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Low cost carriers' destination selection using a Delphi method

Yu-Chun Chang[a,*], Chia-Jui Hsu[b], George Williams[c], Mei-Ling Pan[d]

[a]Department of Transportation and Navigation Science, National Taiwan Ocean University, Keelung, Taiwan
[b]Department of Air Transportation, Kainan University, Taoyuan, Taiwan
[c]Air Transport Department, Cranfield University, Bedford MK43 0AL, UK
[d]Department of Civil Engineering, National Taiwan University, Taipei, Taiwan

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Abstract

Over the past two decades, demand for air transport between Taiwan and China has grown rapidly, partly in response to the economic development of the two countries, but also as a result of political factors. Low cost carriers (LCC) that have operated for several decades in the United States and Europe will provide a good operational benchmark for direct cross-strait flights once these services become possible. This research involves the construction of a sequential destination selection model for direct cross-strait flights by LCC based on a multi-attribute value function. The selection framework comprises three elements: destination competitiveness, airport infrastructure and potential demand. Previous research focused only on a few alternative airports, but the 41 airports available for foreign flights in Mainland China have all been included in the empirical analysis undertaken in this paper. The results therefore fit better with the operational features of LCC who are normally seeking suitable secondary airports rather than traffic hubs. The analysis reveals that six airports would be suitable for LCC, namely, Shanghai Pudong, Shenzhen, Xiamen, Hangzhou, Wuhan and Nanjing.

Keywords: LCC; Direct cross-strait flights; Multi-attribute value function; Sensitivity analysis

1. The development of low cost carriers (LCC) around the world

Since the passing of the Airline Deregulation Act in the United States (US) in 1978, the US domestic market has become highly competitive. New entrant LCC such as Airtran and Frontier entered the marketplace providing low-fare options in city-pairs across the US (Vowles, 2000). Francis, Humphreys, Ison, and Aicken (2006) analysed the international development of the low cost airline model. They found that the spatial and temporal spread of low cost airlines has varied depending on geographical context, but it is clearly inextricably linked to airline market deregulation that allows the LCC the freedom to develop their operations. Frequently, the trend for start-up LCC is to copy the Southwest model. In the European Union (EU), the impact of LCC on fares and passenger numbers has been dramatic. Probably the most radical impact of European liberalisation, in contrast with the US experience, has been the willingness of passengers to use secondary airports which are typically more distant from major cities than the traditional hubs. The low-fare airlines have brought service to secondary airports, in effect by-passing the hubs of national airlines (Barrett, 2004). Airports that are willing to accept LCC will widen their catchment areas. They will increasingly attract passengers from cities that are relatively far from the airport (Pantazis & Liefner, 2006).

Following the experiences of LCC in the US and the EU, the wave of LCC that has emerged in Southeast Asia has raised expectations that the experience of LCC in other major markets will now be replicated in this dynamic region. The main reason is that national airlines have often not been able to provide enough capacity, and they have often been criticised for their poor service standards in

*Corresponding author.
E-mail address: ycchang@ntou.edu.tw (Y.-C. Chang).

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domestic markets. Because passengers in this region believe that the service of full service carriers (FSC) is not better than that of LCC, many more of them have been encouraged to fly with LCC, which began with domestic routes and then expanded to short haul international routes. Some of the LCC are also considering entering long-haul routes (Hooper, 2005). The market environment in Southeast Asia remains favourable for LCC. The enormous, widely dispersed populations and rapidly growing economies have pushed LCC into the ascendancy. Lawton & Solomko, (2005) found that the low-fare airline business model can survive and succeed in Asia so long as these companies can ensure an even lower operating cost than their already relatively low cost, full-service rivals. Low-fare airlines based in low-income countries with a lack of viable land transport infrastructure (e.g. Malaysia) are likely to experience the greatest market stimulation. Direct competition between full service and low-cost airlines is intensifying across the world. US and European FSC have lost a significant proportion of their passengers to LCC, the experience now being repeated in the domestic markets of Asia (O'Connell & Williams, 2005).

Over the past two decades, demand for air transport between Taiwan and China has grown rapidly, partly in response to the economic development of the two countries, but also as a result of political factors. Direct cross-strait flights are currently being considered for approval and it is likely that this high demand market will become a strong battleground for LCC. There are few studies, however, on this topic and those that exist are deficient indicating that research on the destination selection of direct cross-strait flights by LCC is timely. Indirect trade has been permitted since 1987 between Taiwan and Mainland China, with higher freight transportation costs as a result of transiting and passengers having to bear the inconvenience of transferring flights and the additional flying time involved. The political environment, however, remains ambiguous. The benefits of direct cross-strait flights have already been confirmed and all parties expect their formal approval. It is widely anticipated that direct cross-strait flights will stimulate trade and world economic activity. Undoubtedly, LCC will enter this market.

The distance between Taiwan and China is similar to that between the UK and the European mainland. The successful experiences of LCC in Europe could be replicated in Taiwan and China once the political environment is changed. The operational strategies of LCC in Europe could form a model for Taiwanese and Chinese carriers. This paper starts by reviewing the current situation between Taiwan and China. It goes on to analyse the demand for direct cross-straight flights by LCC. A Delphi approach for destination selection is then constructed. Finally, empirical and sensitivity analyses have been carried out. The study focuses on unidirectional demand from Taiwan to Mainland China. The results indicate that Shanghai Pudong, Shenzhen, Xiamen, Hangzhou, Wuhan and Nanjing airports would be suitable for LCC.

2. Demand for direct cross-strait flights by low-cost carriers

2.1. Air transport between Taiwan and China

There were 142 airports that served civil aviation in China in 2005, 113 of which could facilitate aircraft of Boeing 737 size (China Civil Aviation Authority, 2005). As China is not intending to allow all of its airports to be accessed by foreign airlines, not all of the airports are possible as alternative airports for low-cost carriers' direct cross-strait flights. According to this limitation, this research took the 41 airports available for foreign flights in 2005 as alternatives for empirical analysis.

Due to political factors, there are no direct flights between Taiwan and China as yet. Passengers who travel between the two places always transit via Hong Kong or Macau. Despite Taiwanese investments in China being subject to controls, there are currently four million Taiwanese working in China. As a consequence, over the period 1991–2006, annual passenger traffic between Taiwan and Hong Kong increased from 4.4 to 8.2 million. Traffic between Taiwan and Macau also grew rapidly, increasing from 0.9 million passengers in 1996 to 2.6 million in 2006.

2.2. Demand for direct cross-strait flights

As there are no direct flights between Taiwan and China, demand between China and Taiwan Taoyuan International Airport must be estimated. According to a study undertaken by the Civil Aviation Authority of Taiwan in 2002, passenger traffic between Taiwan and China is estimated to be 6.1 million in 2021 assuming direct cross-strait flights are introduced (Taiwan Civil Aviation Authority, 2002). This study constructed a demand forecasting model based on historic traffic flows (between Taiwan and Hong Kong and Taiwan and Macau) and rates of economic development. It also used the TOP-DOWN and BOTTOM-UP methods for validating estimated traffic. It adjusted the forecast demand levels to take account of aviation developments in Asia-Pacific and other parts of the world as assessed by Boeing and IATA (International Air Transport Association). The results of this study are now commonly used in Taiwan. Due to time and data limitations, demand forecasts of direct cross-strait flights are based on the 2002 study carried out by the Taiwan CAA.

2.3. Forecasting demand for direct cross-strait flights by low-cost carriers

In order to forecast demand, a number of assumptions have been made. Firstly, that direct cross-strait flights are