Evaluating the Long-Haul Low-Cost Airline Business Model: A Perspective on Disruptive Innovation

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Abstract:
This article explores how the long-distance low-cost airline business model is impacting the aviation industry through disruptive innovation. The LDLC business model is gaining traction and is set to challenge traditional network carriers in the mainstream market. As a result, significant strategic changes are on the horizon for long-haul air travel, requiring incumbents to adapt their approaches. We propose various strategic response options under avoidance, acceptance, and embracing of the LDLC business model that existing players can consider to maintain their competitive position in this evolving market. The paper provides valuable insight for airline managers seeking to reevaluate their organizations' strategies when confronted with a potentially disruptive innovation within their industry.

Keywords: Low-cost carrier, Airline strategy, Business model, Disruptive innovation

1. INTRODUCTION

The rise and ongoing prosperity of the affordable business model and low-cost airlines in short to medium-distance air travel has revolutionized the aviation sector. Various regions have witnessed the emergence of new leaders, including Southwest, Ryanair, GOL, flydubai, AirAsia, and Jetstar, who have captured significant market presence (CAPA, 2019) and incurred significant financial pressures on existing airlines. In their efforts to efficiently cater to short-to medium-distance travel markets, low-cost carriers and traditional airlines (and the now less influential charter carriers) have been exploring various aspects of their value offering in order to develop, among other things, extremely affordable,,highly exclusive, or combined business models, which may even exist within the same airline conglomerate as distinct brands ((Corbo, 2017); (Fageda et al., 2015)).
New disruptors have evolved into established players themselves ((Corbo, 2017) Short and medium-haul air travel business strategies have come together(Daft & Albers, 2012), Another type of business model innovation, known as the long-haul low-cost business model, is becoming increasingly popular and posing a threat to the industry. The effectiveness of this LHLC approach has been under scrutiny for nearly a decade. Significant variations in the characteristics of long-distance operations have indicated that the potential cost reductions for continental LCCs compared to their network carrier competitors may not be realized ((Poret et al., 2015); (Francis et al., 2007)).
Many unsuccessful endeavors (like the pioneering Laker Airways) and possible setbacks (such as recent speculations regarding the survival of Norwegian Air Shuttle) have highlighted the apparent delicate financial sustainability of LHLC operations(Morrell, 2008). However, advancements in aircraft

technology and increasing expertise with a wider range of additional income streams and cargo operations, along with continued liberalization (Poret et al., 2015) The potential success of the LHLC model is being increasingly recognized. Airlines like AirAsia X, Scoot, and Jetstar have adopted this model and are gaining market share on transatlantic routes at the expense of established airlines in the market (Soyk et al., 2017); theoretical progress in the conception and comprehension of LHLC operations and strategy ((Daft & Albers, 2012); (Poret et al., 2015); (Soyk et al., 2017);(Whyte & Lohmann, 2015)) contribute to this understanding.

Given the recent surge in interest surrounding LHLC within the airline industry, there is a noticeable shortage of research on this topic and its impact on established airlines as well as the broader aviation ecosystem. Despite existing studies on LHLC characteristics and economic feasibility, our comprehension of the nature and potential consequences of LHLC for the airline industry is still in its early stages. The "LHLC strategy" remains relatively unknown from a theoretical perspective due to lack of differentiation. On an empirical level, LHLC ventures worldwide have been acknowledged and documented. ((Jiang, 2013);(Soyk et al., 2017); (Whyte & Lohmann, 2015)), but still need a thorough strategic analysis and contextualization. As a result, in-depth assessments of the potential impacts of LHLC emergence on the wider industry, especially on network carriers that currently have significant influence in long-haul markets, are yet to be produced. This paper is the initial effort to examine the growth of the LHLC business model and its strategic consequences from the viewpoint of disruptive innovation. (Christensen, 1997). After examining existing academic research on LHLC, the overview explores real-world efforts to establish and run LHLC operations globally. It then defines the LHLC business model as a disruptive innovation and evaluates its potential to disrupt the long-haul air travel market. This allows for a discussion of strategic response alternatives for established companies, along with their possible adoption by network carriers.

2. UNDERSTANDING THE CONCEPT OF LONG-HAUL LOW-COST TRAVEL

The paper's understanding of the long-haul low-cost airline business model is based on a review of academic literature on this topic and an analysis of global initiatives in LHLC.

2.1. Scholarly contributions

A comprehensive search in two major academic databases (Elsevier's ScienceDirect and EBSCO's Business Source Premier) 27 academic contributions related to LHLC have been discovered, with 13 articles mentioning the LHLC phenomenon without directly addressing it (e.g. (Hazledine, 2011); (Linz, 2012); (Bießlich et al., 2018). Fourteen articles center on LHLC as the main focus of their explanatory or descriptive scholarly goals. Aside from three articles that delve into LHLC service quality (Jiang, 2013) , route selection (Wilken et al., 2016), factors influencing customer decisions between low-cost and full-service airlines for long-distance flights (Hunt & Truong, 2019), research has focused on two main areas: the financial sustainability and the business structure supporting LHLC operations. Financial sustainability. Previous research has primarily explored airlines' ability to operate long-haul flights with a significant cost advantage over traditional long-haul flights; this encompasses the overall financial feasibility ((Daft & Albers, 2012); (Poret et al., 2015)), the capacity to produce earnings similar to network carriers (Soyk et al., 2018) and the cost benefit compared to network carriers ((Francis et al., 2007);(Moreira et al., 2011); (Whyte & Lohmann, 2015)). The studies mentioned above indicate that LHLC operations can be financially appealing in certain situations, including emphasis on popular routes, use of modern and cost-effective aircraft, diversification of revenue streams beyond ticket sales, fuel hedging, and strategic management of air traffic control charges. However, as (Whyte & Lohmann, 2015) incumbent airlines' reaction and customer approval will play a critical role in the financial feasibility of LHLC operations, which has not been addressed in previous theoretical cost analyses. There has been considerable research focus on the business model that supports LHLC operations ((Morrell, 2008); (Soyk et al., 2017); (Wensveen & Leick, 2009);(Douglas, 2010);(Maertens, 2015). The LHLC business model is a market-oriented innovation that reduces the complexity of traditional long-haul business models by unbundling services and incorporates practices from the continental low-cost model (e.g., (Wensveen & Leick, 2009); (Maertens, 2015)) while leveraging much of the same technology as current business models, such as jet engines or distribution systems. (Soyk et al., 2017) The LHLC business model has been identified through empirical research as separate from the traditional legacy hub, comprising hub-and-spoke networks with a focus on premium passengers, and leisure travel which focuses on point-to-point routes for medium- and long-haul operations. For the North Atlantic market, this model is described as "no frills decentralized point-to-point" with an emphasis on low complexity and cost efficiency. These carriers target all passenger groups equally (Soyk et al., 2017). We embrace this perspective and examine the LHLC phenomenon as a novel business model in the long-haul air travel industry.

2.2. Global LHLC initiatives.

In order to find global LHLC initiatives, we reviewed all airlines with an IATA code from the establishment of IATA in 1949 until 2019 and evaluated if their activities included (partially) features of LHLC operations. as highlighted by (Maertens, 2015),(Soyk et al., 2017) or (Wensveen & Leick, 2009). All airlines were taken into account, regardless of whether they have stopped operating, are still in business, or only have plans for long-haul3 operations. This method led to a total of 31 LHLC carriers, with 16 currently active. Our analysis of global LHLC initiatives is organized into three sections: time and markets, structural characteristics, and core logic of the business model.

Time and markets. Efforts to establish low-cost carriers have been ongoing for a long time, with examples such as Icelandic Airlines, Laker Airways, and People Express operating affordable transatlantic flights decades ago. The number of LHLC carriers has notably increased since the 2000s, and AirAsia X is considered one of the oldest active LHLC carriers. These initiatives are observed globally in both well-established regions like Europe and North America, as well as emerging markets such as South America. LHLC airlines mainly operate on high-demand routes with frequent customers that yield significant profits, including northern transatlantic routes and "Kangaroo" routes to Australia ((Soyk et al., 2017); (Whyte & Lohmann, 2015)), as well as routes with strong growth potential and consistent year-round demand from cost-conscious travelers, including first-time tourists, those traveling for cultural or religious reasons. Examples of such routes are the connections between the Middle East and South East Asia operated by AirAsia X and Cebu Pacific.

Structural characteristics. There are two kinds of new competitors entering the long-haul air travel market using the LHLC business model. The first type is made up of newly established airlines that focus on long-haul routes employing the LHLC business model to attract existing demand or create new price-sensitive demand in the lower segment of the market ("indigenous pioneer"), like Laker Airways or Oasis Airlines. The second type consists of "market reachers"; these are continental LCCs that expand into new geographical markets by adding long-haul routes or establishing new AOCs4, such as WestJet or AirAsia X. These LCCs capitalize on their expertise in low-cost operations and provide connectivity options for passengers, offering direct access to their entire network spanning short- to long-haul flights.

Additionally, dominant players in the market have implemented cost-cutting initiatives known as "cost crusher" LHLC strategies, like Level, Rouge, or Eurowings. These involve creating new subsidiaries to assist network carriers in overcoming structural barriers and operating routes with highly competitive pricing. Several studies have explored the fundamental principles of the LHLC business model ((Daft & Albers, 2013); (Jean & Lohmann, 2016); (Mason & Morrison, 2008); (Soyk et al., 2017)). Based on our assessment of LHLC initiatives, we can expand the core logic of LHLC across four main aspects that distinguish it from traditional hub and leisure business models: incorporating services, prioritizing passenger needs, focusing on network connectivity, and enhancing overall connectivity. An important differentiation lies in the offering of basic fares without additional frills, enabling passengers to buy supplementary services as needed (Soyk et al., 2017). Air Belgium offers a greater range of essential amenities, such as a meal, one checked bag, and in-flight entertainment included in the standard fare. Additionally, most flights include carry-on luggage as part of the basic service beyond just transportation. Moreover, LHLC initiatives are mainly focused on dual-cabin-class configurations, indicating a broader target audience than solely leisure travelers. A significant number of air carriers, like Eurowings (Hofmann, 2017),Lie-flat business class arrangements have been implemented, further aligning the LHLC model with the focus on premium passengers typical of network carriers. By utilizing mixed-class configurations, LHLC carriers can improve their ability to offer varying fare options (Wensveen & Leick, 2009), revenue generation(Douglas, 2010), and break-even load factors (Poret et al., 2015).

Table 1 Previous studies on the LHLC phenomenon.

Authour	Year	Focus	Approach	Key Findings
Francis et al.	2007	Cost differential	Comparison of Virgin Atlantic average route costs with assumed low-cost carrier costs	Cost advantage demonstrated for low-cost carriers in very large markets
Morrell	2008	Business model	Comparison of LCCs cost advantage over full-service carriers and transferability to long-haul operations; discussion of LHLC characteristics	Considerable doubt on the establishment of LHLC business model
Wensveen and Leick	2009	Business model	Comparison of low-cost, legacy, and charter with a long-haul low cost model; depiction of three (niche) business models	Product and even more price specialist as potential templates for long-haul low-cost model
Douglas	2010	Business model	Assessment of full-service carriers that establish LHLC subsidiaries	Long-haul low-cost business model may be viable
Moreira et al.	2011	Cost differential	Cost simulation between long-haul low-cost and legacy carrier under specific aircraft type (Boing 767-300)	Cost advantage for LHLC of maximum 10% under varying operational assumptions
Daft and Albers	2012	Financial viability	Route profitability analysis considering different revenue sources and costs	LHLC can be profitable under specific business model set-ups
Jiang	2013	Service quality	Survey of Jetstar and AirAsia X passengers	Assurance, airfare and reliability as most important factor when choosing long-haul low-cost carriers
De Poret et al.	2015	Financial viability	Revenue-cost simulation for transatlantic low-cost operations (MAN-EWR; LGW-LAX)	Financial viability subject to secondary revenue sources, fuel hedging, aircraft weight managing, crew and airport charges and use of B787-8 aircraft
Maertens	2015	Business model	Analysis of EW long-haul low-cost operations and comparison with LCC principles	EW long-haul low-cost in-between traditional leisure carriers and LCC principles
Whyte and Lohmann	2015a	Cost differential	Cost model for hypothetical low-cost operations and comparison with full-service airlines (FSA) on Melbourne-London route	Long-haul low-cost airlines could achieve a cost advantage, while expected FSA competition, customer acceptance, etc. may cast doubt on viability
Wilken et al.	2016	Demand structure on long-haul routes	Analysis of O&D, O&D transfer and feeder demand on international routes per segment	Hubbing and small long-range aircrafts further extend the range of long-haul routes offering sufficient demand for low-cost operations
Soyk et al.	2017	Business model & cost differential	Analysis of carrier differences along business model framework and cost analysis on transatlantic market	Identification of three business model clusters and sustainable cost advantage for long-haul low cost (no frills, P2P carriers
Soyk et al.	2018	ReVentie characteristics	Benchmark of revenue characteristics between full-service and long-haul airlines	LHLC carriers have no revenue disadvantage compared to full-service airlines on North Atlantic routes
Hunt et al.	2019	Passenger business model preferences	Survey of passengers on variables affecting choice of and switching between a long-haul or a full-service carrier	Passengers' satisfaction with fares and comfort (LHLC) or service and flight schedule (full-service carrier) drive choice and willingness to switch.

Some studies propose that a decentralized, point-to-point (P2P) network structure with incidental feeder traffic is a defining characteristic of LHLC initiatives (see (Soyk et al., 2017)). Although this is the predominant model, it does not apply universally to all LHLC initiatives. For example, some LCC-backed ventures like Azul and WestJet employ a hub-and-spoke design and integrate LHLC operations closely with short- to medium-haul networks. Additionally, certain network carriers such as British Airways and Air France-KLM utilize their entire range of short- to long-haul flights to systematically feed flights operated under the legacy hub and the LHLC business model.

Furthermore, there are significant differences in passenger connectivity offered: OAG schedule data indicates that apart from certain key routes (e.g., LON-NYC) and peak seasons (e.g., April to September in Europe), LHLCs operate very infrequently with less than five flights per week and seasonal breaks. In contrast, legacy carriers maintain denser and stable schedules for most established connections with a minimum of six weekly flights year-round. Moreover, the LHLC initiatives we examined worldwide vary from no transfers at all to extensive transfer options through other airlines' networks - an experience distinct from the moderate-level connectivity observed in transatlantic LHLC ventures (Soyk et al., 2017). On one side, Jin Air, Cebu Pacific, and French Bee run strict point-to-point networks without selling connecting flights or offering checked-through baggage options. On the other hand, LHLC subsidiaries of airline groups have a more integrated relationship with other flight networks. Norwegian Long Haul's flight operations and administrative tasks are closely linked with the entire Norwegian Group, while Jetstar offers extensive passenger connectivity even beyond its own and Qantas' group network through alliances, codeshares, and joint ventures. Additionally, some LHLCs form alliances and codeshare partnerships with short-haul low-cost carriers to support their transatlantic routes (for example - easyJet cooperating with Norwegian). In conclusion ,the LHLC business model is based on simplicity in quality offerings and less complex operations compared to traditional models but several initiatives driven by their backgrounds are evolving them towards appealing to more premium-oriented customer segments . If successful this could pose a significant challenge to market incumbents using traditional long-haul legacy hub or leisure business models.

3. A DIFFERENT PERSPECTIVE ON THE LHLC BUSINESS MODEL FROM THE LENS OF DISRUPTIVE INNOVATION

The idea of disruptive innovation has become prominent in academic circles (e.g.,(Adner, 2002); (Christensen, 2005);(Guttentag, 2013)) and has been heavily promoted as a valuable perspective for examining early-stage innovations that have not yet impacted the fundamental sustainability of established companies in an industry. It has been specifically employed to forecast the impact of these innovations on existing businesses(Christensen, 2005) to also delineate current response possibilities ((Christensen et al., 2018);(Habtay & Holmén, 2014)). We harness the explanatory power of this framework and envision the LHLC business model as a groundbreaking innovation (Christensen, 1997). This allows us to examine its impact on the airline industry, specifically how it is expected to develop in relation to other business models.

3.1. LHLC's business model serves as a form of disruptive innovation.

Disruptive innovations typically allow new businesses to target lower-end market segments that are not well served by existing companies, where customers value the unique offerings of newcomers even if they have lower performance than established players. Additionally, there is little motivation for incumbent companies to create competing products in these areas (Christensen, 2005) . All these features are relevant to the LHLC airline business model, as we will elaborate further below Disruptive innovations target overlooked market segments where established companies, in an attempt to cater to more profitable customer groups, develop products that exceed the needs of mid- to low-end customers. This creates opportunities for new offerings with lower costs (and thus lower prices) or better performance in other aspects appealing to less affluent customer segments. (e.g.(Schmidt & Druehl, 2008)).

In the context of legacy hub business model in long-haul air travel, certain service features may be seen as excessive because passengers in the mid- to low-tier do not seem to place much value on them. Some examples include a frequent flight schedule with over five daily trips per route, a wide range of entertainment options like newspapers and dedicated on-board TV/audio channels, or exclusive airport lounges that are typically only accessible for higher service classes which these tiers generally cannot afford. In their study of passenger choice, (Hunt & Truong, 2019) LHLC carriers attract certain passengers who want to save on extras and only pay for specific services when necessary. Disruptive innovation products initially have lower performance compared to established products but offer a unique combination of features that appeals to niche customer groups, especially those in the lower end of the market(Christensen et al., 2018). No-frills offerings at very low prices being initially considered "inferior" is a key feature of all low-cost business models in the airline industry. An assessment of services covered by fares, passenger orientation, route network, and passenger connectivity within global LHLC initiatives shows that LHLC-based offerings are inferior to legacy hub business model offerings in one or multiple aspects appreciated by customers for high service quality and extensive flight schedules (Hunt & Truong, 2019).

Finally, established companies are often limited by existing profit models, preventing them from creating lower-margin products for smaller markets or even producing inferior goods that their current customers cannot use ((Christensen et al., 2018)). Network carriers find it unappealing to lower fares and offer discounted prices to attract customers with lower profit margins due to their sustained disadvantage in staff, airport, or distribution costs (Soyk et al., 2017) that restrict the ability to carry out cost-effective activities at affordable prices and necessitate higher fares to support lower-priced economy fares (Francis et al., 2007). Additionally, airline companies need a specific number of high-paying passengers to ensure the profitability of their premium facilities like airport lounges and feeder or connecting flights at top-tier airports. This is necessary to reach break-even load factors.

3.2. Is LHLC disrupting long-haul air travel?

The LHLC business model displays key features of a disruptive innovation, but does it also cause disruption in the airline industry? The literature on disruptive innovation has proposed a common process for such disruptions ((Christensen et al., 2018) (Schmidt & Druehl, 2008)) which focuses on the difference in performance between conventional and new offerings (see Fig. 1). In the context of long-distance air travel, this can be described as:

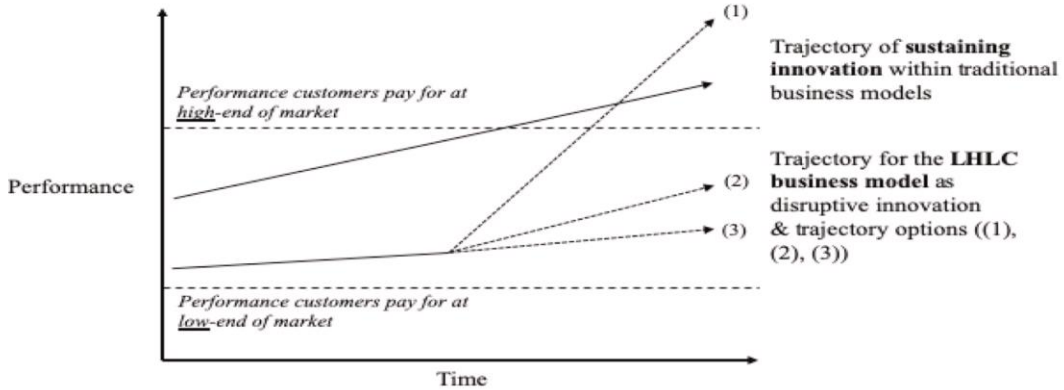
1. Due to increased competition at the lower end of the market, traditional hub and leisure business models will increasingly target higher-value market segments, leading to gradual enhancements in the performance of related offerings.
2. Industry disruption happens when the performance of previously less competitive travel options (based on the LHLC business model) surpasses the performance of previously more competitive travel options (i.e., those based on traditional legacy hub and leisure business models).
3. The occurrence of industry disruption depends on how quickly the performance of LHLC-based offerings improves.

To this day, companies utilizing the LHLC business model have primarily concentrated on strengthening their low-end operations rather than enhancing their overall value and attractiveness to other market segments. As a result, their offerings have remained stagnant instead of progressing towards higher tiers. Economic events at both macro and micro levels have led to shakeouts among various LHLC carriers, preventing the establishment of consistent and profitable operations that would enable service and product enhancements. Nonetheless, essential factors are shifting now, allowing for an improvement in the performance of LHLC-based offerings, indicating a progression along trajectory option 2 as shown in Fig.1:

Recent technological and regulatory progress seem to have significantly enhanced the foundation of LHLC initiatives. Developments like the introduction of new narrow-body (e.g., A321neo LR) and wide-body (like B787) aircraft models provide airlines with more options for creating new flight routes, while modern online reservation systems focused on retailing and additional services, alongside expanding market liberalization, improve the economics of LHLC offerings ((Poret et al., 2015); (Wensveen & Leick, 2009)). Recent sales data from Airbus shows significant orders for long-haul A321XLR aircraft from carriers with budget-friendly business models. Indigo Partners, the holding company for Wizz Air, Frontier Airlines, and JetSmart has placed 50 orders, while AirAsia X has ordered 30. Additionally, both Air Arabia and VietJet have each placed 20 orders, JetBlue has ordered 13, and Flynas as well as SKY have both ordered 10 aircraft each (Airbus, 2020). This would result in LHLCs being able to focus on enhancing performance and potentially expanding into higher-end markets in the future.

A variety of airline projects suggest aspirations to improve the performance of the LHLC service and elevate the business model towards a higher market segment. Premium cabins and passenger connectivity beyond simple point-to-point travel have been introduced compared to LHLC initiatives before the 2000s. services are now commonly seen as the standard for today's LHLC initiatives. In a more recent development, WestJet has launched business-class lounges to complement their long-haul business class strategy, while AirAsia X has installed on-board WiFi in its long-haul fleet. JetBlue, set to begin long-haul operations on transatlantic routes in 2021, views premium passengers as a crucial customer segment and intends to outfit planes on these routes with its premium MINT product (Heffernan, 2019). Individual airlines are making similar strides in short- to medium-haul markets, with some like Spirit Airlines maintaining a strong focus on pricing while others are adding extra services and features such as serving major airports and providing loyalty programs to attract business travelers ((Alamdari, 2017); (Fageda et al., 2015)). On a warning note, the enhancement in quality and efficiency which LHLC carriers can take advantage of is primarily achieved through the acquisition of new, modern long-haul aircraft. Since it's challenging to upgrade aircrafts throughout their lifespan, additional performance enhancements are anticipated to occur at a slower rate once LHLC operations commence and market entries decrease.

Fig. 1. (Potential) Performance trajectories of innovations in long-haul air travel.



Third, the details of the established hub business model create challenges for low-cost offerings to expand into higher market segments more quickly than traditional business models. Premium passenger transportation requirements, like access to major airports and alliances for connectivity, are limited and hard to replicate. Moreover, introducing similar improvements would necessitate significant investments in areas such as handling irregular operations, airport facilities (e.g., lounges), and frequent flyer programs. In summary, the LHLC business model is experiencing steady growth and an increased focus on the upmarket segment. Market share data reflects significant gains for LHLC carriers in long-haul routes from Europe to North America, with their capacity increasing sevenfold from 2015 to 2019, reaching approximately 3% of total capacity or around 14 million seats in 2019. These substantial market share gains indicate a maturing LHLC business model and heightened competition for a larger portion of the lower end of the market. This trend poses a growing challenge to traditional airlines but doesn't follow a steeply disruptive path just yet. Therefore, it's important to analyze strategic implications at the firm level for incumbent airlines going forward.

4. MARKET PLAYERS' RESPONSE STRATEGIES

Incumbent airlines must actively consider their choices; for many of them, the long-distance air travel sector is a critical revenue source where larger numbers of premium passengers bring in substantial profits compared to short-distance operations (see for example ́(ak,, 2014). Airlines like TAP, SAS, and Alitalia heavily depend on their long-distance flights. Even in the robust domestic US market, more than 90% of airlines' profits come from long-haul flights rather than short-haul ones . Even if a new idea does not immediately appear to be disruptive and therefore fails to directly prompt established companies to respond, it can still have negative consequences in the future (Schmidt & Druehl, 2008) Misinterpreting the competitive implications of rivals' actions can lead to blind spots or biases when categorizing competitors (Zajac & Bazerman, 1991) and subsequent apathy and prolonged periods of poor performance (Albers & Heuermann, 2013). The comparison to low-cost carriers entering the market demonstrates how established companies, despite having better products, soon found themselves in competition with low-cost carriers for the same customers within specific city or even airport routes (Atallah et al., 2018). New LHLC entrants are expected to keep gaining market share on established core routes and not limit their services to less appealing routes for existing competitors.

Previous work on disruptive innovation(Christensen et al., 2018); (King & B., 2015) has offered numerous possible approaches for response. Expanding on this research, we present five strategies for the network carriers, categorized into three groups. In the following section of this chapter, we detail and analyze how network carriers can prevent, acknowledge, or adopt the LHLC business model in their activities, with specific focus on two key factors:

First, we evaluate the accessibility of each strategy for network carriers based on their unique resources, capabilities, and market positions (see Table 3). This includes assessing a strategy's long-term impact in terms of its ability to effectively maintain current revenue levels and achieve the company's goals for growth and influence within the industry. It also involves examining any obstacles that may hinder a firm from quickly altering its strategic direction, such as costs, time constraints, and associated risks ((McGee & Thomas, 1986); (Mascarenhas & Aaker, 1989)).

Secondly, we analyze the current presence of each strategy in the long-haul air travel market as of today. A thorough evaluation of company strategy necessitates a multidimensional framework (see e.g. efforts to measure airline business models by (Daft & Albers, 2013) or (Jean & Lohmann, 2016)), key performance indicators might already show how network carriers have responded. For each response strategy, one key operational metric is examined and evaluated for the North Atlantic long-haul air travel market using Official Airline Guide schedule data Disruptive innovation is often misunderstood as the idea that it will inevitably replace existing offerings and dominate the entire market. In reality, market-driven, low-end innovations typically only cater to a specific segment of the market. (Albers et al., 2020). Given network carriers' limitations in competing effectively in the long-haul low-cost market, it is essential to explore alternative competitive strategies rather than engaging in direct cost-based competition with disruptors. Shifting focus towards other market segments presents a fundamental option for consideration (Porter, 1997).

Table 3 Network carrier response strategies to handle the LHLC business model.

Response Strategy		Strategy Long-term effectiveness	Firm mobility barriers
Avoid	Extend current performance trajectory	Moderate; risk of refraining from a growing market segment	Low; ability to utilize core competencies and brand reputation
	Reposition into a niche	Low; shrinking strategy that implies substantial reductions in firm size	Moderate-high; contradicts carriers* self-conceptions and stakeholder expectations
Accept	Pursue LHLC business model in autonomous unit	Moderate-high; enables participation in a growing market	Moderate; creates trade-off between separation and integration of organizational units
	Cooperate with or acquire LHLC partners	Moderate; fast access to expertise, resources and competitiveness on specific markets or routes	Low-moderate; creates costs to integrate operations/sales/ etc. logies and to ensure a consistent customer experience
Embrace	Create a hybrid business model for the long-haul market	High; ability to redefine long-haul air travel through an innovative recombination of business model components	Moderate-high; inertia to adjust business model components and risk of undermining customers' brand perception

First, current leaders can take advantage of their strengths and fundamental abilities to serve high-profit, top-tier customers across a mostly worldwide network and continue the present performance trend ((Christensen et al., 2018); (King & B., 2015)). Strategies and service cultures targeting higher-tier market segments are challenging for new entrants to replicate, and established network carriers can leverage these strengths to delay the emergence of similar offerings from low-cost long-haul carriers. For instance, they may invest in upgrading on-board experience and services by introducing new seat configurations (e.g., special seats, WiFi installation) and enhancing flight operations (e.g., increasing flight frequency and connectivity) to cater to premium customers who are willing to pay more for a superior product. Finnair and United have notably increased the proportion of premium seats offered on transatlantic routes over the years. However, the long-term effectiveness of this approach is uncertain as low-cost carriers expand into higher market segments too. While network carriers' relative capacity for premium services had remained relatively stable between 2012 and 2018, it significantly grew in 2019.

Secondly, by evaluating the worth of prevailing in an industry – determining whether a market remains lucrative or if exiting would be more advantageous when faced with a disruptive innovation (King & B., 2015)Incumbent companies have the ability to realign themselves within a specialized market or move up into higher segments (Albers et al., 2020). Network providers might choose to cease competing with LHLC carriers on routes between specific cities that are predominantly traveled by price-sensitive passengers, such as pure vacation spots. Instead, they could shift their focus to routes that have a more even mix of leisure and business travelers. With the increasing popularity of budget travel for short-to-medium-haul flights, network carriers have greater flexibility in implementing this strategy for long-haul routes due to the higher importance placed on service and comfort by passengers traveling long distances (Hunt & Truong, 2019).

Some network providers have started to prioritize less competitive long-distance routes, thus avoiding intense competition in shorter distance long-haul routes. One potential approach for network carriers is to shift their focus towards longer distance city-pair routes. For instance, American Airlines and SAS have increased the share of seat capacity on long distance (>7,000 km) from total long-haul EU-NA routes from 37.5% to 47.3% and from 50.0% to 62.3%, respectively. Meanwhile, relative seat capacity on such longer distance routes has also risen at LHLC carriers but at much lower rates, while it has remained relatively stable at other network carriers.

Winning holds varying significance for different routes and network carriers must evaluate if these specific segments offer substantial market potential, promising growth prospects, and effective defense against new competitors in comparison to the more general routes and wider market presence(Albers et al., 2020). Ultimately, repositioning does not eliminate the threat posed by LHLC carriers - namely, an incremental rise in market share, size, and political influence - making it a high-risk strategy. This approach is likely to result in a decline over the medium to long term and contradicts the self-image of network carriers as leaders in long-haul air travel or societal expectations toward established flag carriers.

Incumbent airlines might recognize the importance of long-haul low-cost air travel for their future success and begin integrating the LHLC business model into their organizational structures. Strategies to enable experimentation with the LHLC business model include creating independent organizational units or collaborating with LHLC newcomers.

First, a common reaction to disruptive innovation is for companies to create independent organizational units that seek the innovation ((Christensen et al., 2018); (Charitou, 2003)) Affiliate partnerships create potential to effectively compete and engage in both the expanding low-cost and premium long-haul travel sectors with two distinct business approaches ((Graham & Vowles, 2006);(Whyte & Lohmann, 2015)).

Establishing an independent department within the organization presents significant difficulties. It creates conflict between maintaining a distance from traditional business structures and strategies, while also aiming to minimize inefficiencies and duplication of efforts. As a result, it can impede the development of a cost-efficient mindset (Daft & Albers, 2013). In reaction to continental LCCs, network carriers have struggled with the performance of low-cost "airline-within-airline" subsidiaries like Ted by United Airlines or Go-Fly by British Airways. This has been due to unclear value propositions, entering the market late, similarities between full-service and low-cost operations, and cost disadvantages compared to other low-cost peers (Pearson & Merkert, 2014). Within the LHLC framework, Air France-KLM's choice to deeply integrate Joon with its existing hub operations led to a vague value proposition for the low-cost brand. This also caused internal tensions within the worker union and ultimately resulted in Joon being terminated after 13 months (Reals, 2019).

Autonomous organizational units enable network carriers to enter the expanding long-haul air travel market with a manageable level of risk and resource commitment, making this approach quite popular. Several network carriers have already set up LHLC subsidiaries. Specifically, developments in seat capacity demonstrate the strong pursuit of this strategy by network carriers like Lufthansa or their holding companies such as IAG, as evidenced by Eurowings and Level increasing their seat capacities from 402,000 and 19,000 seats in 2012 to 5,936,000 and 3746 seats in2019 respectively.

Incumbents may attempt to align themselves with competitors they cannot outperform and work together or buy LHLC partners. ((Christensen et al., 2018); (Marx et al., 2014). Cooperation, such as interline or codeshare agreements, and even acquisitions can give network carriers rapid access to essential skills and resources. This enables them to experiment with new strategies at manageable risks, leading to cost reductions on unprofitable routes or quick responses in lucrative markets. Carriers with rapidly increasing seat capacities and unstable financial positions are especially appealing for cooperation or acquisitions. However, integrating operational logics, IT systems, and customer expectations from different business models requires careful consideration.

Today, there is evidence of network carriers collaborating with LHLC carriers through codeshares on EU-NA routes. For instance, in 2019 Emirates marketed approximately 420,000 seats operated by Westjet and 659,000 seats marketed by JetBlue. Beyond the transatlantic market, individual network carriers have initiated partnerships between their independent LHLC subsidiaries and external LHLCs. As an example, Singapore Airlines' subsidiary Scoot collaborates with several long-haul low-cost carriers such as Cebu Pacific and easyJet. Lastly, established airlines may adopt the LHLC business model innovation as a chance to develop a new hybrid business model that can lead to success in the market (Christensen et al., 2018). Hybrid business models can offer a stronger value proposition to customers by combining effective elements from both traditional and new business models. These are often seen as an interim approach with restricted long-term economic sustainability (Corbo, 2017), Southwest's success is attributed to a hybrid model that incorporates elements of both low-cost and differentiation strategies (Moir & Lohmann, 2018). A hybrid business model can exist in two ways. It may involve combining certain elements of both LHLC and traditional hub business models. With the emergence of continental LCCs, network carriers often integrated fleet standardization (Merkert & Hensher, 2011) or fare un- and re-bundling (Hazledine, 2011) into their traditional center of operations. Conversely, it may represent various unique offerings catered to diverse market segments (Christensen et al., 2018). Network providers can integrate budget and premium travel on the same aircraft to accommodate various types of passengers. Thoughtful design is required for Business incumbents encounter significant challenges in shifting away from traditional model components. This is especially crucial for network providers with their complex structures comprising various levels of hierarchy, diverse cultures, historically accumulated pension benefits, and strained connections with pilot unions (e.g. (Gittell et al., 2004)) Some of this complexity arises from the demand of premium passengers for high service levels or all-inclusive fares. Simplifications in business models should not compromise network carriers' positive perception as premium legacy brands. Digitalization provides new opportunities for streamlined and cost-effective operations that cater to different customer segments while reducing the risk of diluting the brand appeal to premium customers.

For instance, "white label" distribution may facilitate brand-unspecific sale of remaining capacity to price-sensitive customers. The assessment of whether and how much network carriers are adopting hybrid long-haul business models is challenging and necessitates a multidimensional analysis. Nonetheless, recent developments in the configuration of airline value chain activities suggest an evolving landscape towards a more diversified approach (see (Daft & Albers, 2015))

Network carriers are showing an initial sign of moving away from core commitments of their traditional business model, including cabin product design, ticket distribution, and bundling. Premium cabin seat layouts are becoming more intricate to provide passengers with increased privacy, while the space per seat in economy class continues to shrink (Winter, 2019) Well-established airlines like Cathay Pacific, British Airways, and Emirates are reducing the seat width in some B777 aircraft by switching to 10-abreast configurations instead of the original 9-abreast setup. Similarly, most network carriers introducing next-generation long-haul aircraft such as A350 and B787 (including Qatar Airways, Singapore Airlines, and LAN Chile) have chosen the crowded 9-abreast economy class configuration over the more spacious 8-abreast version.

Ticket distribution networks have heavily relied on conventional methods of indirect sales through global distribution systems. In contrast, low-cost carriers predominantly utilize affordable direct sales via their own channels. Over the past decade, network carriers have begun to increase their investment in this new form of digitalized commerce (Poulaki & Katsoni, 2020). Today, major airline companies worldwide, including American Airlines, Lufthansa, and ANA, have approached a more balanced distribution model by increasing their direct sales to a sustainable 50-50 ratio. Additionally, traditional airlines are now adopting the LCC strategy of offering individual components beyond basic transportation. These airlines are also generating additional revenue from premium services such as special meals and access to exclusive traveler lounges. Major players in this shift include United Airlines, Delta, and Air France-KLM who rank among the top 10 for ancillary revenue.

In conclusion, the market control of network carriers in long-distance air travel and their available resources allow for a variety of possible responses. The information presented above can assist network carriers in considering their choices and adjusting or solidifying strong competitive positions against new entrants as well as established long-haul low-cost carriers during competitor analysis.

5. CONCLUSION

The purpose of this study was to further explore the LHLC phenomenon and evaluate its current status, future prospects, and strategic implications for established airlines. We conducted a comprehensive review of academic research and global LHLC initiatives in order to gauge the understanding of this business model in existing literature and its practical implementation within airline operations and strategy. In assessing its potential future evolution and impact on the airline industry, we examined the LHLC business model as a disruptive innovation, identified recent technological advancements as indicators of its future performance compared to traditional long-haul air travel models, and outlined strategic response options for network carriers.

The analysis indicates that the future direction of the LHLC business model is aimed at capturing a larger share of the long-haul air travel market, currently dominated by network carriers. As a result, network carriers are urged to prepare for this shift. We have outlined several options, with the most promising and challenging one involving fully adopting the LHLC business model innovation in order to create a competitive hybrid model (refer to Table 3). This suggests that there will likely be a convergence of business models in long-haul air travel as airline groups compete directly for mass market appeal. However, it's unclear whether either model will dominate the overall market and disrupt long-haul air travel. Similar developments have been seen in continental airline markets where different business models have converged (Daft & Albers, 2015) a change to direct competition at the market and airport levels has been noted ((Atallah et al., 2018); (Dobruszkes et al., 2017);(Klein et al., 2015)). While the emphasis of this research has been on the LHLC business model and its effects on established companies in long-haul air travel, the emergence of LHLC carriers could have more widespread consequences. Initially, it might bring about significant transformation to global airline networks. Up until now, network carriers' strategies for international expansion through alliances, codeshares, and joint ventures have resulted in the virtualization of the industry (Craps, 2021) and worldwide, high-quality transportation systems.

While low-cost carriers often employ more straightforward methods to enter the market.((Albers et al., 2010);(Rodríguez et al., 2011)), Market-expanding subsidiaries, such as the recent collaboration between LCCs and other LHLC or leisure carriers (e.g., Value Alliance in Asia or Ryanair and Air Europa), indicate the potential growth of international low-cost transportation networks as rivals to premium networks. These developments and their impact on network carriers and their affiliates require further examination. Additionally, we may see how the emergence of the LHLC business model could prompt airlines, governments, or other entities to redefine the significance and principles of the industry ((Christensen et al., 2018); (Albers et al., 2020)). The LHLC's business model revolves around pricing as a key factor for passengers when making choices (Hunt & Truong, 2019), while advancements in customer experience or changes in government regulations may introduce new elements, such as flight experience or sustainability, that impact the determination of customer satisfaction and preferences for long-haul air travel, it ultimately "disrupts the disruption (Albers et al., 2020). This study improves the comprehension of airline managers regarding the future development of the LHLC business model and provides insights into strategic response options. Network carriers, as well as leisure carriers and new entrants, must make cautious decisions on whether to avoid, accept, or adopt the LHLC logic. With increasing competition in long-haul air travel, a significant market reorganization is currently taking place.

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