A comparative analysis of hub connections of European and Asian airports against Middle Eastern hubs in intercontinental markets

Christopher Piltz a, *, Augusto Voltes-Dorta a, Pere Suau-Sanchez b

a University of Edinburgh Business School, EH8 9JS Edinburgh, United Kingdom
b Cranfield University, Centre for Air Transport Management, MK43 0TR Bedfordshire, United Kingdom

A R T I C L E   I N F O
Article history:
Received 1 July 2016
Received in revised form 15 September 2017
Accepted 15 September 2017

Keywords:
Airport connectivity
Hub competition
Airline network development

A B S T R A C T
In a context of changing trends in global air passenger demand and strong airport and airline competition, the largest US carriers have challenged the quality of the flight connections provided by Middle Eastern hubs in direct competition with their own connections provided via European or Asian airports. Using schedules and bookings data between 2012 and 2016, we assess whether European and Asian hubs have lost market share to Middle East airports in the markets from the Eastern US to South Asia and South East Asia. Thereafter, we provide a comparative analysis of the quality of flight connections for selected European, Asian, and Middle Eastern airports, based on indicators like total frequencies, travel times, and connecting times (determined with a connections-building algorithm). The results provide insights on the threat posed by Middle East airports and airlines that have managerial and policy implications.

© 2017 Elsevier Ltd. All rights reserved.

1. Introduction

In recent years, Middle East airlines have leveraged their privileged geographical location and obtained a competitive advantage in intercontinental air transport markets (Zhang, 2015). This advantage is largely built upon a competitive cost structure, a strong brand image, and an efficient hub-and-spoke operation (O’Connell, 2011). This last characteristic makes Middle Eastern airports able to support a large amount of potential flight connections between other origin and destination airports with optimal travel times for the passengers. The impact of the entry of Emirates, Etihad, and Qatar Airways in air transport markets between Europe, Asia, Africa, and the Americas has been noted by many studies, with particular focus on the head-on competition with European and North American airlines (Durganhee, 2013; Dresner et al., 2015; Kindergan, 2015). Taking into account the strong relationship between the growth of a network carrier and the development of its main hub, it is not surprising that the hegemony of European airports as intercontinental gateways has been challenged by the rise of Middle Eastern hubs, such as Dubai, Doha, and Abu Dhabi (The Telegraph, 2015; Morgan Stanley, 2015).

Few existing papers have analysed hub competition on a global level using quantitative methods. The main conclusion is that the more recent data employed by the authors, the higher the threat of Middle Eastern airports and airlines to its European and American counterparts. Using data from 2008, Grimme (2011) analysed the impact of the entry of Emirates in the air transport markets between Germany and Asia. He concluded that entry stimulated passenger traffic but incumbents did not lose market share as the new services—with longer travel times via e.g. Dubai—did not constitute a perfect substitute for time-sensitive passengers. Redondi et al. (2011), also with data from 2008, found that competition amongst major global hubs is high, even between airports located in different countries. However, major European airports still dominated most markets, compared to American and Asian competitors, due to their geographical competitive advantage. More recently, Grosche and Klophaus (2015) used data for 2009–2012 and found that the five leading European hubs (Heathrow, Paris-CDG, Frankfurt, Amsterdam, and Madrid) were still dominating the intercontinental markets despite increased competition from Gulf carriers and the explosive growth of Istanbul-Ataturk. No Gulf-based hub ranked among the five main competitors in regards to connecting traffic in intercontinental markets. The threat arising from Middle East airports and airlines seems to have increased over time, though little has been published with data from 2012 onwards. We can only mention the paper by...
Suau-Sanchez et al. (2016) who found that, by 2013, airports like Dubai and Doha were amongst the main competitors at the time of providing flight connections between the UK and the rest of the world.

While the broad air transport literature is very clear about the threat posed by Middle Eastern hubs, there are no quantitative studies that establish if airports like Dubai, Doha, Abu Dhabi, or even Istanbul have already overtaken the largest European hubs in terms of intercontinental passenger connections. We submit that the strong growth of Istanbul and other Middle Eastern hubs between 2012 and 2015 warrants a new analysis of this topic using more recent data than the previous studies. In particular, there is no information about how much market share has leaked between airports. This is our first area of contribution. According to annual passenger traffic (see Fig. 1), during the last three years Doha has overtaken Zurich and Vienna, Istanbul has overtaken Amsterdam and Frankfurt, and Dubai has overtaken Frankfurt, Dubai, and Heathrow to rank as the third busiest airport in the world in 2015, just behind Beijing and Atlanta (ACL, 2016). These developments are likely to produce different airport rankings than the ones obtained with data from 2012 or earlier.

In line with the expansion policy of Middle East airlines and airports, several European airlines increasingly complain of an ‘unlevel playing field’ linked to economic and institutional conditions in the Gulf States and demand protection from their respective governments (de Wit, 2014). Similarly, major carriers like American Airlines, Delta, United, and other industry bodies in the US created the Partnership for Open and Fair Skies with the objective to ‘restore a level playing field under the Open Skies agreements with Qatar and the UAE’, with particular focus on uncovering the government subsidies received by the Gulf carriers (Partnership for Open and Fair Skies, 2015). One of the arguments brought forward by this Partnership is that connections between Eastern US and South East Asia via the Middle East result in longer travel distances than routings provided by US airlines and their partners via Asian hubs (Partnership for Open and Fair Skies, 2015, pp. 47–48). These Middle Eastern routes also stand in direct competition of connections provided by European partners via their hubs, for which the Partnership noted a sustained decrease in traffic (Partnership for Open and Fair Skies, 2015, p. 48). A similar negative impact on traffic was noted in the market to India (Partnership for Open and Fair Skies, 2015, p. 46). These statements, albeit brief, can be interpreted as a challenge to the quality of flight connections offered via the Middle East, with direct implications on Asian and European airports, respectively. Given the lack of academic publications to support or reject this challenge, as a second contribution we aim to shed light on whether the quality of flight connections offered by Middle East hubs in the aforementioned markets is comparable to the quality offered by US airlines and their partners via European and Asian hubs.

From a methodological perspective, many studies have tackled the issue of how to measure airport hub connectivity, such as e.g. Burghouwt (2007) and Burghouwt and De Wit (2005). A well-known approach employs data on airline schedules to determine the amount and quality of the flight transfers available at each hub. For example, the NETSCAN method (Veldhuis, 1997) builds potential flight combinations and performs a quality-weighted aggregation (linked to the detour imposed with respect to non-stop travel) to calculate the airport’s total number of connection units. These travel detours are measured in time units and have two components: 1) additional flying time (also known as circuitry time) and 2) connecting time, with a maximum detour threshold typically imposed to discard uncompetitive connections. In order to account for the fact that long-distance travellers will be less sensitive to travel detours, variable thresholds are imposed depending on travel distance (See e.g. Global Connectivity Index by Allroggen et al., 2015). In this context, an airport’s effectiveness as a hub will be largely determined by whether flights arrive to and depart from the hub in coordinated waves (Burghouwt and De Wit, 2005), which has the desirable effect of maximizing transfer potential and minimizing transfer times. Factors that facilitate the implementation of an optimal wave structure are geographic location, available capacity, terminal layout, noise regulations, or airline dominance (Doganis, 2009).

Since schedules data provides information on the supply of seats at each airport, the methods described above can be referred to as

---

1 Many past studies have employed indicators of centrality or accessibility as a proxy for airport connectivity. This includes degree and betweenness centrality (Guimerà et al., 2005), or shortest/quickest-path-length centrality and accessibility (Shaw, 1993; Shaw and Ivy, 1994; Cronrath et al., 2008; Malighetti et al., 2008; Paleari et al., 2008).
دریافت فوری
متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات