) to 6 (very bad). The passengers were also asked to rate their overall experience at the airport.

Regression analysis was then used to correlate the transfer passengers' overall rating of the airport and the individual facility/service ratings. The objective of the regression analysis is to determine the relative importance of each facility/service to transfer passengers. That relative importance can be measured by the quantitative contribution their ratings make to the overall rating of the airport by the passenger. The results of the analysis can be used to define investment priorities when the airport is planning to build and/or renovate facilities for transfer passengers.

4. Case study: Bandaranaike International Airport

Bandaranaike International Airport (BIA) is the only international airport in Sri Lanka. This airport is located 32 km north of Colombo and caters for all international flights to the Island. In 1983, Airport and Aviation Services Limited (AASL) took over the management and operation of the airport as an appointed agent of the Government of Sri Lanka and has since then looked after its operational, maintenance, navigational and safety aspects. Subsequently, the traffic flow at BIA has shown a significant growth—Fig. 1—and the number of airlines carrying passengers and cargo started to increase. It is an international hub for

[1] For example see, Müller and Gosling (1991), Lemer (1992), Davis and Braaksma (1987), Yen (1995), Yen et al. (2001), Omer and Khan (1988), Ashford (1988), Ndoh and Ashford (1993), Seneviratne and Martel (1994), Caves and Pickard (2001), and Park (1999).