



Contents lists available at ScienceDirect

Journal of the Air Transport Research Society

journal homepage: www.elsevier.com/locate/jatrs

Behind Market Size: Understanding the Absence of Giant Low-Cost Carriers in Asia Pacific

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ARTICLE INFO

Keywords:

Low-cost carriers
Asia Pacific
Open skies framework
Deregulation
Market demand
Regional Connectivity

ABSTRACT

This article examines the historical evolution of the Asia-Pacific LCC markets, highlighting the socio-economic and institutional factors that contribute to the market fragmentation and impede the growth of LCCs. Despite robust passenger demands and rapid network expansions, Asia Pacific has yet to produce giant LCCs. In contrast to the European single aviation market, the absence of a unified deregulation process and a shared Open Skies framework in Asia Pacific restricts LCCs' seamless cross-border operations. The analysis underscores that structural and regulatory barriers remained key obstacles to larger-scale integration of the LCC market in this region. This may be partially overshadowed by the region's apparent success in terms of LCC development. Consequently, this study proposes enhanced multilateral dialogues of regulatory systems to unify sub-aviation markets across the Asia-Pacific countries, fostering economic development, supporting tourism recovery in the post-COVID era, and finally improving social well-being.

1. Introduction

Although the Asia-Pacific region is not the birthplace of the business model for low-cost carriers (LCCs), by 2019, air transport market share in Asia Pacific had reached 34.7 per cent of the world air traffic, becoming the largest market among all major regions (Africa, Asia Pacific, Europe, the Middle East, North America and South America), according to the International Civil Aviation Organization (ICAO) (ICAO, 2020). Within Asia Pacific, during the same time period, LCCs captured 35.1 per cent of total available seat kilometers (ASK), again the highest share compared to other major areas (ICAO, 2020). Taking a closer look at the Asia Pacific market, over the past decades, 89 LCCs, including both airlines with stringent LCC business models and hybrid models, have emerged in the Asia-Pacific region (Wang et al., 2024), marking a remarkable transformation in the region's aviation landscape (Zhang et al., 2008). Among them, the pioneers include Compass Airlines (Australia, 1990) (Nyathi et al., 1993a), Kiwi Travel International Airlines (New Zealand, 1995) (Haugh & Hazledine, 1999), Cebu Pacific (The Philippines, 1996) (Manuela, 2007), and Skymark Airlines (Japan, 1998) (Ng et al., 2022). Undoubtedly, the Asia-Pacific region has been the most important LCC market around the world in terms of both

market share and the number of LCC players. As a result, the fast development of this market has led to much discussion since the beginning of this century (Wang et al., 2025), which again showcases the importance of this regional LCC market.

In contrast to their counterparts in the European Union (EU) and North America, however, LCCs in the Asia-Pacific region have been long operating in a dynamic yet fragmented market, characterized by soaring demands alongside significant variations in socio-economic environments, aviation regulations, as well as market dynamics and competitions (e.g., Hanaoka et al., 2014; Taumoepeau, 2016; Taumoepeau et al., 2017; Wang et al., 2025; Zhang et al., 2008). These entangled and contradictory factors constantly evolve, shaping the landscape of Asia-Pacific LCCs and turning each submarket in this region into a unique piece of a larger yet intricate puzzle. A notable phenomenon resulting from the fragmentation of this market is the scale of LCCs. For example, Ryanair and Southwest Airlines, the two giant LCCs in the EU and North America, respectively, operating the fleets of 609 (Ryanair, 2025) and 811 (Southwest Airlines, 2025) aircraft. In contrast, AirAsia, the biggest LCC in the Asia-Pacific market, operating a fleet consisting of only 219 aircraft at the same time (Capital A, 2025) as of 2024 November. Considering the existing literature discussing the importance

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<https://doi.org/10.1016/j.jatrs.2025.100061>

Received 17 January 2025; Received in revised form 26 January 2025; Accepted 27 January 2025

Available online 27 January 2025

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of economies of scale and economies of density to LCC operations and cost reductions (e.g., Caves et al., 1984; Hanaoka et al., 2014; Ryu & Won, 2019; White, 1978; Williams & Baláz, 2009; Zuidberg, 2014), fleet scales are constantly important to the survival and development of LCCs. However, a fragmented market has provided barriers to the growth of LCCs, partially offsetting the cost reductions brought by the deregulations in the Asia-Pacific aviation industry. Hence, this article attempts to offer a historical review of the region's ever-changing yet multifaceted market in which Asia-Pacific LCCs have been strenuously operating. This article also traces market changes from a development perspective and concludes with insights into the future trajectory of the Asia-Pacific LCCs. Specifically, after conducting a historical survey of LCCs' development in the Asia-Pacific region, this article answers the following question:

- *Why has the Asia-Pacific market, despite experiencing decades of robust growth, failed to produce giant LCCs?*

Drawing on a detailed examination of LCC development in the Asia-Pacific region, this article aims to make three key contributions. First, it raises and addresses a research question that has often been overlooked, in part due to the rapid growth of LCCs in Asia Pacific. Second, it adds depth to the existing research by shedding light on the complex market environment that Asia-Pacific LCCs must navigate and by comparing the region's institutional frameworks with those of other major markets. Finally, this article informs policymaking and offers practical recommendations for LCCs operating in the region, underscoring the importance of creating a unified LCC market built on the shared standards of deregulation and liberalization. Section 2 briefly reviews the existing literature. Sections 3 through 7 then present a detailed historical overview of the development of Asia-Pacific LCCs from various angles. Section 8 concludes the discussion by offering practical recommendations and policy suggestions for both LCC professionals and policymakers, with the goal of fostering further growth and development of LCCs in the Asia-Pacific region.

2. Literature review

Scholars have extensively discussed the development of LCCs in the Asia-Pacific region. Seminal studies in this region can be traced back to the 1990s discussing the tax pressure and the failure of Compass Airlines (Cooper, 1990; Nyathi et al., 1993a, 1993b). After these early explorations, relevant studies emerged quickly to explore both environmental (e.g., Bowen, 2016; Forsyth, 2003; Hooper, 2005; Kua & Baum, 2004; Liang & James, 2009; Wang et al., 2025; Zhang et al., 2008) and management factors (e.g., Chae & Kim, 2015; Graham & Vowles, 2006; Lawton & Solomko, 2005; Yeung et al., 2012; Zuidberg, 2017), which affected the growth of LCCs as well as generated the economic influence of LCCs on the tourism industry (e.g., Chang et al., 2008; Chung & Whang, 2011; Koo et al., 2010; Lyon & Francis, 2006) and social development (e.g., Bowen, 2016; Lee et al., 2018; Wang et al., 2017; Zhang et al., 2017; Zhang & Zhang, 2016).

The demand for LCCs in the Asia-Pacific region, widely discussed by scholars and industrial professionals, is one of the key environmental factors behind the fast growth of LCCs in the region. Scholars (e.g., Bowen, 2016; Jain & Natarajan, 2015; Law, 2022; Sun, 2020) generally agreed that the rapid growth of tourism markets in the Asia-Pacific has significantly boosted the demand for leisure travel, fueling the expansion of LCCs. Price-sensitive and short-haul leisure travelers have emerged as a primary customer base for LCCs in countries across the region, including ASEAN nations, Australia, China, India, and New Zealand (e.g., Bowen, 2016; Jain & Natarajan, 2015; Law, 2022; Sun, 2020). A notable example is Spring Airlines, which has experienced remarkable growth due to the rise of the leisure travel sector in China. Leisure travelers constituted 30 % of China's domestic tourism markets in 1999, a figure that increased to 50 % by 2010 (Fu et al., 2015).

Among other environmental factors shaping the growth trajectory of LCCs in the region, regulation-related issues are a key factor of debate. The deregulation (e.g., Gross & Lück, 2011; Hooper, 2005; Kua & Baum, 2004; Wang et al., 2018; Zhang et al., 2008) and liberalization efforts (e.g., Forsyth et al., 2006; Tan, 2009, 2010; Wang et al., 2017; Whyte & Lohmann, 2015; Zhang et al., 2008) in most Asia-Pacific countries have laid a strong foundation for the rapid growth of LCCs. Specifically, by making it easier to form joint-venture companies, these regulatory changes have enabled leading regional LCCs in operation, such as AirAsia, Lion Air, Spring Airlines, and VietJet, to broaden their market presence (e.g., Dy & Lee, 2015, 2016; Lee & Yoon, 2020; Whyte & Lohmann, 2015). In addition, LCC-airport relations are also an important external element influencing the quick growth of Asia-Pacific LCCs (e.g., Ariffin & Yahaya, 2013; Lu & Mao, 2015; Lyon, 2016; Neufville, 2006; Pandey, 2016), although this relationship is different from that of the EU and North America (Bowen, 2016).

Internal management factors are also important for the growth of LCCs in Asia Pacific. Among these factors, network strategies are considered as a primary factor (e.g., Bilotkach et al., 2021; Bowen, 2016; Chung et al., 2020; Jiang et al., 2017; Wu et al., 2020), since the structure of LCC networks can not only affect their profitability but also generate social wellbeing (e.g., Bowen, 2016; Mizutani & Sakai, 2021; Sowawattanukul & Wongsurawat, 2013; Wang et al., 2020). Furthermore, LCCs' efficiencies are also a research focus (e.g., Barbot et al., 2008; Hu et al., 2017; Lee & Worthington, 2014; Sakthidharan & Sivaraman, 2018; Zhang et al., 2023), and many efficiency benchmarking studies have been conducted to provide operational suggestions. Moreover, management strategies (e.g., Abdul Nasser et al., 2010; Abdullah & Takahashi, 2016; Cheng & Chen, 2016; Costantino et al., 2016; Fu et al., 2014; Wu et al., 2020) and service qualities (e.g., Kim & Lee, 2011; Ko, 2016; Lupiyoadi & Putra, 2014; Rajaram, 2012; Thanasupsin et al., 2010; Yunus et al., 2013) are also discussed aiming to strengthen the market competitive advantages of LCCs in the region.

The development of LCCs in the Asia-Pacific region also brings economic benefits and social well-being. On one hand, the growth of LCCs in the region has significantly boosted tourism demand (e.g., Cheuk et al., 2010; Chung & Whang, 2011; Tsui, 2017; Wang et al., 2016a, 2016b; Whyte & Prideaux, 2008), hence improving the government tax income (Pratt & Schuckert, 2018) and the economic growth (Jayakumar, 2017; Srisook & Panjakajornsak, 2017, 2018). On the other hand, the prosperity of LCCs in Asia Pacific has brought much social well-being to local people, as they could easily travel to places (e.g., Fu et al., 2006; Henderson, 2006; Koo et al., 2010; Lawton & Solomko, 2005; Lin et al., 2009; Murakami, 2009) with lower fares (e.g., Chan, 2014; Gupta & Kumar, 2009; Manuela, 2007; Morrell, 2008; Ricart & Wang, 2005; Vowles & Tierney, 2007).

Considering the positive impacts of LCCs on the economy and society, a healthy growth of LCCs is crucial to improving the mobility of people and the quality of life. In the American market, many papers have been published to explore the success of LCCs (e.g., Bachwisch & Wittman, 2017; Bitzan & Peoples, 2016; Hüscherlath & Müller, 2012; Morrell, 2017; Vowles & Lück, 2016), especially the growth of Southwest Airlines (e.g., Boguslaski et al., 2004; Bunz & Maes, 1998; Richards, 1996; Smith, 2004; Thomas, 2015), not only because it created the LCC business model, but also due to its huge scale and industrial influence. In the EU market, giant LCCs have also been researched (e.g., Dobruszkes, 2006, 2009, 2013; Francis et al., 2004; Graham & Shaw, 2008; Mason et al., 2016), especially Ryanair (e.g., Diaconu, 2012; Malighetti et al., 2009; O'Connell & Williams, 2005) and EasyJet (e.g., Cattaneo et al., 2018; Malighetti et al., 2015; Morlotti et al., 2017). Considering their success, scholars believed that the huge scales of these LCCs have not only contributed to acquiring the economies of density on key O-D markets (Brueckner & Spiller, 1994; Caves et al., 1984, 2005), but also benefiting the reduction of operational costs (Brüggen & Klose, 2010; Cserekyei & Stern, 2020).

Although the scale is important for the growth of LCCs, throughout

existing literature, we have not found relevant research explaining why giant LCCs are mostly operating in the EU and American markets. By comparison, the Asia-Pacific region has been the world's largest LCC market but has yet to produce a giant LCC on the same scale (arguably AirAsia is only giant LCC in Asia) as those in the EU and North American markets. To close this research gap, we conduct a historical review focusing on the institutional differences among major LCC markets around the world, aiming to understand the root causes behind this phenomenon.

3. Significant socio-economic gaps among Asia-Pacific countries

According to the ICAO statement (ICAO, 2025), the Asia-Pacific region covers a vast geographic area that includes 39 countries/states. These states have different economic development statuses and socio-economic backgrounds, creating a dynamic yet challenging environment for the growth of the aviation industry. For instance, in terms of gross domestic product (GDP) per capita reported by the World Bank (World Bank, 2025), Singapore ranked among the highest in the Asia-Pacific region in 2023, at 141,500 US dollars, while the Solomon Islands was reported at just 3036 US dollars, only 2.1 % of Singapore's figure. This significant income disparity among Asia-Pacific countries has given rise to various socio-economic challenges (Zhuang, 2023), including differing rates of urbanization (Marcotullio & Schulz, 2008), unequal disposable incomes (Yang & Greaney, 2017), varying sizes of middle classes (Koo, 2016), and differences in the elasticity of demand for leisure air travel (Nguyen, 2021). These factors have created an uneven economic foundation for the growth of LCCs in Asia Pacific, which might potentially lead to various growth rates of LCCs in the region that were different from those large LCCs in the EU and North America, such as Ryanair, EasyJet, and Southwest Airlines.

In addition, the negative social perceptions and stereotypes about the low-cost airline business model remain prevalent in some Asia-Pacific countries (Thanasupsin et al., 2010). A common example is the frequently asked question: "Is it safe to fly cheap?" (ABC News, 2017). This concern has been amplified by several crashes involving LCC aircraft in the region, despite a lack of statistical evidence suggesting that LCCs have a higher overall incident and accident rate. Another aspect of negative attitudes towards LCCs in the region relates to the public's perception of their service quality and standard (Han et al., 2019; Pan & Truong, 2018). A 2016 news report from SOHO.com, one of China's largest online news platforms, highlighted widespread concerns about the quality of low-cost air transportation services:

For the general public, "low-cost airlines" remain an unfamiliar concept, and market acceptance will take time. On social review platforms, many passengers have expressed dissatisfaction with baggage fees, indicating a lack of understanding of the low-cost airline model. For instance, the concept of premium economy is often misunderstood by travellers as the "business class" of low-cost airlines. However, in reality, premium economy seats are no wider than economy seats; they only offer greater legroom and provide simple meals. Despite this, ticket prices are noticeably higher than standard economy class of LCCs, which has drawn criticism from many passengers. (Zheng, 2016)

These background variations and socio-economic gaps across the Asia-Pacific region have created an uneven aviation market, forcing LCCs to navigate a complex "puzzle game" in their quest for growth and expansion. In comparison, the unevenness of social development is less observed in the EU and North American markets where LCCs have a comparatively stable environment to develop (Tas, 2014).

4. Discrepancies in the pace of deregulation and liberalization across Asia Pacific

Just as in the EU and North American markets, the rise of LCCs in the Asia-Pacific region began with aviation deregulation (Zhang et al., 2008). Domestic aviation deregulation typically aims to remove market

entry barriers for start-ups, eliminate airfare controls, and relax restrictions on ownership and investment for all types of airlines (e.g., Henderson, 2006; Tan, 2009; Zhang et al., 2008). Many LCCs in the region emerged shortly after these deregulation policies were promulgated with examples seen in Oceania (Gross and Lück, 2011), and the Philippines (Manuela, 2007). For instance, in New Zealand (e.g., Gross & Lück, 2011; Lyon & Francis, 2006; Taumoepeau et al., 2017), aviation deregulation began in 1983 and completed in 1990, leading to the emergence of Kiwi Travel International Airlines in 1995. Similarly, Australia initiated aviation deregulation in 1990 and completed the process in 1995, during which Compass Airlines began operations in 1990 (Taumoepeau et al., 2017). In the Philippines, the government liberalized its domestic aviation market in 1995, and its first LCC, Cebu Pacific, was established in 1996 (Manuela, 2007; O'Connell & Vano-verbeke, 2015).

However, unlike the EU and North American markets, the process and extent of aviation deregulation in the Asia-Pacific region vary significantly from country to country (e.g., Bardai, 2019; Liu & Oum, 2018; Wang et al., 2025; Zhang et al., 2008). This has resulted in differing paces of deregulation across the region, further reinforcing the unevenness of this aviation market and, in some cases, creating operational challenges for LCCs (Liu & Oum, 2018; Wang et al., 2025). For example, while Japan introduced deregulation in 1985 by abolishing the 45/47 policy (Jiang & Li, 2016; Murakami, 2011), industry professionals and scholars still refer to it as "partial deregulation" due to the continued existence of heavy taxes and market entry restrictions on LCCs (Jiang & Li, 2016). Similarly, China initiated its aviation deregulation process in 2005 (Liang & James, 2009; Zhang et al., 2008), leading to the emergence of many new entrants and private airlines, including Spring Airlines (Jiang et al., 2017; Pan & Truong, 2021), the largest LCC in China. However, these new entrants continue to face regulations and restrictions for their operations, such as restrictions on accessing high-volume routes (Hanaoka et al., 2014; Liang & James, 2009), slot restrictions (Dobruszkes & Wang, 2019; Sun, 2015), night flying restrictions (Wu et al., 2020), fleet expansion quotas (Fu et al., 2015), fare regulations (Kua & Baum, 2004), and caps on some ancillary charges (Liang & James, 2009).

In addition to domestic deregulation, aviation liberalization has significantly benefited the international operations of LCCs in the Asia-Pacific region (e.g., Bilotkach et al., 2021; Forsyth et al., 2006; Ma et al., 2021). Bilateral and multilateral air services agreements (ASAs) and open skies agreements have largely supported the growth of LCCs in the region by easing restrictions on various air traffic rights, including the third, fourth, fifth, and seventh freedoms of the air (Loh et al., 2020; Tan, 2010). Notable examples include the 2008 ASEAN multilateral agreement (Liu & Oum, 2018), the trans-Tasman single aviation market between Australia and New Zealand (Wang et al., 2020), and the open skies agreement between South Korea and Japan (Fu et al., 2015). The relaxation of international air traffic restrictions has provided Asia-Pacific LCCs with a strong foundation to expand their operations on short-haul international routes across the region (Bilotkach et al., 2021). This expansion has also fostered the creation of interconnected LCC networks linking major regional hubs (Bowen, 2016). Furthermore, agreements like ASAs and open skies agreements enabled carriers such as AirAsia to establish additional hubs across ASEAN nations (Zhang et al., 2008), allowing them to leverage the seventh freedom of the air to operate more efficiently across the region. As LCCs have increasingly entered short-haul international markets, full-service carriers (FSCs) have responded with airline-within-airline (AWA) strategies to compete in the low-cost sector (Whyte & Lohmann, 2015). For example, Qantas founded Jetstar (Homsombat et al., 2014), Juneyao Airlines established 9 Air (Wang et al., 2018), and Singapore Airlines launched Scoot (Law, 2022) to capture this growing low-cost market segment. These developments have resulted in a surge of new LCC players, further transforming the Asia-Pacific aviation landscape.

Despite these benefits, partial liberalization of certain international

routes combined with uneven progress in ASAs and open skies agreements across the Asia-Pacific region created challenges for market integration (Liu & Oum, 2018; Wang et al., 2025). This fragmented approach has made it difficult to establish a cohesive and unified aviation market or an “intact sky” for LCCs (Liu & Oum, 2018). Many ASAs and open skies agreements in the region were negotiated either bilaterally or multilaterally among specific countries, creating isolated markets that limit access for foreign LCCs excluded from these agreements. For example, the single sky market between Australia and New Zealand and the 2008 ASEAN multilateral agreement promoted regional cooperations across trans-Tasman market but restricted opportunities for other LCCs not covered under these agreements. As a result, LCCs often face difficulties in operating international flights and encounter hurdles in expanding their growth opportunities. For instance, limited bilateral ASAs between Hong Kong SAR and countries such as Australia, Japan, and Singapore led to barriers for LCCs from other nations without similar agreements to access the Hong Kong market (Dy & Lee, 2016; Sze et al., 2015). This situation contrasts sharply with the EU, where comprehensive open skies agreements, such as the EU Single Aviation Market, have established a unified aviation market among member states (Tas, 2014). These agreements remove barriers such as capacity constraints, market access restrictions, and pricing limitations, effectively integrating national markets within the EU (Tas, 2014). In contrast, the Asia-Pacific region remains fragmented and complex. Unlike the EU, where the European Commission provides strong regulatory guidance, the Asia-Pacific region lacks a supranational body to oversee and unify open skies agreements (Tas, 2014). This absence of centralized oversight adds layers of complexity for LCCs in Asia Pacific, further hindering efforts to integrate the region’s aviation market (Wang et al., 2025).

As a result, the Asia-Pacific aviation market has become increasingly fragmented for LCCs, resembling a complex puzzle game. LCCs in this region have been facing barriers and struggled to access a fully integrated market under an intact sky, even as the demand for low-cost air travel continues to grow in the region during the past decades.

5. Diverse investment policies and infrastructure qualities in Asia Pacific

Differences in aviation regulations and insufficient aviation infrastructure across the Asia-Pacific region further shape the pieces of this puzzle-like market (Henderson, 2006; Zhang et al., 2008). Due to varying levels of deregulation and liberalization across Asia-Pacific countries, LCCs face barriers when entering international markets, including constraints on exercising the seventh freedom of the air in certain markets in the region. To overcome these obstacles, many LCCs have adopted joint venture (JV) strategies to bypass the requirement of entry barriers (Hanaoka et al., 2014; Tan, 2009), expand their flight networks (Tan, 2009), and access new aviation markets across different countries in Asia Pacific (Dy & Lee, 2016). Examples include AirAsia’s joint ventures in India, Japan (AirAsia Japan), and Thailand (Thai AirAsia) (Tan, 2009); Jetstar’s joint ventures in Vietnam (Jetstar Pacific) and Singapore (Jetstar Asia) (Dy & Lee, 2016; Wang et al., 2017); and Spring Airlines’ joint venture in Japan (Spring Airlines Japan) (Dy & Lee, 2016).

However, certain countries or economic entities imposed strict conditions for establishing JV LCCs and might still be reluctant to approve their operations (Wang et al., 2017). These conditions often include limits on foreign investments in domestic carriers and regulations on effective control of airline ownership (Dy & Lee, 2016), which typically cap foreign ownership stakes at less than 49 % (Oum et al., 2010). Some notable failures include Jetstar’s attempt to establish an LCC subsidiary in Hong Kong (Wang et al., 2017), Tiger Airways’ efforts to create a South Korean JV LCC (Dy & Lee, 2016), and AirAsia’s unsuccessful bid to form a JV LCC with VietJet (Dy & Lee, 2016). These regulations further limited and fragmented the aviation markets in the

Asia-Pacific region, making each market a unique piece of the puzzle-like market.

Furthermore, insufficient airport capacity (Bowen, 2016) and the lack of secondary airports (Fu et al., 2015) are widely acknowledged by aviation professionals and scholars as significant barriers to the expansion of LCCs in certain Asia-Pacific countries. At major hub airports such as Tokyo Haneda Airport (Adler et al., 2014), Beijing Capital International Airport (Wang et al., 2017), and Hong Kong International Airport (Picard et al., 2019), limited airport capacity and services, such as slot shortages (Zhang & Zhang, 2016), runway limitations (Sun, 2020), air traffic congestion (Wang et al., 2017), and insufficient handling, ramp and maintenance facilities (Pandey et al., 2018), severely restricted LCC operations. These constraints not only limited flight frequencies but also slowed the pace of LCC expansions in certain markets in Asia Pacific. For instance, the slow growth of Japanese LCCs was partially attributed to limited time slots at Tokyo Haneda Airport, where LCCs only operated between 11:00 p.m. and 6:00 a.m. (Hanaoka, 2018; Ma et al., 2021).

The insufficient airport infrastructure and capacities for LCCs operating in some Asia-Pacific countries have also increased the operational costs of LCCs, making those markets less accommodating for LCCs to grow, thereby strengthening the unevenness of the Asia-Pacific LCC market (e.g., Bowen, 2016; Lu & Mao, 2015; Sun, 2020; Wong et al., 2019; Zhang & Zhang, 2016). LCCs operating in these markets and/or hub airports must deal with longer turnaround times (Gross & Lück, 2011) and higher airport charges (Chang et al., 2008; Fu et al., 2015) that significantly decreased their profitability. For example, in East Asian countries, approximately 80 % of airport-related expenses at major hubs are beyond carriers’ control (Lei & O’Connell, 2011), as governments governed regulations on fuel supply, airport charges, and departure taxes. Similarly, operating costs for LCCs at Singapore Changi Airport could be up to 50 % higher than at Johor Bahru Senai International Airport in neighbouring Malaysia (Kua & Baum, 2004).

Additionally, the privatization of airports in Asia-Pacific countries, particularly in India (Wang et al., 2018), has significant implications for LCC operations. Privatized airports often implement more flexible business strategies to attract LCCs, boosting air traffic volumes, and improving market accessibility (Wang et al., 2018). These airports have emerged as key hubs for LCCs, promoting the home-based LCCs for future growth (e.g., Graham, 2013; Lin et al., 2013; Yu et al., 2019). In contrast, other markets in Asia Pacific lacking this trend of airport privatization are often less favourable for LCC operations, contributing to uneven competitive environments across the Asia-Pacific region.

6. Complicated market conditions and further market fragmentation

The puzzle-like LCC market in Asia Pacific has been constantly shaped by uneven regulatory policies and varying aviation infrastructure capacity and quality. As a result, LCCs aiming to achieve both economies of scale and density across Asia Pacific can feel like trying to assemble mismatched puzzle pieces. More importantly, the market fragmentation has worsened even further when we take a closer look at the conditions of each country, as each individual market presents unique challenges and internal environments.

On one hand, the growing market size and high passenger volumes in certain markets of Asia Pacific have provided LCCs with significant opportunities, while other markets are less favoured by LCCs. Key markets such as the Singapore–Kuala Lumpur route (Kua & Baum, 2004), the Hong Kong market (Pratt & Schuckert, 2018), and China’s domestic markets (Fu et al., 2015) have stood out for their lucrative airport catchment areas and large passenger bases. Additionally, in countries such as South Korea, LCCs were rare in the early 2000s. This lack of competition and higher fares provided great opportunities for new entrants (Khan et al., 2019). In comparison, regional markets in Asia Pacific are not as popular as those markets in the EU and North America. Furthermore, some local governments in Asia Pacific actively

supported LCCs to increase airport traffic, driving business growth, aiming to grow local tourism industries (Forsyth, 2003; Jiang & Li, 2016). For example, local governments in countries such as China (Jiang et al., 2017) and Australia (Loh et al., 2020; Wang et al., 2020) have introduced favourable policies to promote local LCC operations, further boosting the market potential for local LCCs, but leaving less market potential to non-local LCCs. The uneven market growth and varying levels of government support have intensified market fragmentation in Asia Pacific, resulting in several markets facing high passenger demand with limited capacities, while most of the other markets experiencing low passenger demand with redundant airport capacities. A typical example can be observed in ASEAN countries, where LCCs favor major cities such as Bangkok, Jakarta, and Singapore, yet are less willing to operate in smaller regional areas (Bowen, 2016).

On the other hand, the growth of LCCs in some Asia Pacific countries has been far from seamless. A key challenge in these markets is the rising operational costs faced by LCCs, which include airport charges, fuel expenses, aircraft leasing and purchasing costs, pilot recruitment costs, and maintenance expenses (e.g., Lei & O'Connell, 2011; Liang & James, 2009; Murakami et al., 2015; Zhang & Lu, 2013). These challenges are often compounded by strict aviation regulations. Consequently, up to 80 % of airline costs remain outside the airlines' control, making it difficult for LCCs in these countries to achieve sustained growth and profitability (Lei & O'Connell, 2011). However, under the single sky agreements, LCCs in the EU and North America have less experienced such a market challenge while flying across borders (Tas, 2014).

Additionally, the fundraising environment in certain markets in Asia Pacific creates further hurdles for LCC operations and growth. Strict controls on fundraising and airline mergers hinder LCCs' ability to quickly grow. For example, Spring Airlines and Juneyao Airlines in China faced lengthy and opaque initial public offering (IPO) processes, only receiving approvals for Shanghai Stock Exchange listings in 2015, which was 13 years after the state-owned Shanghai Airlines was listed in 2002 (Yu et al., 2019). In contrast, those LCCs operating in better financial environments usually able to raise funds through capital markets to grow faster.

Moreover, severe domestic competition among LCCs, FSCs, and high-speed rails (HSRs) presents significant challenges for LCC operations in some Asia-Pacific countries (e.g., Jiang & Li, 2016; Wan et al., 2016; Wang et al., 2017). Certain practices such as price collusion and predatory pricing by FSCs in domestic and international markets (Forsyth, 2003) have created a hostile operating environment for LCCs. Adding to these difficulties is the volatile operational conditions, which characterized by frequent international flight cancellations driven by unstable tourism markets and fluctuating political relationships between governments (Jiang & Li, 2016; Wu et al., 2020). These factors have severely restricted LCCs' ability to expand their domestic and international operations in the Asia-Pacific region.

The constantly evolving and complex market conditions in the Asia-Pacific region reflect political and social disparities, as well as differing levels of aviation market maturity. In contrast, LCCs in the EU and North America encountered fewer obstacles (Tas, 2014). For example, the EU has taken a more liberal approach to develop both HSR and LCCs, creating a more supportive environment for their growth (Jiang & Li, 2016). This comparison underscores how varying market conditions in different countries in Asia Pacific can have a significant impact on the development of LCCs. When flying across borders, LCCs have to deal with different market challenges, and undoubtedly, their operational efficiency can be affected, which in turn impedes their growth.

7. Fierce competitions and fleet downsizing after the Covid-19 pandemic

Socio-economic, regulatory, infrastructure factors and various market conditions previously discussed persist in forming the fragmented LCC markets within the Asia-Pacific region. These core socio-economic

and market dynamics have not only limited LCCs to go big but also sparked fierce competition among small and medium-sized LCCs and well-established FSCs, consequently further delaying the rise of giant LCCs in Asia Pacific. In addition, the COVID-19 pandemic has forced many airlines to downsize their fleets (Capital, 2025), further strengthening the fragmentation of the market.

Market concentration is a common trend in the aviation industry (Wandelt et al., 2024), as market concentration can bring the benefit of economies of scale (Cserekyei & Stern, 2020), such as the reduction of operational costs, and economies of densities on specific O-D markets, especially for LCCs (Brueckner & Spiller, 1994; Caves et al., 2005). However, socio-economic factors in Asia Pacific have impeded market concentration for LCCs, leading to intense competition among those small- and medium-scaled LCCs to compete with FSCs and HSRs in some Asian countries, thereby fostering greater market fragmentation. A notable example is the competition between LCCs and HSRs in Northeast Asia, which has driven LCCs to expand into longer-haul routes. Researchers have observed that this competition is most pronounced in short-haul markets (<800 km), where HSRs' lower fares often force LCCs to restructure their networks and withdraw from certain routes (Chen et al., 2022; Wu et al., 2020). Although collaborations between HSRs and LCCs have been observed in certain Chinese regional markets (Liao et al., 2022), the fierce competition between LCCs and HSRs still forced LCCs in China to find new markets and change their networks (Liao et al., 2022).

Competitions between LCCs and FSCs are also fierce across the Asia-Pacific region. Numerous FSCs are state-owned, providing them with substantially more market power than LCCs. For example, incumbent FSCs hold numerous "grandfathered" slots to deploy larger aircraft, disadvantaging new LCCs that operate only narrow-body planes, and such an example can be seen at Haneda Airport (Wang et al., 2017). AirAsia also faced similar slot constraints when expanding to Beijing Capital International Airport (Wang et al., 2017). In some Asian countries, the operational costs of LCCs are affected by FSCs. For example, in Japan, FSCs imposed high maintenance fees on new LCC entrants in order to undermine their cost competitiveness, and thus these new LCCs must cut their operational costs, including labor, in-flight services, and maintenance expenses (Murakami et al., 2015).

Competitions among LCCs in the Asia-Pacific region is equally fierce. Moreover, due to the absence of giant or dominating LCCs in particular markets, competitions are frequently seen among small and medium-sized LCCs, which in turn exacerbates their operational challenges. For example, in Thailand, the AWA initiative proposed by Thai Airways and Nok aims to operate as an "ultra-low-cost carrier" (ULCC). However, the Thailand aviation market already has a high penetration of LCCs and could maintain low domestic fares for passengers due to intense airline competition. This suggests that achieving market dominance may be challenging unless AWA or new LCC entrants target unserved or underserved routes and regions (Pearson & Merkert, 2014).

Facing fierce airline competitions, LCCs are seen to try to integrate their low-cost markets, however the efforts seemed not very successful. A notable example was AirAsia (Saulon, 2017), which embarked on a deeper integration within the ASEAN region before the COVID-19 pandemic. Building on its initial phase of creating more seamless flight connectivity across ASEAN nations, AirAsia aimed to position itself as a true ASEAN company by integrating operations, fostering cross-border staff collaboration, and expanding into secondary and regional cities to boost regional economic development. AirAsia also tried to explore new routes, such as connecting Kuala Lumpur and Kota Kinabalu (Malaysia) with Davao (the Philippines), as well as planning to link the popular tourist destinations like Boracay (the Philippines) and Phuket (Thailand) before the COVID-19 pandemic. However, the pandemic has hindered AirAsia's progress of market integration and even forced it to downsize its fleet (Capital, 2025). Another example was the establishment of Value Alliance, the world's largest LCC alliance, integrating eight Asian LCCs: Cebu Pacific (and its subsidiary Cebgo),

Jeju Air, Nok Air, NokScoot, Scoot, Tigerair Singapore, Tigerair Australia, and Vanilla Air. Together, these LCCs covered over 160 destinations with a combined fleet of 176 aircraft back then, spanning their LCC services to destinations in Southeast Asia, North Asia, and Australia (Petersen, 2016). Value Alliance allowed passengers to book flights across member airlines in a single transaction, similar to global alliances like Oneworld, SkyTeam, and Star Alliance. However, the growth of Value Alliance is slow, and the operation of this alliance involves a large number of investments in unifying the IT infrastructure among its member airlines (Singapore Airlines, 2024).

8. Summary and outlook

Considering that the Asia-Pacific region has not yet formed a seamless LCC market, but rather remains a fragmented market, this article raises an important question: why has the Asia-Pacific LCC market, despite experiencing decades of robust growth, failed to produce giant LCCs? This article tries to answer this question by providing a historical review of the development of the LCC market in the Asia-Pacific region, with a particular focus on the socio-economic and institutional factors that have shaped its growth and fragmentation. It also examines the strategies LCCs have employed to navigate this fragmented and puzzle-like market. Additionally, this article highlights challenges that have often been overlooked in prior discussions eulogizing the region's booming demand for LCCs.

While previous studies have paid much attention to the rapid expansion and success of LCCs in the Asia-Pacific region, they have largely ignored the structural and regulatory barriers that hinder the emergence of giant LCCs in the region. In contrast to the EU and North America, where the East Enlargement Movement and the creation of a unified single aviation market have facilitated seamless LCC operations across member states, but the Asia-Pacific region lacks an equivalent institutional establishment and regulatory framework to support LCC growth. Such a regulatory fragmentation imposes significant obstacles for Asia-Pacific LCCs, preventing them from operating cohesively across borders and achieving the level of integration and scales observed in the EU and North American aviation markets. Considering the significant contributions of LCCs to economic developments, social well-being, and tourism growth, especially in the post-COVID19 era, the absence of an intact LCC market may become barriers to further integration of regional economies and improvement of social well-being, as well as allowing giant LCCs to form. Looking ahead, we propose the following recommendations for policymakers, LCC professionals, and academic researchers to deal with this salient issue:

First, we appeal the ICAO Asia-Pacific office to organize more multilateral dialogues among the member countries to further discuss the deregulation and liberalization in the aviation industry and the integration of the aviation markets in the Asia-Pacific region. By mutual understanding and unifying the standards of deregulation and liberalization of the aviation industry in the region, member countries can benefit from "an intact sky" and grow their aviation industries including both LCCs and FSCs, as we have seen from the EU single aviation market.

Second, considering LCCs' economic contributions, we recommend that member countries in the region can include specific policies promoting the development of LCCs in various regional free trade agreements (FTAs) across the Asia-Pacific region, such as Regional Comprehensive Economic Partnership Agreement (RCEP) and ASEAN-Australia-New Zealand Free Trade Area (AANZFTA) to support international tourism trade in Asia Pacific.

Third, we appeal the influential civil aviation authorities (CAAs) in the region to organize more seminars and official meetings to promote the development of more liberalized aviation markets and more open skies agreements across the Asia-Pacific region. Establishing a shared aviation system in the region can benefit a long-term development of the airline industry including both FSCs and LCCs.

Fourth, we recommend LCC professionals in the region to discuss

shared standards of LCC operations, IT infrastructures, and network collaborations. By doing so, a seamless operation can be achieved to not only benefit LCC network collaborations but also improve the mobility of passengers and socio-economic development and wellbeing.

Last but not least, we suggest that more empirical studies can be conducted to discuss and analyse the impacts of LCCs on regional integrations and regional FTA developments, such as LCCs' influence on tourism exports or tourism trades in RCEP or AANZFTA. Such studies can contribute to a deeper understanding of the economic contributions of LCCs in regional economic developments, thereby fostering economic growth, supporting the recovery of the tourism sector in the post-COVID era, and improving the social well-being of people living in Asia-Pacific countries.

CRedit authorship contribution statement

Huan Wang: Writing – original draft, Data curation, Conceptualization. **Kan Wai Hong Tsui:** Writing – review & editing. **Xuecheng Wang:** Writing – review & editing. **Fen Zhan:** Resources, Writing – review & editing. **Yan Liu:** Resources, Writing – review & editing.

Declaration of competing interest

Huan Wang reports was provided by University of Southern Queensland. Huan Wang reports a relationship with University of Southern Queensland that includes: non-financial support. Huan Wang has patent pending to N.A. Not available If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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