

Louvain School of Management

**Fighting for flying: The Competition Challenges
between Full-Service Network Carriers & Low-Cost
Carriers in Latin America and the sustainable
strategies to face Low-Cost Competition in the
Industry**

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The purpose of this master thesis is to study the competition challenges between the full-service network carriers (FSNC) and the low-cost carriers (LCC) and to provide recommendations for full-service carriers to fight LCC competition. The analysis focuses on understanding the drivers of the competition, the profitability, and the main strategies used by carriers in the Latin American region. The thesis is split into three main parts: a literary review providing a better understanding of the aviation industry, the current state of the Latin American region, the main business models deriving from full-service and low-cost strategies, and the main strategies used by FSNCs to fight LCCs. The practical part is composed of a qualitative analysis focusing on understanding the competitive advantages, strategies, and risks of each carrier; and a quantitative analysis that provides an overview of the financial and operational performance of the different business models and strategies adopted by the carriers. The analysis concluded that the main differentiators of FSNCs in the region are no longer seen as important by customers and that carriers should implement many policies to cut costs. A list of different recommendations is provided.

Keywords: Airline's strategy, Low-Cost Carriers, Full-Service Carriers, Latin America.

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GLOSSARY

Ancillary revenue: Revenue from activities and services offered by airlines to its passengers' choice of purchase. E.g.: additional baggage, on-board services, "à la carte" services.

Aircraft utilization: Measure of the productivity of an airplane, usually calculated by dividing the block hours by the number of aircraft days assigned to service on the air. Presented in block hours per day.

ASK (or ASM): Measurement of airline capacity output that refers to one aircraft seat flown one kilometer (or mile) even if it is not occupied. E.g.: An aircraft with 100 seats that flew 100 miles creates 100,000 available seat miles.

Airlines Alliances: Agreements between two or more airlines in which those airlines share routes and resources, such as ground equipment, airport lounges, and provide reciprocal benefits to their passengers by using their frequent fliers' programs. E.g.: Star Alliance, One World.

Block hours: standard unit used in aviation to evaluate aircraft utilization. It measures the time the aircraft door closes at departure until the moment the aircraft doors open at arrival after landing.

CAPA: Centre for Aviation.

CASK: Unit to measure the unit cost to operate each seat for every kilometer. The lower the CASK, the higher the ability of the airline to generate revenue.

CASK ex. Fuel: CASK excluding fuel cost. It provides a better overview of the ability of the airline to manage its costs.

Code-Sharing: An agreement between two airlines to share seats on flights. Both airlines can put their brand name and their flight code.

Carrier-within-Carrier (CWC): Carriers that are created inside a parent airline. Usually, this type of strategy is used to create low-cost carriers within a full-service carrier.

Emerging-Full-Service Network Carriers (EFSNC): These carriers are very similar to the Established regional carriers; the main difference is that EFSNC are more likely to fly long-haul and ERC prefer to fly in a defined region of Africa.

Emerging Regional/ Low-cost carriers (ERLCC): this type of airline is private, has a small size, and flights mainly in the same regions. Furthermore, they operate mainly in monopolistic markets which correspond to the model of a regional airline.

Employees per aircraft: average number of all its paid employees per unit of production. Another way of seeing it is the average number of paid employees needed to operate one flight.

Established regional Carriers (ERC): A carrier that usually flies by using their own hubs providing spoke services, or even flying point-to-point in some niche routes. Their main purpose is to connect passengers from specific regions to a major airline hub.

FSNC: Full-Service Network Carrier.

FSA: Full-Service Airlines.

Hybrid Carrier: A carrier adopting characteristics from LCC and FSNC models. Usually, they have dominating characteristics from one model.

Hub-And-Spoke: A hub is a central airport that flights are routed through a hub, and spokes are the routes that planes take out of the hub airport.

IATA: International Air Transport Association.

Long-Haul Niche Carriers (LHNC): These carriers focus mainly on niche point-to-point demand generally coming from tourism, passengers visiting their relatives, or business passengers.

LCC: Low-Cost Carrier.

MRO: Maintenance, Repair, and Operations.

On-time-performance: Measurement of the punctuality and reliability of a carrier.

Point-to-Point Network: In aviation, it is a transportation system in which an aircraft travels directly to a destination, rather than using a central hub.

Pure Low-Cost: These airlines are the ones that respect the different criteria for the LCC business model.

Small Full-Service Carriers (SFSC): Mainly controlled by African states, these airlines fly longer lengths, but they have very low connectivity. They target mostly niche markets, and they usually have many problems facing the volatile demand and they use a lot the point-to-point structure even if they fly in larger markets.

Stage Length: Average distance flown measured in miles or KM per aircraft departure. Usually calculated by dividing the total miles or KM flew by the total number of departures.

Turnaround Time (TAT): Time that elapses between the arrival of an aircraft and then taking off the same aircraft for a new destination.

VFR: Visiting friends and relatives segment. Usually, it is a segment targeted by LCC.

Yield: Average fare per passenger per mile (or kilometer).

Part I - Introduction

Since its early beginnings, the aviation industry has been a fundamental pillar of economic development. Nowadays, people can move across continents faster and airplanes are bringing people, cultures, and ideas together. However, airline companies have always struggled with profitability and cost efficiency, the airline industry is a very capital-intensive business that is driven by the airlines that manage to have the lowest cost and that are perceived as innovators.

With the creation of the Southwest Airlines business model, one new type of actor appeared on the landscape: the low-cost carriers (LCC). This business model has become very mature in different markets (the United States, Europe, and Asia) and it's reducing the profitability of full-service network carriers (FSNC).

The ambition of this master thesis is to analyze the challenges that low-cost and full-service airlines face when competing, to understand the main competitive advantages that carriers must develop to be successful in a very particular market and to bring recommendations for full-service carriers to fight those challenges. The choice of Latin America as a focus for this thesis is justified because the LCC model is still not mature and therefore the industry is still in transformation. Furthermore, the region represents a big potential for investment, especially for European carriers, such as Ryan Air or Iberia, but also for American carriers such as United Airlines and American Airlines.

Through this master's thesis, the following question will be answered: what are the competition challenges of Latin American FSNCs & LCCs, and how can FSNCs face this competition? We can divide the research question into three main sub-questions. First, what are the drivers of low-cost and full-service competition in the region, and how they impact profitability? To answer this subtopic, one hypothesis will be studied: profitability is no longer driven by comfort, convenience, and connectivity but by cost and productivity in Latin America. Second, is FSNC and LCC competition challenged by other types of business models in the region? The idea is to verify the following hypothesis: the Latin American landscape is no longer composed of two main business models but by different types of actors. Finally, what are the best strategic focuses for FSNCs to fight LCC competition? For this subtopic four hypotheses are tested: The hybrid strategy is a sustainable strategy to fight LCC competition; Creating and capturing value is a sustainable strategy to fight LCC competition; Market and advantages of anticipation is a

sustainable strategy to fight LCC competition; Revenue generation & cost-cutting is a sustainable strategy to fight LCC competition.

This research work is composed of a literature review, in which the main objectives are to learn about the FSNC and LCC business models (Chapter 1), understand the challenges of the Latin American aviation industry faced by both actors while competing against each other (Chapter 2), provide with a framework useful for the practical part of the different business models found in the literature (Chapter 3) and the different strategies used by FSNC to fight LCC competition (Chapter 4). The practical part is a case study based in the Latin American region which objective is to cluster the different business models by using the theoretical framework developed in the literature review, analyze qualitative and quantitative strategies of the carriers, and provide some recommendations of the direction that FSNC should follow in the region, but also in other continents such as Europe. In the conclusion, a summary of the main findings of the thesis will be presented, as well as the limitations of the research and the implications for the business strategies used in the global aviation industry.

Part II – Literature Review

Chapter 1: Learning about the airline industry

1.1 Deregulation and history (World & Latin America): From the 1900s to our time.

In his book *Conquistadors of the Sky*, Dan Hagerdon (2008) shows that the history of aviation in Latin America started some years later than the European and American industries. In the 1920s, the Latin American market was already disputed between the European plane manufacturers, and in the 1930s, the American manufacturers started to compete to gain the Latin American market (Vidal Olivares & Piglia, 2019). According to Vidal Olivares J. & Piglia M. (2019), the scientific literature puts the beginning of commercial aviation in the years that followed the Great Depression of 1930. This is the beginning of the airline carrier model that we know in the present.

After the Second World War, because of its different consequences, states started participating more in the commercial aviation industry. After the Chicago Convention in 1944, the carrier model was consolidated but states controlled commercial aviation. The different flows of flights were organized by allied countries that possessed monopolies of national flights, and international flights were only allowed by negotiated bilateral trades (Vidal Olivares & Piglia,

2019). This is what we can call a period of closed skies. This vision was strengthened with the Cold War because states realized the interest in controlling their air space. With tension rising in the 1950s, the Latin American countries started to protect their spaces too. To do so, they mainly started developing national laws protecting their air space, also they started protecting their national markets and they developed national companies, avoiding the introduction of foreign entrants to the market.

During the same years, Latin America was giving a priority to its military aviation. While the United States aerospace programs were developing in seeking better aviation technology, European aviation was stagnating, but this was stopped with the Airbus project. In 1976, ministers from France, Germany, and Britain consented to create Airbus “for the purpose of strengthening European cooperation in the field of aviation technology and thereby promoting economic and technological progress in Europe, to take appropriate measures for the joint development and production of an airbus” (Airbus Mission Statement, 1967).

While the United States and Europe had their programs developing new aviation technology, Latin American countries were struggling to develop and create their aircraft because of a lack of economic resources and political challenges. Therefore, countries were forced to acquire their fleets in the American and European markets. Furthermore, adapting the fleet to the new technology in the following years was a continuous challenge and these challenges increased when the USA and Europe liberalized their markets from 1978 (Vidal Olivares & Piglia, 2019).

The beginning of the open skies era introduced significant changes in the industry: public companies became private; airlines and airports were acquired by private companies. Latin America followed the trend in the following years, and this resulted in the entry of a high amount of foreign capital aiming to acquire state assets. However, Olivares and Piglia (2019) constated different rhythms of each country to adapt to this process. The rhythm depended on the political landscape and the regulation of each country. At the end of the process, three big private Latin American carriers were born: LATAM (Chile), AVIANCA (Colombia), and AEROMEXICO (Mexico) but some other public carriers remained. What can be said with exactitude is that the different research done about the industry’s origin had proven that commercial carriers have played a very important role in the development of the Latin America region in the 1930s and 1940s (Vidal Olivares & Piglia, 2019). But the region is still late in

comparison to other markets, especially in terms of liberalization and policies allowing a Latin American open sky.

1.2 Main strategic focus used by the carriers:

The airline industry is composed of many business models based on two main strategic orientations that have evolved: Full-service and Low-Cost. In this master thesis, we will be studying two types of carriers: Low-Cost Carriers (LCC) and Full-Service Network Carriers (FSNC). However, chapter 3 will provide an important hypothesis: there are more than just two types of business models that emerged from the LCC and FSNC.

1.2.1 *Low-Cost Carriers (LCC) attributes*

There are many definitions of Low-Cost Carriers. However, according to Schlumberger & al. (2014), scientific literature agrees on one point: LCC are carriers that develop a cost-competitive advantage in comparison with the rest of the carriers. Because of their low-cost strategy, these carriers can offer much more competitive pricing than FSNCs. This is possible because of the following attributes:

Service offering:

In terms of service offerings, one of the common strategies of LCCs is to charge certain additional services. In the aviation industry, within the LCCs is very common to ask for payment for “frills”, meaning in this specific case charging for food & beverages, assigned seating, and additional baggage (Schlumberger & Weisskopf, 2014). Also, some airlines realized that certain passengers considered as very important to board faster the plane and to reserve their seats, so they decided to charge this as an additional service. For example, EasyJet, a Swiss LCC offer a “Speedy Boarding” ticket only for passengers that have the fidelity card or that have bought additional services such as upfront seats, extra legroom seats, or the “Flexi ticket” which is their flexible fare that allows free changes on flight dates (EasyJet,2020). Instead of stopping offering the services that FSNC could offer, the LCC model works more on a pay-for-service logic. Customers can have access to the additional services offered by FSNC, but they will have to pay an additional fee.

Network structure & Scheduling:

LCC usually adopts a short-haul Point-to-Point network structure because it allows them to increase the frequency of their flight by avoiding the costs and the complexity of the Hub-and-

Spoke structure that is usually preferred by the FSNC (Schlumberger & Weisskopf, 2014). However, according to Schlumberger and Weisskopf (2014), this kind of configuration can generate diseconomies of scale during peak hours. During these hours the demand for runways, gates, and equipment is very high which increases cost and overcrowding airports. Therefore, avoiding this kind of network is a way to reduce the cost of the operations. However, certain LCCs prefer to offer connections via their hubs. For example, GO-air, which is an Indian low-cost, possesses a hub in Mumbai.

Use of secondary airports:

According to Forsyth (2003), because of the low frequency of flights departing from those airports and the scarcity of certain airport infrastructure, secondary airports offer two main advantages which are lower operating costs and less congestion. Furthermore, because of the same reasons, LCC operating from this kind of airport benefits from lower airport charges. These three advantages are fundamental for Low-Cost carriers to design more efficient schedules and increase the use of their aircraft which is very important to maintain a low operation cost. Finally, because of the lack of congestion in those airports, the airport can also benefit from the arrival of an LCC to its facilities, and sometimes LCCs manage to obtain exclusive use of secondary airports (Schlumberger & Weisskopf, 2014).

High aircraft utilization:

One of the specificities of the Low-Cost carriers is that they highly utilize their aircraft. According to Vasigh & Al. (2008), a high utilization rate of an aircraft can be obtained by increasing the frequency of flights, flying longer routes, or reducing the Turnaround Time (TAT), which is the time that elapses between the arrival of an aircraft and the taking - off of the same aircraft for a new destination. To reduce TAT, some LCCs try to decrease boarding time by not allowing seat allocation, removing, or using limited catering services, having shorter boarding procedures, and using secondary airports. Others will prefer to fly longer routes or some will just increase the frequency of the route each day (Schlumberger & Weisskopf, 2014).

Shorter stage lengths:

An additional specificity of LCCs is that they prefer to fly short-to-medium haul routes meaning that they fly routes of around 2400 KM and the less time it takes, the better. One would think that this is contradictory because shorter routes mean that the fee of the ground equipment used

to board and to land is less spread in a lower distance on air. However, according to Dietlin (2014), boarding and landing costs are fixed costs. Therefore, those costs do not depend on the distance flown, and using shorter routes allows LCCs to increase the utilization rate of their aircraft and reduce operating costs.

Fleet:

Concerning the fleet of aircraft, usually LCCs will prefer to use one type of aircraft. According to Schlumberger & Weisskopf (2014), this is explained because if carriers have different types of aircraft, the operation on the ground becomes much more complex and costly as they need equipment, training for workers, and spare parts. Furthermore, another advantage of using one signal aircraft type is that airlines can benefit from discounts for bulk demand. Additionally, LCC configures their aircraft differently to have more space for seats. Usually, low-cost airlines use seat pitches of 28-29 inches in comparison with 31-33 inches for the FSNCs (Schlumberger & Weisskopf, 2014).

Marketing:

In terms of marketing, specifically in pricing, the entry of the Low-Cost model generated a change in how airlines priced (Schlumberger & Weisskopf, 2014). The FSNCs were forced to simplify their fares because the products offered by LCCs were very homogeneous. Schlumberger and Weisskopf (2014) discuss the changeset in terms of airlines pricing:

Airlines segment passenger demand by creating so-called “fences” with independent unique products by fare class. This has allowed them to forecast demand by fare class and then determine the right allocation against capacity. In the LCC fare simplification model, these fences do not exist and have allowed carriers to promote 100 percent “sell down” to open fare class. (pp.39)

However, it is not proved yet that adopting a fare simplification model can be beneficial for an airline (Schlumberger and Weisskopf, 2014).

Labor:

For an airline, labor represents an important aspect of its costs. Latin American Full-Service Network Carriers are well-known in the industry because they have very inefficient cost structures and labor productivity of 125-150 employees per aircraft (O'Connell & al., 2020). In aviation, the labor productivity index is a key performance indicator (KPI) that measures

passenger/employee, employee/aircraft, and ASK /employee. Low-Cost carriers in the region perform very well in this indicator. For example, according to O'Connell & al. (2020) research, Volaris, a Mexican LCC, has a ratio of 66 employees per aircraft which is half of what Latin American FSNCs had in 2016.

Furthermore, Schlumberger & Weisskopf (2014) research proves that in Europe, LCC carriers have better labor productivity than FSNCs carriers. However, they indicate that some authors believe that generally LCCs pay less than FSNCs and ask for their pilots to fly longer hours. This could be an explanation for the different pilot strikes that RyanAir had in 2019, proving that maybe the model could have its limits (The Sun, 2019). Nonetheless, the scientific literature does not agree on a common ground for this issue (Schlumberger & Weisskopf, 2014).

1.2.2 Full-Service Network Carriers (FSNC) attributes

As its name suggests, in comparison with LCCs, Full-Service Network Carriers are characterized by having a more complete offer in terms of services than LCCs. As done for the previous model, it is interesting for this research to understand the main attributes of the model.

Service offering:

Full-service carriers offer high-quality services that can be divided into three aspects: connectivity, in-fling and ground services, and last-minute seat availability (InterVISTAS, 2016). According to InterVISTAS, Full-Service Airlines (FSA) offer better connectivity because the networks that they operate are larger. This can be explained by two factors: alliances with other airlines and redundancy of their routes which allow passengers to have a choice of different routes to arrive at the same destination. This attribute makes the FSNC much more interesting for certain kinds of passengers, specifically business travelers.

Network structure:

As explained before, LCCs fly using a point-to-point structure. In contrast, according to Schlumberger & Weisskopf (2014), full-service airlines use a Hub-and-Spoke structure. In the Hub-and-Spoke, the “Spoke” flights arrive all at a hub in which passengers need to make a transfer to another hub of the airline or the destination. In Latin America, one of the carriers that use this technique is Copa Airlines which has its hub in Panama City. The “Hub of the Americas” is the center of their operations that allows them to connect flights in the Americas. We explained before that usually this kind of configuration generates diseconomies of scale. However, we will see later that in Latin America this is one of the assets of the company that

allow them to even beat LLCs in terms of labor productivity and costs structures (O'Connell *et al.*, 2020), showing that combined with a good geographic positioning and optimized structure costs, the Hub-and-Spoke structure can be beneficial for an airline.

Scheduling and high connectivity costs:

Even if this method is working for Copa Airlines, the literature consensus is that the high connectivity attribute of FSNCs is very costly. To offer better connectivity, FSNCs need to have the proper computer systems and therefore a very trained labor force that can ensure that each passenger will arrive at their destination. Also, it requires better coordination between many flights which automatically impacts the aircraft utilization, the labor costs, and the ground support equipment cost.

Lower aircraft utilization:

Overall, for an airline to be profitable, its more capital demanding assets must be highly used to spread the costs better. However, in the case of the FSNCs, their high connectivity forced them to have better coordination with all their flights, and this complexity often caused aircraft to remain for a long time and reducing therefore the utilization of their aircraft (InterVISTAS, 2016).

High Legacy costs:

Compared with new airlines that can enter the industry with new compensation packages, new suppliers' agreements, and of course with non-existing consumers' expectations, FSNCs are forced to maintain a certain level, and therefore switching to a less costly strategy could be more difficult. For example, when faster aircraft were introduced to the industry, airlines could cut some costs and therefore pilots were offered better compensation packages than in comparison with similar jobs in other industries (InterVISTAS, 2016). But now, a new airline entering the market could easily pay lower wages and benefit from better labor costs. There is a certain expectation for FSNC related to the level of quality offered, the compensation packages paid to their employees, and the prices negotiated with their suppliers. This is what it is called in the industry the legacy costs (InterVISTAS, 2016).

1.3 Current business context of the global industry:

Airlines use different methods to expand their operations. In this literature review, we have identified four different methods: Airlines Alliances, M&A, Code-Sharing, and Joint Ventures.

Of course, a carrier can always create a route from scratch, or they are even airlines that decide to create airlines from zero (Greenfields). In Latin America, the most used are the three first strategies. Greenfields is not a common practice.

1.3.1 Airlines Alliances

In the airline industry, alliances usually refer to agreements between two or more airlines in which those airlines share routes and resources, such as ground equipment, airport lounges, and provide reciprocal benefits to their passengers by using their frequent fliers' programs. The main advantages of these kinds of alliances are that airlines inside these alliances can expand their routes without flying to the final destinations. So, they can offer more destinations to its passengers. Furthermore, if there is a problem with a flight or if a passenger misses a connection because of the airline, they can put him on another flight of another airline inside of the Alliance faster, reducing passenger dissatisfaction. Finally, being members of airline alliances allow carriers to offer bag interlining, which is the fact of not having to check-in the bags if passengers do a connecting flight. This method of expansion should not be confused with code-sharing, the main difference is that code-sharing only concerns two airlines that are flying with shared seats on the same flight.

1.3.2 M&A

Some airlines merge to become bigger and more competitive and other airlines are acquired to expand their network. The main advantage of these practices is that the company will get the slots and the routes of the other company. It is also a way to increase the fleet of the airlines and leverage resources to expand further their network. The main problem with M&A is that it can be very expensive, and it is highly regulated. It is a much more difficult practice to put in place today in many regions because of the high concentration of the market. Integration and cultural difference can also pose a problem.

1.3.3 Code-sharing

A codeshare is an agreement between two airlines to share seats on flights. Both airlines can put their brand name and their flight code. Thanks to this method, airlines can add many destinations to their network without investment. The downside of this agreement is that the profits are shared between the two companies and can add operational complexity to their network (especially for luggage handling). Codesharing can also create confusion among customers often unaware that they will fly with another company.

1.3.4 Joint ventures

Joint ventures are agreements between two airlines to collaborate in areas such as scheduling or revenue sharing. In 2018, Avianca announced a joint venture with United and Copa to increase their sales in the US-Latin American market. This is their answer to the joint venture announced by American Airlines with LATAM Group. From the airline's point of view, this helps them to increase their number of flights and revenues in routes that they don't operate. However, sometimes these agreements are very costly to implement because of market regulators. From the customer point of view, it means a more diversified offer and greater connections.

From a historic outlook perspective, the Latin American aviation industry entered late the open skies era, and it is still in process. In comparison with Europe and the USA, Latin America has not a common air space regulation which complexifies much more the operation of the carriers. Furthermore, since the 1950s the different states are struggling to finance their markets and the lack of political stability makes it harder for states to sign open skies agreements or to find a common regulation for the whole continent. In terms of the current business context, airlines mainly use three strategies to expand their operations: airline alliances, code sharing, and M&A. Joint ventures are also practiced, majorly by FSNCs. The current COVID-19 crisis has revealed several limits for the region to develop the industry. Because of lack of financial help from states and a huge amount of debt, the three big Latin American carriers (LATAM, AVIANCA, and AEROMEXICO) filed for Chapter 11 bankruptcies in the US. Analyzing the current state of the region will be very important to this research, this is the objective of the following chapter.

Chapter 2: The current landscape of the Latin American Airline Industry

2.0 The Airlines

2.0.1 Full-Service Airlines:

The Latin American Air Transport industry is dominated by five main full-service carriers: LATAM, Avianca, Aeromexico, Copa Airlines, and Aerolineas Argentinas. These FSNC together managed in 2016 at last 64% of the total available capacity of the region. As explained in the latter chapter, on a general basis, FSNCs organize their network by centering their operations in regional hubs. For example, Avianca has its South American hub in Bogota and two other hubs in Central America, one in El Salvador and another in Costa Rica. Copa has centralized its operation in Panama City, Aeromexico in Mexico City, LATAM in Santiago,

and Aerolineas Argentinas in Buenos Aires. But each FSNCs has a domestic airline in each country that they operate. In a nutshell, according to the research done by O'Connell & al. (2020), the FSNCs perform on the product offering. In the region, they have managed to offer high comfort during the flights (quality, seating, and premium services onboard), very convenient routes which are related to the frequency they fly, the punctuality, and the airport attractiveness. Also, they offer good connectivity with a lot of routes, code sharing, alliances, and dense networks. However, in comparison with other markets, the FSNCs of Latin America suffer from low profits that could be explained by an inefficient cost structure, a high traffic concentration, and unfavorable externalities related to the environment. According to the research of O'Connell et al. (2020), these are the main drivers of the underperforming profits of the carriers in the region. But there is an exception, Copa Airlines has better results in the same market and even outperforms LCCs in different key performance indicators (See Figure 1).

2.0.2 Low-Cost Airlines:

According to O'Connell & al. (2020), in 2016, the three largest LCCs in the region were Gol, Volaris, and Azul. These carriers together manage 16% of the available capacity of the region (before COVID-19). Together with the main five FSNCs, in 2016 they represented 80% of the available capacity (O'Connell & al., 2020). In a nutshell, the research done by the same academics showed that LCCs thrive by applying the low-cost mindset in all their operations. In comparison with FSNCs, affected by the drivers explained above, LCCs have implemented a performant organizational architecture performing in metrics such as high aircraft utilization, use of secondary airports, strong online penetration, and higher ancillary revenues (O'Connell & al., 2020).

An additional aspect of LCCs is that they manage to avoid traffic congestion which characterizes the primary airports of the region. In fact, by doing this, scientific literature states that low-cost carriers can achieve higher aircraft productivity, at least around 50% higher than full-service carriers (Warnock- Smith & Potter, 2005). Furthermore, as explained in the last chapter, usually LCCs have a high aircraft utilization to reduce fixed costs and to generate much more revenue. A deeper comparison between LCCs and FSCs models will be done below.

2.0.3 Regional airlines :

In the Latin American market, most of the airlines offer local flights. Because of the big territories of the countries, especially in South America, sometimes the only way of traveling

from a city to another is by plane. O'Connell et al. (2020) based on a research of OAG Analysis explain that the majorities of the airlines of the region are regional, meaning that they specialize in flights inside of the same countries or the same region (South America, Central America, or North America).

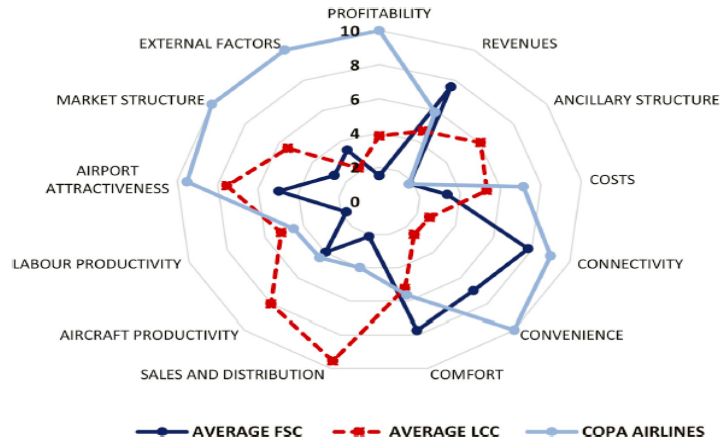


Figure 1: Overview of O'Connell et al. (2020) research results for Latin American FSCs, LCCs, and Copa Airlines.

A lot of the mainline airlines are composed of different regional airlines, having their brand in different countries is a strategy used by carriers to avoid the lack of common regulations of the countries. Franchising is used by all the five different main FSNCs. Only Copa Airlines franchised and flew by using the same brand, which has helped to reduce its costs (O'Connell et. al, 2020). We will talk about this later in this chapter. A cluster of the different actors in the industry is provided in Figure 2.

2.1 Challenges of the Latin American region

2.1.1 High Costs across the region

2.1.1.1 Fuel costs

Globally, oil cost is a very important driver for an airline. However, in comparison with other markets such as Europe and the United States, Latin America consumes a lot less fuel per year. According to the Jet Fuel Monitor Index of the International Air Transport Association (IATA), Latin America represents only 4% of worldwide fuel consumption (IATA, 2021). And this is detrimental for the industry because the bargaining power of the airlines is very low, therefore they have less access to attractive prices. Furthermore, their fluctuating currencies increase their fuel costs. According to IATA (2016), the low profitability of the region is driven partly by the weak currencies which make the purchases in US dollars much more expensive.

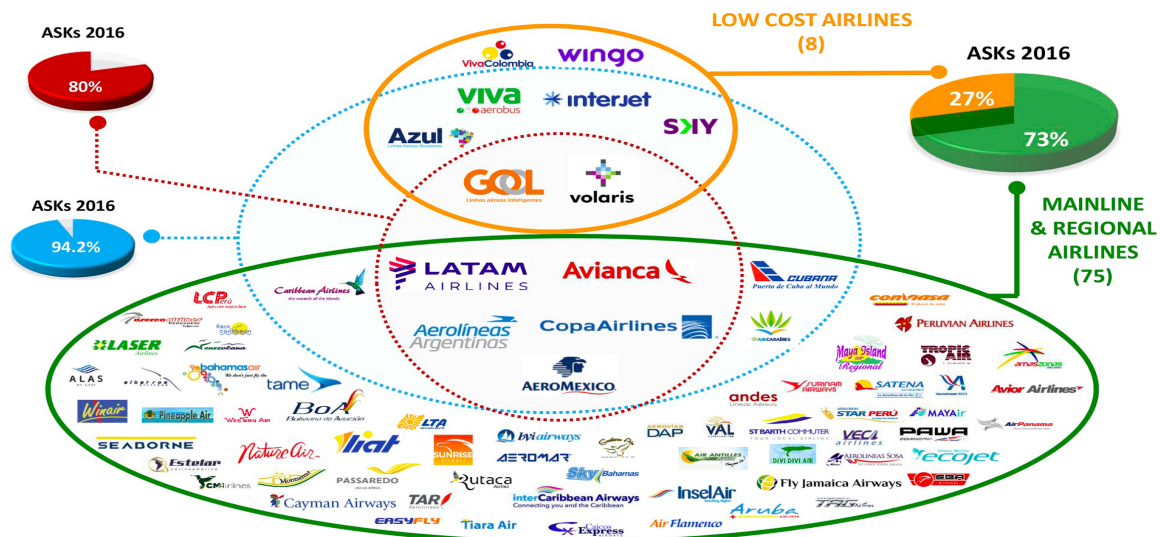


Figure 2: Latin American airlines in 2016. Source: O'Connell et. al (2020), extracted from an OAG Analysis in 2016

Finally, actors in the region face the same risk to the fluctuation of the crude oil price which drives the jet fuel price. If we look at the relationship between the Brent index and the jet fuel price (see Appendix 1), we can conclude that they move in parallel. Therefore, each time the oil price increases, the jet fuel price is going to be higher. To mitigate these risks, airlines must have a hedging strategy by acquiring call options, swaps, current oil contracts, or implement collar hedges (Tarver, 2015).

2.1.1.2 Taxes and charges

Taxes and charges play a very important role for airlines to decide in which airport they will be operating. In an interview with Hernan Rincon, former CEO of Avianca Airlines, he explained that taxes represent up to 60% of the value of the tickets (CAPA,2017). Most countries overcharge the taxes and fees in comparison with other regions such as the United States or Europe. According to Alexandre de Juniac, IATA's Director General and CEO:

Latin America and the Caribbean is an expensive place to do business. Taxes, fees, and government policies create a great burden. Today governments see aviation as a revenue source. But it is more powerful as a revenue catalyst. Reducing the costs of doing business will pay big economic and social dividends (IATA, 2018).

And the reason is that many of the countries of the region have very high taxes, at least for airlines. For example, the Brazilian fuel tax policy adds \$800 million in costs annually. In Colombia, the government implemented a connectivity tax, exit tax and majors of the different

municipalities think that a \$5 tax should be asked to air travelers to improve the road infrastructure. Furthermore, tourism taxes are very high in the following countries: Mexico, Colombia, Ecuador, Peru, Nicaragua, Jamaica, Costa Rica, and St. Lucia, making tourism more expensive for travelers (IATA, 2018).

2.1.1.3 MRO Costs

In terms of maintenance costs, the region lacks proper infrastructure and there is a scarcity of actors offering Maintenance, Repair, and Operations (MRO) services (O'Connell et al., 2020). Therefore, sometimes these actors act as monopolies in certain countries, and airlines are forced to pay a higher price. Also, in some countries such as Argentina, the ground handling on the airport is controlled by the government. For example, Intercargo has a monopoly of ramp services in the country (Pierobon, 2020). However, according to different local newspapers in Argentina, in 2019, Mauricio Macri (Argentina's president) decided to finish with the local monopoly of the ramp company. According to IATA's analysts, ground services on airports should be opened to free competition and the different charges should be determined by the markets. The consequences of allowing only one company to offer this service to the airlines are detrimental to the development of the commercial aviation industry of the country. This situation negatively impacts the airline's costs and can generate bad service from the monopolies (IATA, 2019).

2.1.1.4 Operation costs

In terms of operations, the region is very poorly performant in comparison to the rest of the markets. In terms of utilization of aircraft, the Latin American ratio falls below the rest of the industry (O'Connell et al., 2020). This is explained by the fact that flying restrictions of countries are high, and airline aircraft are older, therefore airlines cannot use as much of their aircraft as in other markets (Heinz and O'Connell, 2013). According to the research of O'Connell et al. (2020), the average age of the fleet is 15.6 years which is much larger than the middle east (10.8 years) and the Asia Pacific (9.6 years). Furthermore, according to IATA Economics (2021), in terms of EBIT operating margins, the region falls beneath the whole industry. Compared with the industry, in 2018 Latin America was almost 3% beneath, and in 2019, 3,3% beneath. With the COVID-19 crisis, the whole industry suffered but Latin America doubled the loss of margins of the whole industry (- 94% versus -45% for the whole industry).

2.1.1.5 Political stability, economic landscape, and debt financing

As mentioned above, doing business in Latin America is not always easy. Political and economic factors make these regions very volatile. This can be easily reflected in the airlines' businesses. Due to the risk of the countries in which these carriers fly and the depreciating currencies of the region, Latin American carriers must pay more for their debt and compensate much more when financing through equity (Rodrigues et al., 2017).

2.1.2 - Lack of common regulation and complex organizational structures

As discussed in 1.1, in comparison with Europe or The United States, Latin America still does not possess a common air space regulation. A common air space regulation is key to develop the aviation industry of a region because it allows maintaining the costs of the operations lower. To land in a specific country, the airline must have obtained a slot and a license to enter the country's air space, but this is almost the same practice in the rest of the world. But the problem is that there are at least 45 different provisions for a market with an estimated population of 580 million inhabitants, while in markets with a similar population, for example, the U.S (300 million inhabitants) or Europe (500 million inhabitants), there is a single regulation (O'Connell et al., 2020).

Furthermore, this problem of burdensome regulation is amplified by the expansion strategy adopted by the local players. To increase their connectivity and their reach, the different Latin American full-service carriers had to find a way to bypass these regulations. According to O'Connell et al. (2020), the strategy particularly adopted by FSNCs was franchising. But a lot of carriers just expanded by acquiring and merging with other airlines of the region. This is a very interesting strategy because it was a way for FSNCs to acquire airlines that already had the permits to fly to specific countries and therefore open new routes. In practice if carrier A acquires another airline B, they will be acquiring the planes with the different licenses, the permits to fly to another country but all the needed documentation will be at the name of airline B. Let's look at the example of Avianca Airlines (See Appendix 2). Avianca is a holding company composed of different airlines and each airline shown in the chart is also composed of different regional airlines. If we take as an example TACA International S.A (El Salvador), the company is composed of TACA International Airlines (El Salvador), AVIATECA (Guatemala), Regional (operating under AVIATECA's code), LACSA (Costa Rica), Isleña Airlines (Honduras), TACA Peru (Peru) and TACA Regional. All different airlines, with different licenses for their aircraft and different permits to renew after a certain time. And the

problem with this organizational structure is that Avianca Airlines is not operating under the same commercial name because all its permits are not under the same company name. So, this generates very high organizational costs.

As illustrated by this example, unlike the strategy used in Europe, in which carriers decide to fly with separate brands (for example Brussels Airlines is part of Lufthansa Group but it flies as a separate brand), Latin American carriers preferred to unify the brands and develop a pan-Latin American identity (O'Connell et al.,2020). This strategy is also adopted by LCCs in Latin America, such as ViVaAerobus, but the only carrier flying with a simpler structure organization is Copa Airlines and according to O'Connell et al. (2020), this has been one of the key aspects to have the best results in the region, specifically in reducing costs. Because of the complexity of the other carriers' structure, if Copa Airlines decides to open a new route they will only need to do once all the workload (slots, permits for aircraft, licenses for pilots, permissions to fly on a country's air space, etc.) but the other carriers will need to do it several times depending on which of its airlines and aircraft will be used to open the route which it is much more costly. Of course, with an open skies regulation in Latin America, all this problem could disappear for the rest of the carriers because they will not need to use this kind of strategy and help to improve the performance of the whole local industry. According to IATA (2017), the region could benefit from a smarter regulation: "The goal of all regulation should be to achieve clearly defined, measurable policy objectives that can be adhered to in the least burdensome manner possible. And any regulatory framework benefits from a transparent and objective consultative process between governments and industry". This continues as one of the most important challenges of the industry.

2.1.3 - COVID-19 Crisis: multiple challenges to face

Even if the scope of this thesis is not oriented to the impact of the COVID-19 crisis, it is important to take into consideration the analysis of the future landscape of the aviation industry. Overall, the global industry has suffered during 2020 and the demand will not recover its pace before some years.

The firsts cases of the COVID-19 were firstly identified in China and according to the Chinese Center for Disease Control (CDC), the first case was an individual that started to have symptoms on the 1st of December 2019 (Mhalla, 2020). This event led to a pandemic and detrimental consequences for the world economy, especially in the oil industry and the aviation industry. In fact, in the beginning, the setback of the Chinese economy plummeted the oil price,

because the growth in Chinese demand is one of the drivers of the oil price (Mhalla,2020). However, after the disease became a pandemic, the OPEC and the West Texas Intermediate (WTI) were confronted with production cuts since the demand was plummeting. As explained before, a lower crude price generally is beneficial for the carriers. However, with the attempts of the different governments to restrain the propagation of the virus, many states decided to close their borders, impose travel restrictions that generate a lower demand and movement of all the carriers. Even at the beginning of 2021, passengers were not encouraged to fly or travel for non-essential reasons (Nizetic, 2020).

In terms of volumes and financial performance, according to David Oxley (2020), in December 2020 the recovery of the airline industry was stagnating. Starting in May, there was a little increase of 4% in terms of passenger volumes, but the recovery was affected because of the resurgence of the virus during the fourth quarter of the year. In terms of air passenger volumes, the industry RPKs (Revenue Passenger Kilometers)¹ fell about 69,7% in 2020, which represents a loss of around 600 billion per month. However, according to this analysis of the air passenger market, there was no sign yet that 2021 was going to be a better year for the airlines. It is known that the first quarter of 2021 will still be challenged by the different travel restrictions, the low willingness of flying of the customers and the novelty are the variants of the virus (Oxley, 2020). Even if the start of the vaccination could represent relief for the industry, immunization is taking longer than expected. According to IATA, bookings for future travel are still down. If we compare January 2021 with January 2020, there was a drop of around 70% (Oxley, 2020).

In the case of Latin America, in comparison with 2019, in April 2020 the estimation of passenger revenue was a drop of US\$18 billion, Mexico being the most affected market of the region with losses of US\$6.4 billion (Cerdeña, 2020). According to Cerdeña (2020), the Latin American aviation industry supports 7.2 million jobs and represents around US\$167 billion of the region's GDP. However, the major difference between the other regions in terms of the COVID-19 crisis management is that countries in the region didn't financially help the airlines, mainly because the priority of the region was not there. So, many of the full-service carriers were forced to file a case under Chapter 11 of the US Bankruptcy Code (USC Ch.11-Reorganization, 2018). This chapter allows the carriers to present a plan for reorganization to

¹ RPK (Revenue Passenger Kilometer) is a measure of the air traffic. It is computed by the product of the paying revenue of passengers and the distance flown (Source: SkyMart Glossary).

pay their creditors and to keep the business afloat. For the moment, three of the biggest carriers have taken this decision: AVIANCA, LATAM group, and AEROMEXICO, but the first two have already succeeded to acquire their financing (CAPA, 2020). A particular example of the region is Copa Airlines. This carrier hasn't need to file for the bankruptcy chapter, nor ask for financial help from the Panamanian Government and they have been implementing strategies to face the challenge of the COVID-19 pandemic: optimizing the number of aircraft to be sure that they have the proper capacity for the current situation in the market, paying some of its debt and securing committed credit of lines (CAPA, 2020). Finally, in terms of recovery, the region is also affected because there was a big delay to reopen borders with safe infrastructure during the recovery period and according to a statistical study, vaccination is still slow: only 8 countries are vaccinating against the COVID-19 (Rios., 2021).

As the pandemic continues in the region, the carriers of the region need to rethink their strategies to face the following challenges: low willingness to fly, travel restrictions, bad infrastructure (low vaccination strategy), financing, optimizing capacity, lowering costs, and repaying its debtor. However, according to IATA's Regional Vice-President for the Americas, this effort needs to be accompanied by a willingness to collaborate with the government. The governments of the region need to provide a solution to the different challenges: direct financial support for the carriers of the region to compensate for the loss in passenger and freights revenues, increasing the eligibility of companies for support from the government or central banks on the bond market and tax relief, such as an extension of payments or reducing the payroll taxes for 2020-2021 (Cerda, 2020).

2.1.4 - Low- Cost competition

One of the major challenges of the region is the entry of low-cost carriers. Now, these carriers are becoming the leaders of the domestic markets, especially in Brazil and Mexico. Gol has been Brazil's domestic leader for some years now and achieved in 2019 a transported passenger's share of 35.9% (ANAC, 2019). In Mexico, Volaris overtook Aeromexico as the 2019 domestic market leader. With a transported passenger's share of 31% from Volaris, versus 25% of Aeromexico, Volaris is showing resilience with the LCC model in one of the biggest domestic markets of the region. In total, if we take into consideration the share of VivaAerobus and Interjet, LCCs have a domestic passenger share of 70% (CAPA, 2019). For the rest of the region, the LCCs have also performed with very strong domestic shares, however, the trend is much less resilient than in Mexico and Brazil. Before COVID-19, according to the LCC's Latin American Analysis report of CAPA (2019), the low-cost model in Latin America was still in

evolution even if many carriers were already taking the lead in some of the more mature markets. However, according to the 2020 CAPA's LCC state of the region report, during the COVID-19 crisis one of the main consequences was that in Brazil and Mexico, LCCs took 58% of market shares because full-service carriers (Latam Airlines Brazil and Aeromexico) are under the US Chapter 11 of Bankruptcy and were therefore forced to reduce capacity (CAPA,2020).

In what strategies are concerned, low-cost focus almost on the domestic markets. In many regions of the world, expanding the operations has been key for carriers to increase their revenues, however, in Latin America, it seems that these growth strategies came mostly from long-term established legacy carriers and not from new airlines such as Gol, Volaris, or Azul (Mills G., 2017). But, in the book of Schlumberger & Weisskopf (2014), "Ready for Takeoff? - The potential for Low-Cost Carriers in Developing countries", the authors present a new trend that is currently being exploited by LCCs of the region, in particular a new airline called VivaAerobus that started as a bus operator in Mexico in 2006. Born as a source of private investment from IAMSa (a Mexican private bus operator) and the Ryan family (founders of RyanAir), this LCC has set its eye on a very interesting target in the region: long-trip bus users that couldn't fly because of the high fares offered by the FSNCs in the region (Mills G., 2017). The important aspect of this trend is to understand that one way of entering a new market for LCCs in Latin America is not creating a market from scratch but focusing on the segments that are not targeted by FSNCs. By entering the mature markets with much lower prices, they are also attracting FSNC's customers and therefore taking a lot of market shares.

Of course, LCCs are also facing several challenges such as finding a low-cost distribution network, the region has low internet penetration and low credit card use which complexifies the LCC model (Schlumberger C. & Weisskopf, 2014), and sometimes airlines face problems to enter certain markets, such as Argentina in which the government is protecting Aerolineas Argentinas from LCC's competition (Mills G.,2017), or problems with the lack of low-cost infrastructure in the region. In the following chapter, we will study the different models used by LCCs to circumvent these challenges. With better management of cost, better performance in the region, and the COVID-19 crisis that is accelerating the taking of market shares, LCC's represents a real challenge for FSNCs but an important opportunity for the development of the industry.

In this chapter, the literature about the current situation of the Latin American aviation industry shows that there are mainly three types of actors in the region: Low-cost carriers, Full-service network carriers, and regional carriers. Full-service network carriers, also called legacy carriers opted for a franchising expansion model that increases its complexity and its costs. Many challenges are faced by all these actors. As explained, Latin America is a very expensive region to do business in because of its burdensome regulation, complexity, lack of proper infrastructure, political stability, and more recently because of the COVID-19 crisis. However, one main challenge is only affecting FSNCs of the region: the competition of low-cost carriers. In recent years, low-cost carriers are becoming the leaders of the biggest domestic markets (Mexico, Brazil, Colombia, etc.) and because of the COVID crisis, most of the legacy carriers are under Chapter 11 of the US Bankruptcy Law. To compete in this very challenging landscape, carriers have adopted different business models and strategies. The following chapter will describe the main airline business models that can be found in a market according to the scientific literature. This approach is important to understand the sources of competitive advantages in each business model and how FSNCs and LCCs are adapting their business models to compete with each type of actor in different markets.

Chapter 3: Business models and strategic focuses adopted by airlines to compete

3.1 Types of business models based on full-service or low-cost strategies

Over time, many models have appeared in different parts of the world. Nowadays, carriers are adopting different features of different models, it is no longer true that all the carriers are purely low-cost or full-service (Klophaus et al., 2012). Airlines are reacting differently to the presence of low-cost or full-service airlines. This is leading to the hybridization of both models: full-services carriers are adopting low-cost features and low-cost carriers are adopting full-service features. The scientific literature, as well as reports from aviation organizations, are very limited on this subject. The objective of this chapter is to provide the different models that can be found in different regions of the world. Furthermore, after defining the main models that are currently presented, the focus will be set on defining the different strategic orientations and their competitive advantages. This will be helpful to define a theoretical framework to apply in the Latin American region on the practical part of this master thesis, and therefore to make a cluster analysis of the 2020 landscape of the Latin American carriers. The regions studied in this chapter are Europe, North America, Africa, and the Asia-Pacific.

3.1.1 The European Case:

In its paper, Klopheus et al. (2012) found evidence confirming that in Europe short-haul low-cost carriers are converging to the same model. Their study shows that a large population of LCCs is adopting FSNCs features, evolving to a hybrid model in which they merge proper traits of the low-cost model with some of the traits of the full-service airlines. The major trends detected in the region were that the majority of LCCs flew with a homogenous short-haul fleet, long-haul being in majority used by FSNCs or certain hybrid carriers. But in contrast, as explained in Chapter 1, FSNCs were known to operate a heterogeneous fleet but it seems that in Europe, many of them are moving to a more homogenous fleet to benefit from cost reductions. Furthermore, according to the study, only three airlines were using airports recognized as secondary airports by the criteria defined by the authors: WizzAir, RyanAir, and FlyBe. With the evolution of low-cost to hybrid versions, some researchers believe that this can represent an opportunity for secondary airports and legacy airports willing to shift to take more capacity from LCCs in the region and act as network managers, allowing better connectivity, facilitating self-connecting, improving the quality of the services, and offering a better customer service than hub airports (Fageda et al., 2015). Finally, in terms of network implications, a study conducted by Fageda et al. (2015) shows that LCCs are adapting the initial model by offering new sources of ancillary revenues, instead of selling individual onboard services, they are selling onboard bundled services which allows them to improve the comfort of their flights. Another interesting trend is the implementation of connecting flights, more and more LCCs in Europe are adapting the point-to-point model by offering a connection between flights too. With these two trends, these hybrid LCCs carriers are targeting medium-haul flights that require more comfort onboard and higher connectivity.

We can summarize the trends discussed above in 4 different adaptations of the LCC model (Klopheus et al., 2012; Fageda et al., 2015).

Pure Low-Cost:

These airlines are the ones that respect the different criteria for the LCC business model. Typically, in this model, we find the following attributes: “use of a single aircraft type, predominant use of secondary airports, point-to-point traffic, no code sharing, only one one-way fare per flight available at each point in time, single class cabin, and no-frills” (Klopheus et al., 2012). E.g.: RyanAir, Wizz Air, Blu Express

Hybrid carrier with dominating LCC characteristics:

These airlines slightly adapted the previous characteristics by maintaining LCC characteristics in its majority. These adaptations could be using a heterogeneous fleet, not using a secondary airport, offering certain services on-board, etc. E.g.: EasyJet, Jet2, Vueling, Air Lingus.

Hybrid carrier with dominating full-service airline characteristics:

These airlines majorly adopted FSCs characteristics and still have some LCCs attributes such as flying by using the point-to-point model. E.g.: Norwegian, Flybe, Germanwings

LCCs that are full-service airline:

According to Klopheus et al. (2012), some of these airlines do not operate point-to-point but rather they use a hub-and-spoke system (E.g.: Air Berlin). Furthermore, they have adopted many FSNCs characteristics such as offering frills, using different types of aircraft, use code-sharing, offering bundled fares, etc. E.g.: Air Berlin, Air Baltic, Air Italy. The difference between these carriers and the European FSNCs (Iberia, Lufthansa, British Airway, Alitalia) is that all FSNCs operate by using a hub-and-spoke network.

Even in mature markets such as Europe, the LCC landscape is changing. Not all carriers that price as LCC should be considered as a low-cost carrier.

3.1.2 The African & Middle East Case:

In Africa, Heinz & O'Connell (2013) do not conclude that the region is trending to hybridization of their models the air transport in Africa has a landscape much more complex than in Europe. This is very interesting for the analysis of the Latin American carriers because the African region is also facing similar challenges: "high costs, poor safety, government interference, corruption, low productivity and overstaffing; old aircraft [...] low internet penetration [...] and difficulty in obtaining Air Operating Certificates (AOCs)" (Heinz & O'Connell, 2013). However, the region is also touched by many other difficulties, such as distribution challenges: airlines must pass by sell agents to sell their tickets because the use of credit card is not very common, and this fee represents at least 7% of the ticket price. Furthermore, they face sparse demand that is a direct result of the lack of competition in the region and the inequality of revenues of the populations in the region. According to the research, because of this fluctuating demand, the most sustainable business model for the region will remain the Full-Service Network carriers (FSNC) because of their connectivity ratio and their hub-and-spoke model

that is attracting an international target. The trend that we studied in Europe seems to not be compatible with the African region, however, low costs are still found in different variants such as full-service carriers and even regional carriers. We can summarize the different trends studied on the following business models:

Full-service network Carriers (FSNC):

This model is the same that we studied in the previous chapter. Airlines that use this business model offer long-haul and short-haul routes, they fly by using a hub-and-spoke network with code sharing and segmenting business passengers from economy one. E.g.: South African Airways, EgyptAir, Kenya Airways, Ethiopian Airlines, Royal Air Maroc, and Air Algérie.

Established regional Carriers (ERC)

This kind of carrier in the region usually flies by using their hubs, providing spoke services, or even flying point-to-point in some niche routes. Furthermore, they are called “regional feeders” (Heinz & O’Connell, 2013), which means that their main purpose is to connect passengers from specific regions to a major airline hub. E.g.: South African Express, Arik Air, Air Nigeria.

Long-Haul Niche Carriers (LHNC)

These carriers focus mainly on niche point-to-point demand generally coming from tourism, passengers visiting their relatives, or business passengers. A very interesting example is Air Mauritius that possesses most of its aircraft that are only used to target European holiday service companies. These tourists land at Mauritius International Airport and can then take another flight to arrive at their destination. The difference with FSNCs is that this kind of company does not specialize in connecting passengers to their destination, they do not operate a hub-and-spoke network.

True (or Pure) Low-Cost Carriers (TLCC)

These airlines showed a very high frequency of flight, a large size of flights operated in the region, and some other characteristics of the model (no frills, no hub-and-spoke, etc.). Most of these airlines operate in regions with a very high degree of competition and avoid monopolistic routes that are operated by airlines protected by the state, confirming that in less liberalized markets such as Africa or Latin America, free competition is essential for the presence of LCCs. E.g.: Air Arabia Maroc, Mango Airlines, Comair.

The Emerging Regional/ Low-cost carriers (ERLCC)

Generally, this type of airline is private, has a small size, and flights mainly in the same regions. Furthermore, they operate mainly in monopolistic markets which correspond to the model of a regional airline. However, many carriers in this segment define themselves as LCC but, they are classified more like a hybrid of regional and low-cost carriers. E.g.: Fly540.

Emerging-Full-Service Network Carriers (EFSNC)

These carriers are very similar to the Established regional carriers, the main difference is that EFSNC are more likely to fly long-haul and ERC prefer to fly in a defined region of Africa. E.g.: LAM, Senegal Airlines.

Small Full-Service Carriers (SFSC)

Mainly controlled by African states, these airlines fly longer lengths, but they have very low connectivity. They target mostly niche markets, and they usually have many problems facing the volatile demand and they use a lot the point-to-point structure even if they fly in larger markets. E.g.: Sudan Airways, Air Mali, Air Zimbabwe.

3.1.3: The American case

The United States hasn't escaped from these trends too. Much research confirms that it is more difficult now to classify carriers into two categories, the landscape is continuously evolving and there is a phenomenon of hybridization, particularly of the LCC model. It seems that FSNCs stay much more homogeneous than LCCs (Alamdari & Fagan, 2005; Lohman & Koo, 2013; Fageda et al., 2015). In a study which objective was to do a cluster analysis of 9 US airlines, Lohman & Koo (2013) identified that the main attributes modified by the LCCs is the use of the secondary airport, replaced by congested airports, and offering higher comfort onboard such as complimentary meals, seat assignment, etc. Even if the research didn't provide as an output different segments for the business models in the US, based on the result of their analysis we can conclude that the situation in the United States is very similar to the one in Europe, the same business models apply to that case with the difference that regional airlines are also adopting a low-cost strategy, which is more like what we saw in the African and Middle East region.

3.1.4: The Asia-Pacific case

In Asia, the LCC business model entered much later than in Europe or the United States. In the different regions, Zhang et al. (2008) identified that at the time three main models were used:

true low-cost with similar characteristics as Southwest airlines, short-haul low-costs, and long-haul low-costs. For the first business model, a very good example is Spring Airlines (South Korea) that had a fleet composed of only one type of aircraft. They reduced the leg space on-board; they offer to book only online or per phone and they only have one single class. For the hybrid models, two airlines may illustrate the situation in Hong Kong and Macau, “Oasis Hong Kong” and “Viva Macau” are two low-cost airlines offering long-haul operations but there can be considered more as emerging full-service carriers since they both offer business class, and they focus more on cargo services than cost reduction.

Australia is another example of how business models have been evolving. The hybridization of LCCs is also present but there are also examples of LCCs that completely changed their strategic focus to become FSNCs and operate international routes (Srisaeng et al., 2014). The best example in the region is Virgin Australia that decided to shift to a full-service model in 2010. According to Srisaeng et al. (2014), the changeset is justified because of the need to expand the operations of the carriers in other domestic regional markets where demand was scarce, confirming that one of the conditions needed for the LCC model to be successful is high and stable demand. Finally, because of the competition of the true low costs in the regions, the incumbent decided to launch their low-cost operator but focusing more on international routes, this is proof that the long-haul low-cost business model is also present.

Classifying airlines into two different strategies are no longer an accurate representation of the reality of the aviation market (Pereira & Caetano, 2015). According to O’Connell & Williams (2005), there is a trend of modifying the original business model and it is even a need for the carriers to innovate their business models to remain competitive. As illustrated by the latter examples, in every region of the world, the FSNC and LCC models are modified and adapted to the market. The recent approach of the carriers, specifically for LCCs, has been to adopt differentiation as a major strategic focus rather than just cost-reduction. The regional cases studied by different researchers allow making classification of the major trends in terms of differentiation and the business models applied by the carriers around the world. It seems that the major business models found in the scientific literature can be categorized as Full-Service Network Carriers (FSNC), Full-Service Carriers (FSC), True Low-Cost Carriers (TLCC), Regional Carriers (RC), and Hybrid Carriers (HC). Regional Carriers and Hybrid Carriers are both models composed of carriers adopting features of the low-cost model and the full-service model; usually, the features of one of the original models are more present than the other.

3.2. Framework of the different business model found on literature:

The concept of the business model applied for this thesis is understood as a tool “for value creation, exploring opportunities and generating competitive advantage” (Pereira & Caetano, 2015). Based on an analysis of 38 key components extracted from an analysis of different markets and industries, B. Pereira and M. Caetano proposed in 2015 a conceptual framework of different business models that can be applied in the aviation industry. Each business model has a completely different focus and therefore competitive advantages that can come from that specific model. It is worth mentioning that competitive advantages are proper from a company, and those business models are just a tool that helps to structure the business strategy of the company to create a competitive advantage. The objective of this section is to complement the framework of Pereira & Caetano (2015) with the relevant models extracted from the 4 regions studied and to create a new framework that is going to be used in the practical part of the thesis to understand the Latin American landscape in terms of competitive advantages, business models and strategies.

The study of Pereira and Caetano (2015) concluded that in the aviation industry there are four main focuses that airlines could have to develop their business models: creating and capturing value, market and advantage of anticipation, hybrid strategy, and revenue generation.

Creating and capturing value:

This business model strategy focuses on the value creation process of the airline for itself but also for all the stakeholders that are impacted by its operation. Its key components are target customer, value proposition, value chain, revenue generation, corporate core logic, and assets (Pereira and Caetano, 2015). According to the research, the model that seems to adapt better to this kind of business model is the Full-Service Network Carrier. In fact, in this kind of model the carrier invests a lot in explaining how they are creating a lot of value for their customers, the focus is put on wellness, the comfort of the service, and the connectivity to bring each customer to its destination. The whole corporate logic, the value chain, and revenues are aligned to offer the best service and comfort on-board, the target customer is well-defined, usually business, long-haul tourists, and national passengers. In some cases, these airlines also possess as an asset its country of origin and the loyalty that comes from flying with “the country’s airline”, a very good example of this asset is the newest safe instructions video of Air France (Air France, 2021), that is oriented on showing different landscapes, monuments, and historic landscape of the French culture. Therefore, Small Full-Service Carriers make part of this

business model, usually, these carriers are state-owned and offer the same level of comfort as FSNC.

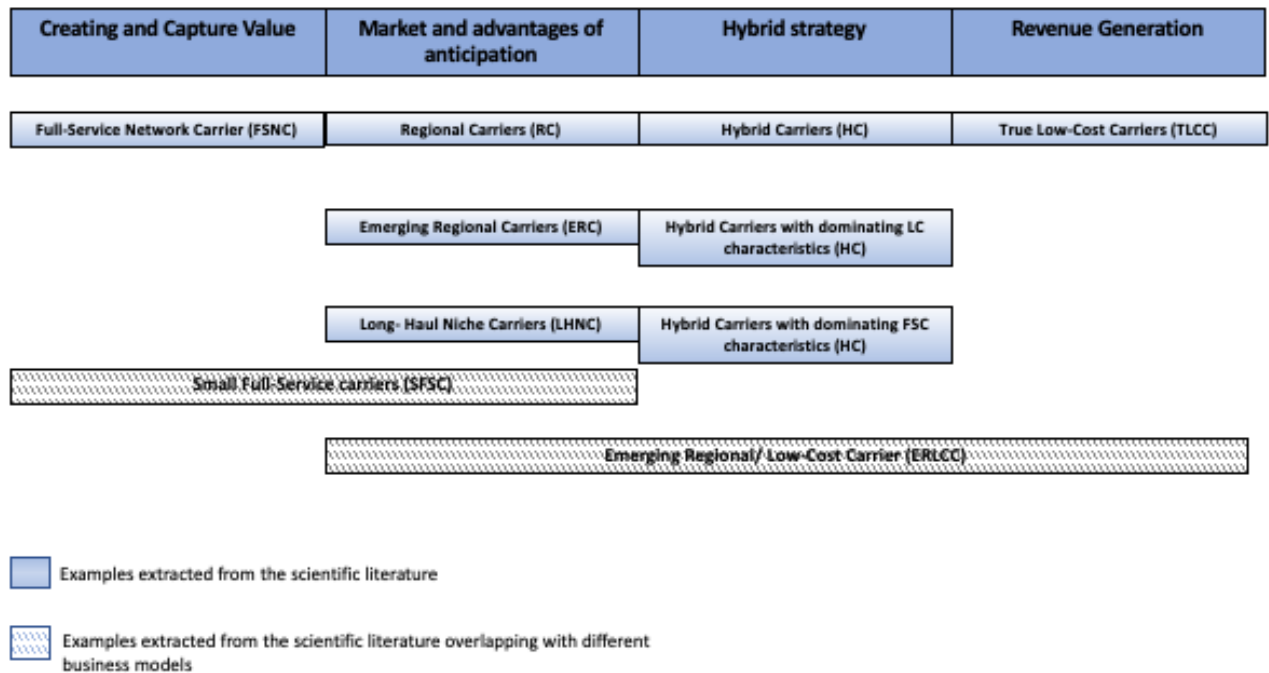


Fig 1. The framework of business models extracted from Pereira and Caetano (2015), applied to the thesis' analysis of LCC and FSC strategies variants around the world. Source : Klopheus et al. (2012) ; Fageda et al. (2015) ; Heinz & O'Connell (2013) ; Alamdari & Fagan (2005) ; Lohman & Koo (2013) ; Fageda et al. (2010); Zhang et al. (2008); Srisaeng et al. (2014); Pereira & Caetano (2015).

Market and advantages of Anticipation:

The focus of this kind of business model is to take action that may help an airline to gain a competitive advantage or be the leader of the market before the other ones. There are several components that an airline must use to consolidate this business model: market offering, network architecture, consumers, relationship with customers, distribution channels, partnerships, protectionism, resources, and technology (Pereira and Caetano, 2015). Airlines that follow this type of focus are typically the ones that manage to operate as monopolies in certain markets, rather because they are focusing on specific routes or because they are protected by a state. Also, airlines who operate in niche markets like touristic/leisure airlines, or airlines that operate as leaders in segments in which they provide a service for other airlines or major stakeholders, for example, regional feeders carriers. In this type of business model, we find regional carriers, emerging regional carriers usually called regional feeders, long-haul niche carriers, and small-full-service carriers because they both usually focus on niche markets/routes.

Hybrid strategy:

This business model focus is one of the most important because as explained in the latter section, there is a trend of airlines to become hybrid carriers by mixing low-cost and full-service strategies. There are thirteen key components of this business model according to Pereira and Caetano (2015): customers characteristics (business and leisure), journey purpose, booking methods, fares, connecting traffic, carrier choice criteria, types of trips undertaken, revenue, connectivity, convenience, comfort, type of aircraft and labor. Usually, in this kind of model, there are two variants, carriers that adopt mainly low-cost features or carriers adopting mainly full-service features.

Revenue generation and cost-cutting:

The revenue generation business model focuses on ways of increasing or generating more revenue for the airlines. In the study of Pereira and Caetano (2015), they explain that the key components adapted to focus on revenue generation are key activities, client relationships, partner network, value proposition, client segments, key resources, distribution channels, cost structures, and revenue flows. The main type of carriers with a revenue-generating business model is pure low-cost because they focus on optimizing their cost structure, their key resources, have intensive key activities (high frequency of flights), use online-only distribution channels, and increase their revenue flows by charging all the on-board services.

An example that may be attributed to two different business models is the emerging regional low-cost airline (ERLC). This is because they operate in a monopolistic market (which can be attributed to a certain degree to the market and advantages of anticipation business models) and by its nature, it is not clear if it is a hybrid or a low-cost.

3.3. Framework of the competitive advantages and risks of the different business models found on literature:

In his book *Competitive Advantage: creating and sustaining superior performance*, Michael E. Porter (1985) defines three generic strategies (cost leadership, differentiation, and focus) that firms can adopt. According to him, for these strategies to be a source of sustainability over time, “[...] the three generic strategies demand that a firm’s competitive advantage resists erosion by competitor behavior or industry evolution” (pp.20). This means that each firm must generate its barriers to make it more difficult for its competitors to copy them. For this thesis we will

adopt the following definition of a sustainable competitive advantage: assets, capabilities, barriers, or any attributes unique or very difficult to imitate that allow an airline to have superior performance than its competitors.

In the latter section, a framework of the current business models that are found in the global airline industry was developed. In this section, the objective is to provide the different sustainable competitive advantages, usually found in the scientific literature extracted from different regions analyzed.

Creating and capturing value:

This type of model could be associated with a differentiation logic, in which the airline selects one or some attributes that are important to a very broad target and they take a position to meet the target's needs. In this type of strategic orientation, the airline must try to perform in terms of cost and productivity in all the areas that are not related to their uniqueness. According to the different scientific literature, the common business model adopted by carriers that has this type of focus is full-service network carriers (FSNC). As explained in chapter 1, these types of carriers are structured following a hub-and-spoke network. Because of these main characteristics, these types of models usually develop attributes that make the service much more convenient but much costlier. Usually, these carriers develop competitive advantages in terms of connectivity (flying from/to primary airport, convenience on the connecting flights, better alliances with other carriers), comfort (quality of the services on-board, staff friendliness, premium services like VIP rooms), customer loyalty (high legacy) and their geographic location (airport attractiveness, hubs in different parts of the world) (Schlumberger & Weisskopf, 2014). However, the risk for this type of strategy is that competitors can imitate, for example, hybrid carriers are offering the same value while maintaining lower costs in some areas. The differentiator can lose importance in the eyes of the target or the airline can lose its proximity to the rest of the industry in terms of costs to sustain their differentiation and therefore they will not be profitable anymore (Porter, 1985).

Market and advantages of anticipation:

In terms of strategy, this type of business model works on a focus strategic orientation. These types of airlines will work on targeting a very specific segment within the industry. The main objective of these airlines will be to develop a competitive advantage within its target segment even if overall it doesn't possess any advantage. There are two strategies within this strategic

focus: rather the firm focuses on cost or rather they focus on differentiation. Usually, this type of airline will focus more on differentiation by offering niche routes, flying on niche markets, or being a monopolistic regional carrier. The main competitive advantages found are protectionism (from a government or legislation), exclusive partnerships with leisure/tourist operators, specialization in certain services exploiting the special needs of passengers or other carriers (regional feeder carriers). The main risks for this strategic focus are that the target segment erodes because demand could disappear or because externalities provoke that the structure corrodes. Also, the strategy can be imitated and carriers that target broader segments could decide to saturate the segment targeted by focus carriers.

Hybrid strategy:

This type of strategic focus can also be a way to participate in a differentiation strategy. By adapting the FSNC or LCC model and focusing on differentiating attributes that are important for their targets. By doing so, these carriers can imitate and even improve some of the forces of their competitors. In a nutshell, these types of carriers may develop competitive advantages in terms of their network structure, for example adopting the point-to-point model or a hub-and-spoke model but complementing these characteristics with other capabilities such as improving the on-board services or develop proximity to the cost leader on the market. Furthermore, according to Fageda et. al (2015), two mutations of the LCC model have been a source of competitive advantages in Europe: fare bundling with a better level of comfort on-board (offering checked bags and free seats, it is about taking the popular services usually charged by LCCs and re-bundle them on a unique price) and adding connections between flights but without becoming a hub-and-spoke carrier, modifying in that matter the point-to-point strategy. This could be important because it allows them to attract more customers, usually from FSNCs, and to enter niche medium and long-haul routes easily. However, there are several risks such as the “Stuck in the middle” situation, defined by Porter (1985) as a situation in which a firm holds each of the generic strategies (differentiation, cost leadership, and focus) but is not able to succeed in any because every competitor is better positioned in each segment. Other risks are blurring the image of the brand, even worse by creating confusion in any touchpoint of the value chain or confusing the customers about the value created by the airline.

Revenue Generation:

In this case, the carrier focuses mostly on adopting a cost leadership strategy. Usually, this type of airline targets a very broad customer segment by offering its services at an equivalent or

much lower price than its rival. Nonetheless, these carriers must offer a comparable service to the other airlines to be able to maintain their competitive advantage. If through the eyes of the customer the service offered has no value, the model will not be sustainable through time. According to Fageda et al. (2015), the low-cost business model is based on the point-to-point network, and therefore most competitive advantages developed by these carriers are consequences of this. In fact, as Gillen and Lall (2004) explain, the sustainable competitive advantage of this model comes from choosing by using the short-haul point-to-point network structure and developing core competencies that can become competitive advantages too but that are mainly there to support the main strategy. Usually, these types of carriers develop high aircraft productivity, because of the high frequency of flight and the scale of economies. Also, they have advantages in terms of labor productivity (inferior wages and lower employees per aircraft ratio), better cost management which allow them to have the best pricing, sales, and distribution since the distribution channels are mostly online without any intermediary agent, it is less complex to operate and less expensive (Schlumberger & Weisskopf, 2014). However, there are some risks when adopting these strategies: other airlines are already imitating the strategy and even adapting it to develop their competitive advantages (hybrid carriers), the bases for cost leadership could erode, the service offered is not seen as comparable as the one from competitors because the value offered is very low or not seen as important for the customers.

Nowadays, it is no longer true that all the carriers are purely following a low-cost or full-service business model. The carriers are adapting themselves to compete against each other. According to the literature, many types of carriers can be categorized into four main business models: creating and capturing value, market advantages of anticipation, hybrid, and revenue generation. Each business models have its sources of competitive advantages. The framework presented in this chapter will be helpful to segment the Latin American players in the practical analysis. Understanding the variety of business models that can be found in the industry allow us to determine the positioning that certain carrier can take in a specific market. The following chapter will provide an overview of the different strategic reactions that once the positioning is chosen, FSNCs implement when a low-cost is entering the market.

Types of business models	Creating and Capture Value	Market and advantages of anticipation	Hybrid strategy	Revenue Generation
Competitive advantages	• Connectivity • Best quality of services (comfort) • Customer loyalty • Hub-and-Spoke network: Geographic location (airport attractiveness)	• Protectionism • Exclusive partnerships • Specialization in certain services exploiting the special needs of passengers or other carriers	• Fare bundling • Adding connection between flights • Several competitive advantages related to FSC and LCC models.	• Short haul point-to-point network • Aircraft productivity (frequency and high-aircraft utilization). • Labor productivity • Cost management (competitive pricing) • Sales and distribution (on-line only).
Risks of the model	• Competitors can imitate • Differentiator loses importance for customers • Lose cost proximity to the rest of the industry	• Target segment erodes • Competitors can imitate • Carriers that target broader segments saturate the niche segment	• "Stuck in the middle" • Blurring the image of the brand • Creating confusion on the value chain/ customers	• Bases for cost leadership erodes • Service offered is not comparable to the industry • Competitors can imitate

Fig 2. The framework of competitive advantages and risks of each business model extracted from Pereira and Caetano (2015), applied to the thesis' analysis of LCC and FSC strategies variants around the world. Source: Gillen and Lall (2004); Porter (1985); Klopheus et al. (2012); Schlumberger & Weisskopf (2014); Fageda et al. (2015); Pereira & Caetano (2015).

Chapter 4: Strategies to face the LCC competition

Before the introduction of the LCC model, airlines started to implement the hub-and-spoke structure in the golden 90s. The idea was to attract more and more traffic to their hubs by covering as many customer segments as possible and at the same time optimize their destination portfolio. However, this had a setback which was a lower convenience for customers because they were forced to take connecting flights. Without any business model innovation, each differentiation strategy was purely based on alliances and partnerships. However, from the 2000s, with the introduction of LCCs, the game completely changed (Franke, 2004). The low-cost carriers successfully introduced a new business model with a sustainable competitive advantage based on the point-to-point network structure and the capabilities to support the model (no "frills", lean processes, and no complexities on the operations). These carriers provided a very similar service with an advantage: direct connections in very low congested airports. Even if they attract very price-sensitive passengers, it is also true that they seduce the regular passengers of FSNCs and even the price-sensitive business passengers. In the words of Markus Franke (2004): "LCCs can provide 80% of the service quality at less than 50% of the unit cost of NCs [FSNC]". The degree to which LCCs are successful depends on how FSNCs answer these competitive challenges. This is the main objective of this chapter: analyze how FSNCs react against the competition of the LCCs and any hybrid form.

4.1 The competition challenges while facing the entry of LCCs:

When competing against low-cost carriers, full-service airlines face three different constraints: increase the productivity of the airlines but losing passenger shares, engaging in an unsustainable price competition war, and the loss of yields on the routes in which the LCCs enter (Franke, 2004; Chen, 2017). In the airline industry, there are many tradeoffs that airlines must face. First, increasing the productivity of a carrier comes with weakening its position against other carriers. An airline cannot increase their productivity, without reducing their connectivity and therefore losing passenger shares in some routes. According to Franke (2004), the problem is when the revenue losses come faster than the cost improvement of this type of action. Usually, this could generate the bankruptcy of an airline. Furthermore, the war with LCCs is fought with different weapons than with other full-service carriers (Franke, 2004). If an FSNCs engages in a price war with an LCC, it should consider the fact that the unit cost of the LCC is generally much lower, a price war competition is therefore not sustainable through time. Also, a full-service network carrier could not easily copy the business model of an LCC, because it is based on a point-to-point network structure and the FSNCs need to maintain their hub for the international flights. Finally, there is a consensus by academics that the presence of the LCCs on a route lowers the yields of the FSNCs for that specific route (Franke, 2004; Chen, 2017; Windle & Dresner, 1999; Oliveira & Huse, 2009). As explained, competition against LCCs is not only a matter based on price rivalry. Price competition is only one of the strategies used by FSNCs to fight different types of business models. It is important to understand that strategies implemented can be price reactions and non-price reactions but that in a certain way they are all challenged by the latter three challenges.

4.2 Price reactions

4.2.1: Price Competition:

As stated before, there is a consensus of the researchers that the entry of an LCC in a market, impacts the fares of their competitors, especially if the direct competition is a FSNC. However, the way that the prices are impacted differs according to the interpretation of each author. Oliveira & Huse (2009) propose that when facing the competition of a LCC, a full-service carrier could: not react with price, react with price by keeping its fare structure and react with price but simplify its fare structure. When an airline is reacting with price by keeping its fare structure, usually they can try to equalize the price, however a carrier must be sure to implement this strategy by accompanying it with other strategies. If the FSNC decides to equalize its price by offering almost the same benefit as the entrant, the situation could evolve into a price war

that could erode profits (De Villemeur et al., 2003). As seen in the latter section, the second dilemma usually constraints the full-service carrier to sustain this strategy.

But the carrier could choose to lower its prices for leisure passengers while increasing the price for business passengers or lower the price for leisure passengers but maintain the one for business passengers. These cases mentioned above usually happen in markets in which the number of business passengers is high, and the product differentiation is high. Sometimes, in this situation, it is better for an FSNC to increase the product differentiation by improving the quality of the service or loyalty. Under the developed framework in Chapter 3, FSNC is usually following business models orientated in a product differentiation strategy, therefore it is less costly to them to follow this strategy. Finally, another way of reacting is changing price by simplifying the fare structure of the airline, by using yield management they can remove limitations such as minimum stays, advance purchase, etc.

Another way of looking at price reaction is the impact of prices on competitive routes and non-competitive routes. In 1997, the US Department of Transportation (DOT), realized a study about the impact on FSNCs fares when a LCC enters a market. This report is very famous because the DOT conjectured that the entry of an LCC lowered the prices on competitive routes (routes in which FSCs and LCCs are in competition) but also full-service airlines increased their prices on non-competitive routes to offset the lost-on yields on the first situation. However, Windle & Dresner (1999) studied the competition between Delta Airlines and Valujet (LCC) on competitive and non-competitive routes, and they didn't find evidence to confirm the DOT conjuncture. Even if this study was done to analyze if competition between LCCs and FSNCs improved customer welfare, the price reaction strategy studied by Windle & Dresner, could be a viable and sustainable strategy. As maintained by Franke (2004), Oliveira & Huse (2009) and the theoretical framework on chapter 3, in long-haul routes and routes not entered by LCCs, FSNCs have a competitive advantage in terms of comfort and connectivity. In fact, price competition is much more common on short-haul routes. Nevertheless, if a full-service decides to follow this strategy, as explained by the first dilemma, the cost implementation needs to bring revenues faster than the loss of yields on competitive routes. Also, in non-competitive routes, the carrier cannot lose sight of the fact that an increase in price must be reflected in an increase in the value of their service compared to their FSNC competitors.

Finally, Chen (2017) complemented the scientific literature on price reactions of FSNCs by analyzing the impact on prices between the competition of Spring Airlines and China Eastern.

According to the author, both adjacent and actual competition impact the fares proposed by full-service carriers while facing the entry of a low-cost. In fact, Chen (2017) agrees with the latter opinions that the entry of the low-cost carrier in a route decreases the fares of the incumbent FSNC. However, the author also explains that actual and adjacent competition from another full-service airline in the same market also decreases the fares of the incumbent. In the Chinese market, the presence of an additional full-service airline on an actual route lowered China Eastern fare by 3,8% and an additional FSNC competitor on an adjacent route, lowered China Eastern fare by 2,1%. This paper proves what the first dilemma in the first section explained, FSNCs are also under competition with others FSNCs, therefore when deciding to adopt a price reaction, they need to be aware that their full-service counterparts are also going to react. Furthermore, another point raised by Chen (2017) is that a full-service carrier should only react on price to the entry of a LCCs, only if the entry represents a real threat. In the Chinese case, in certain routes, Spring Airlines faced many challenges to enter profitable routes and they only received flight slots in very bad schedules, also they couldn't add more capacity to the market because the capacity is controlled by the State. When entering the market, Spring Airlines had a 40% lower fare than China Eastern. We would have expected a price reaction from China Eastern to avoid losing market shares, but instead they carefully selected the routes in which Spring Airlines represented a real threat by always considering that they were still competing against other FSNCs.

4.2.2: Raise of entry barriers:

As explained in the case of Spring Airlines, barriers entry can also be beneficial for full-service carriers (FSCs) while facing LCC competition. In Chapter 1, we explained the concept of legacy carriers. In many countries FSCs are carriers installed on the market for years and they have therefore a certain capacity and slots already owned. In emerging countries, such as China or Latin America, because of slot and capacity regulations, LCCs have much more trouble entering the market. Oliveira and Huse (2009) analyzed the case of Gol airlines in Brazil. In the early 2000s, airlines in Brazil were using their excess capacity to put pressure on competitors and plunge their profits, which generated a super-competition context. When Gol entered in 2000 the Brazilian market, they were a victim of this strategy. In fact, the third round of deregulation created a bad incentive for airlines to increase their capacity to fight expansion of competitors and the entrance of new players. With an excess capacity there was a big pressure to fill empty seats, which created many price wars and therefore reduced the profitability of the carriers. In 2003, the government reviewed its policy about excess capacity, and they aligned the capacity

with the demand, because this policy directly impacted the facility for airlines to increase its flight frequencies, Gol had several problems to introduce its low-cost model depending on high flight frequencies to be profitable. This example shows how in Latin America countries, some FSCs still had in the last years the opportunity to raise entry barriers for newcomers and regulations still need to evolve to have a free market. Authorities still play a major role in the entry of an LCC and FSCs or incumbents can still take advantage of this situation since they are better installed on the market.

4.3 Non-price reactions

4.3.1 Carriers-within-carriers - create a new LCC subsidiary

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But the carrier could choose to lower its prices for leisure passengers while increasing the price for business passengers or lower the price for leisure passengers but maintain the one for business passengers. These cases mentioned above usually happen in markets in which the number of business passengers is high, and the product differentiation is high. Sometimes, in this situation, an FSNC should increase product differentiation by improving the quality of the service or loyalty. Under the developed framework in Chapter 3, FSNC is usually following business models orientated in a product differentiation strategy, therefore it is less costly for them to follow this strategy. Finally, another way of reacting is changing price by simplifying the fare structure of the airline, by using yield management they can remove limitations such as minimum stays, advance purchase, etc.

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4.3 Non-price reactions

4.3.1 Carriers-within-carriers - create a new LCC subsidiary

A strategy commonly used in the industry to face the competitive challenges of the entry of LCCs is to create a low-cost subsidiary within the same airline group. These types of carriers are called carriers-within carriers (CWC). The main idea is to increase the segmentation of the markets, by creating from scratch carriers with much lower unit cost that can face LCC competition on short-haul flights, without blurring the image of the legacy carrier (Graham. B

& Vowles T.M., 2006). This strategy does not represent an innovation per se, it has been used in many regions such as Europe, North America, and Asia- Pacific.

There are several advantages of implementing this strategy. According to Graham & Vowles (2006), the CWC strategy provides four advantages: it can be a useful tool to reduce costs, in particular labor costs, also it can be a way of targeting leisure and hub-pass passengers, and therefore allowing a better market segmentation. Furthermore, it can be a way of stopping the entry of an LCC carrier by raising the entry barriers, and alternatively, a CWC carrier could be also a way to compete directly with a low-cost that is already operating in the market but without blurring the image of the legacy carrier. It is important to note that in the opinion of Graham & Vowles (2006) if the costs can be reduced to a reasonable level to compete against LCC while still maintaining the yields necessary for legacy carriers, the advantages of creating a CWC are minimal.

Other authors such as Morrel (2005) and Gillen & Gados (2008) believe that CWC has three additional benefits: it can be helpful to spin-off profitable businesses and segments, to compete with low costs in key markets, and finally to test a low-cost business model that could be implemented later by the mainline carrier. In the view of Franke (2004), separating the low-cost operations from the mainline operations could be also beneficial in terms of customer segmentation. With a CWC, the mainline carrier could focus on international routes by still offering the same level of quality and premium services while the CWC focuses on national routes, by lowering the costs and competing with the low-cost carriers that are mainly present on short-haul routes. The main argument for creating CWCs rests on the cost optimization rationale. For some years now price has taken comfort as the most important variable on the decision making of short-haul passengers while choosing an airline (Graham & Vowles, 2006). However, as the CEO of the Canadian LCC WestJet said at the time, “You don’t lower the cost of your operation by repainting airplanes” (Grescoe, 2004, pp.211). As explained in Chapter 3, recall the business models framework, the competitive advantage of LCCs rests on its point-to-point network and how the whole business model is built on supporting that structure to achieve the lowest cost possible. Just creating a CWC for the sake of offering a lower service to reduce certain costs, will not represent a sustainable strategy to fight LCC competition (Graham & Vowles, 2006). Additionally, as stated by Gillen & Gados (2008), the target needs to be very clear when creating CWC and the mainline carrier must have a real competitive advantage for the strategy to be successful.

In addition to this, there are several challenges that the airline could face while implementing this strategy. When creating a CWC, mainline carriers can establish a separate brand, allow some relationship between the CWC and the main carrier and create a low-fare service within the main airline (Pilling, 2004). The last two options guarantee to the passenger that the CWC is part of a legacy group, and therefore the CWC benefits from the advantages that go with it. However, there are some risks if the linkages between both are very high.

First, there is the dilution of the brand. Customers could start thinking that the mainline operator is a low-cost carrier. As explained in chapter 3 in the business model framework, the standard competitive advantage of full-service carriers is the connectivity and the comfort of its service, if people start perceiving its services as inferior, this could translate in losses of market shares and profit for the legacy carriers Graham & Vowles (2006). However, another risk is cannibalization. If the separation between mainline operator and CWC is too wide, the legacy carrier may be only redirecting its traffic to the CWC and therefore cannibalizing its customers (Gillen & Gados, 2008). Furthermore, some airlines are opposed to this strategy because they believe that the only way of fighting low-cost competition is through cutting costs: for example, after creating its own CWC and failing in 2002, British Airways opted to implement intensive cost reductions and stretch its brand to fight low-cost competition. They modified a lot of features in their short-haul operations, they abandoned their hub operation at London Gatwick and changed it by a point-to-point network structure that was performant enough to compete against RyanAir and EasyJet. According to Pilling (2004) another reason why British Airways sold “GO”, its CWC, is that in a certain way having Go made the overall operation of the group much more costly. This could be explained by the cost of the structure, having a much more complex structure becomes much more expensive for a holding (cf. The Avianca case in Chapter 1). Finally, another risk to take into consideration is that usually if the CWC is created within the airline group there could be issues with the labor union when trying to reduce labor costs. Usually, airlines try to cut salaries and personnel within their CWC, but because labor unions are also supervising the CWC, labor cost is not very easy to reduce (Morrell, 2005).

It is important to understand that the CWC strategy has caused a lot of debates and there is no scientific data proving that it is not a viable solution. However, the carriers that have been successful to use this strategy are the ones that created the CWC to meet the competition or to test their entry in a new market to maintain the same market share that they had before the entry

of the LCCs. For example, Lufthansa and Qantas developed German Wings and Jetstar respectively to meet LCC competition, but they have been very strict with how they use the CWC to avoid cannibalization and brand dilution. According to Gillen & Gados (2008), both carriers had already a competitive advantage because they dominated their markets and were protected by the government, proving that this strategy must be considered according to the specific context of the market and the carrier.

4.3.2 Hybridization/ Become an LCC

Another strategy is to adopt the hybridization business model presented in Chapter 3. There are many examples in the industry of carriers taking this path. Around the world, there is one airline well-known for having adopted this strategy: Aer Lingus. According to O'Connell & Connely (2017), this strategy could work for airlines that have ss on short-haul flights. However, the model should be accompanied by other strategic decisions supporting this shift. After analyzing the situation of Aer Lingus, they concluded that a full-service wishing to become a hybrid must have strict capacity management, meaning that they should align with their demand, close non-profitable routes to improve the load factors. Furthermore, the carrier must optimize their costs: use secondary airports as hubs, reduce ground charges, charge for additional services on-board, et. In the opinion of the authors, the key aspect to make this strategy work is to reduce costs and differentiate their services from the LCCs according to their environment. For example, Aer Lingus continue using primary airports because this gave them higher market power. Because of the slots restrictions and excess capacity policies, they were protected from direct entry of low-cost, and they can compete with them by offering a lower service on their routes by still maintaining the services on their primary hub and their connectivity (O'Connell & Connely). Also, it is necessary to adopt revenue-generating strategies such as an unbundled pricing strategy. Carriers using the hybrid strategy have at least 3 different fares: "low", "plus" and "flex" and customers can choose the services they want by upgrading from the lowest fare to a higher one. This strategy is usually adopted to cover larger segments. Finally, another important aspect is developing partnerships with other carriers by using codeshare agreements or joint ventures, Aer Lingus even decided to abandon OneWorld to privilege partnerships with strategic carriers and reduce costs. Overall, if well-implemented this strategy allows full-service carriers to compete sustainably with low costs by maintaining a certain level of premium services. However, there are many consequences of adopting this strategy, mainly in terms of brand image and complexity of operations. Furthermore, it is easy for other FSNCs and LCCs to copy the strategy. Nowadays, low costs are also reacting to full-

service strategies by hybrid their models and offering premium services to attract business passengers (Klophaus et al.2012).

4.3.3 Cost-cutting

The common ground of the latter strategies is that to fight low-cost competition, full-service network carriers need to optimize their costs to a level in which they are competitive with LCCs. For many years, the airline industry has had profitability problems because it's considered to be a very capital, labor, and technology-intensive industry (IATA,2021). During times of crisis, such as the 2008 jet fuel and financial crisis or the more recent COVID-19 crisis, airlines started to research different cut-cost strategies that could allow them to recover their profitability and survive. In the opinion of Dr. George Williams, a reader in Airline Economics at Cranfield University (n.d), airline costs could be divided into operating costs and non-operating costs. Operating costs are divided into direct operating costs and indirect operating costs. Direct operating costs are charges related to the operation of each aircraft, such as flying fees (crew salaries, fuel consumption, airport fees), maintenance and overhaul of the aircraft, and the depreciation of the aircraft. Indirect operating costs are not related to any specific aircraft operation, for example, administration costs, marketing, ticketing, and ground equipment charges. And non-operating costs are profits related to other subsidiaries or the capital gain of selling some assets. Usually, these types of costs are influenced by different factors related to the business model of the carrier: the characteristics of the aircraft (speed and capacity), the type of route network (lengths of flights, the frequency, and the average lengths flown by passenger), the marketing activities (promotions, quality in-flight) and the external economic factors such as fuel prices, airports policies, exchange rates, etc. (Williams G., n.d).

According to academic literature, there are five different policies that a carrier could implement to optimize its costs: optimize fuel consumption, improve employee's performance, revise flight operations, reduce aircraft maintenance costs and simplify the operating procedures of its planes (Chang Y.H & Shao P.C., 2011). In the opinion of Chang Y.H & Shao P.C. (2011), many strategies can be implemented on each of the policies. To optimize fuel consumption, carriers should look to implement fuel hedging strategies, increase the saving performance of the aircraft, reduce the dead weight of the aircraft, and optimize the dispatch of the planes. For improving employee performance, carriers could schedule flights on reasonable hours for the crew, reduce over-time of crew members, encourage a cost-cutting mindset by giving incentives to employees to respect guidelines (e.g., incentives for pilots if they consume less fuel during

takeoff/landing) while still maintaining good employee satisfaction. In terms of flight operations, airlines could optimize landing/takeoff produce to use less fuel, alternate airports, close non-profitable routes, alternate destinations in terms of seasonality, and create fuel-saving guidelines. While facing maintenance costs, an airline should invest in new-aircraft and sell the old one, optimize the maintenance frequency, create partnerships with suppliers and seek to reduce the price of their service. Finally, to simplify the operation procedure, carriers should digitize all their ticketing, reduce their reservation systems costs, revise their premium service at the airports and reduce the time between the plane being pushed back from the terminal and the take-off (taxi-out time). According to the academic research consulted for this section, to face LCC competition the most effective is to fight them by reducing costs, any other strategy implemented without cutting costs, will not be very effective to fight low-cost carriers (O'Connell & Connolly, 2017; Chang Y.H & Shao P.C., 2011; Gillen & Gados, 2008; Morrel, 2005; Graham & Vowles, 2006).

CONCLUSION:

Nowadays, the Low-Cost Carriers have successfully developed a competitive advantage against Full-Service Carriers. Their cost leadership allows them to perform much better financially and by increasing the quality of the level offered, they are copying FSNCs and leave them with no strength to exploit. In Chapter 2 the current situation of Latin America was explained. In recent years, low-cost carriers are becoming the leaders of the biggest domestic markets (Mexico, Brazil, Colombia, etc.) and because of the COVID-19 crisis, most of the legacy carriers are under Chapter 11 of the US Bankruptcy law. The local aviation industry is under transformation and accurate analysis of the state of the region will be performed in the practical part to understand how are FSNCs currently fighting against LCCs and what they can improve.

In terms of the competition challenges, when competing against the low-cost carriers, FSNCs face three main tradeoffs. First, if they increase their productivity, they will weaken their position against other carriers. To improve productivity, they need to reduce connectivity and therefore lose market shares. Also, competing with LCCs demand a certain time to compete on price. However, because LCCs have a much lower unit cost, price competition is not sustainable for an FSNC. Finally, when a low-cost carrier entry a route, the yield of the FSNCs lowers, forcing the FSNCs to react.

But competing is not that easy, because LCCs are also reacting to FSNCs strategies. It is no longer true that all the carriers are purely low-cost or full-service. LCCs are adapting their initial models by offering a higher comfort of their flights and changing the driver of the customer decision. They are also adapting their point-to-point network structure to offer connections between flights too. According to research consulted in this literary review, *customer behavior is now driven by price and no longer by comfort, convenience, and/or connectivity* (H2). The latter hypothesis will be tested during the practical part of this thesis.

Consequently, many other regions of the world are now composed of hybrid carriers with full-service or low-cost dominant characteristics. Currently, there are regional carriers, emerging regional low-cost carriers, small-full-service carriers, emerging regional carriers, long-haul niche carriers, and all business models originating from an adaptation of a low-cost or full-service strategy. Therefore, in the following part: the following hypothesis will be tested: (H1)- *The Latin American landscape is no longer composed of two main business models but by different types of actors.*

As far as reactions by FSNCs are concerned, this literature review address four different business models adopted to fight against LCC competition. All of them are composed of different types of strategic orientations, competitive advantages, and risks. A carrier focusing on creating and capturing value will usually put the focus of its strategy into the wellness, comfort, and quality of its service. This model is associated with a differentiation logic, in which carriers select one or many attributes important to their customers and their position to meet their customer's needs. It is a risky approach because competitors can easily imitate, or the differentiator can lose value in the eyes of the airline target. If the carrier chooses to gain a competitive advantage or become a leader in a market before the other (market and advantages of anticipation), the carrier will be focusing on targeting a very specific segment within the industry and develop a competitive advantage within the segment. The main risks are that the segment can erode, and competitors can decide to enter the segment and saturate it. As far as the hybrid strategy is concerned, carriers can adopt a mix of low-cost and full-service features by focusing on differentiating on the attributes more important for their customer target. The risk is to be "stuck in the middle" and not be able to succeed in any segment. Finally, adopting a revenue generation and cost-cutting strategy can be helpful to generate more revenue for the airline and achieve cost leadership. However, the risk is that others are already imitating the strategy and even developing other capabilities (hybrid carriers). In the practical part, the

strategies of the Latin American carriers will be analyzed. Four main hypotheses will be tested: H3: *The hybrid strategy is a sustainable strategy to fight LCC competition.* H4: *Creating and capturing value is a sustainable strategy to fight LCC competition.* H5: *Revenue generation & cost-cutting is a sustainable strategy to fight LCC competition.* H6: *Market and advantages of anticipation is a sustainable strategy to fight LCC competition*

In terms of strategies to implement in the latter part price reactions and non-price reactions were discussed. If the carrier decides to react on price, it must be aware that it needs to keep its fare structure simpler and that equalizing the price of an LCCs is not a sustainable strategy. Furthermore, another possibility can be to lower prices in domestic routes to compete with LCCs and offset the loss of revenue by increasing prices in the international routes. If the carriers decide to not react on price, three main strategies can be found in the literature: create a multi-brand concept by adopting a carrier-within-carrier strategy, hybridize its model by adopting LCC characteristics and implement cost-cutting measures to increase productivity. The latter strategy is the one that everyone agrees on is the best way to fight LCC competition.

Part III: Practical Analysis

1.Introduction

After reviewing the different competition challenges between LCCs and FSNC that can be found in Latin America, this practical part has as an objective to answer the following sub-questions: *Is FSNC and LCC competition challenged by other types of business models in the region? What are the drivers of low-cost and full-service competition in the region and how they impact profitability? What are the best strategic focuses for FSNCs to fight LCC competition in the region?*

As explained during the introduction and conclusion of the literary review, each sub-question is related to the following hypotheses:

H1: *The Latin American landscape is no longer composed of two main business models but different types of actors.*

H2: *Profitability is no longer driven by comfort, convenience, and connectivity but by cost and productivity in Latin America.*

H3: *The hybrid strategy is a sustainable strategy to fight LCC competition.*

H4: *Creating and capturing value is a sustainable strategy to fight LCC competition.*

H5: *Revenue generation & cost-cutting is a sustainable strategy to fight LCC competition.*

H6: Market and advantages of anticipation is a sustainable strategy to fight LCC competition

Through this practical part, each hypothesis will be tested by using different methodologies that are going to be explained in the following sub-section. Furthermore, the results of each analysis will be presented and analyzed. Finally, a conclusion will provide the different the implication to answer the main question: what are the competition challenges of Latin American FSNCs & LCCs, and how can FSNCs face this competition?

2. Methodology

2.1- Definition of the research purpose and approach

To answer the latter questions, the practical part will be based on a case study of the Latin American aviation industry. According to Anderson G. (1993), a case study is a way to understand how and why things happen in a specific context when one needs to understand comprehensively a situation and identify potential causes that could be interesting to study in later research. Usually, case studies can be exploratory, descriptive, or explanatory. The case study conducted in the context of this thesis is exploratory because the objective is to provide observations about the phenomenon of LCC competition in Latin America (Yin,1989). Furthermore, the research has a collective approach because it analyses multiple airlines to have a general view of the topic studied.

2.2 – Research strategy

According to Tellis (1997), a case study is composed of four main steps: design the case study, conduct it, analyze the evidence, and conclude the study by providing recommendations and implications.

Concerning the design of the case study, it is based on a population of 83 airlines that have their major domestics and/or international operations in Latin America. Therefore, carriers whose main operations in the United States, Canada, or Europe are not considered in the scope of the analysis even if they operate in the region. Furthermore, regarding the time scope, the current COVID-19 crisis is not in the scope of the research, all data presented dates to 2020. The main reason is that the aviation industry is still recovering, and 2020 or 2021 data will be biased by this situation. However, COVID-19 is considered for the recommendations and the challenges

that carriers are facing now. Also, sometimes there are certain comparisons with the current situation of the carrier in 2020/2021.

When conducting the analysis, the case study will be composed of three main parts. The first objective of this research is to summarize the main airline business models competing in the region. The idea is to start from a population of 83 airlines proposed by O'Connell et al. (2020) and apply the Pareto principle (80/20) rule by choosing the carriers that contribute to 80% of the total market capacity. By using the theoretical framework developed in the theoretical part and the framework developed by Urban M. et al (2018), the short-listed airlines will be clustered. Furthermore, by using a more qualitative approach based on chapter 3 on the literary review and the definitions of the competitive advantages, all the capabilities, competitive advantages, and the risks of the carriers will be drawn. This process will allow us to verify if H1 it's true or false.

Following a more quantitative approach, based on the product and organizational architecture (POA) methodology developed by Mason and Morrison (2008), and applied to the aviation industry, will allow us to compare the airline business models and make an analysis about the performance of the strategies implemented by each. This part of the research will help us to provide insights for H3, H4, H5 & H6.

Finally, based on the results of the POA, a correlation analysis between different aspects of the business models (convenience, comfort, cost, ancillary revenue, etc.) and the profit will be performed. The idea is to identify what are the elements driving the competition of FSNC and LCC and the financial success of a specific business model in the region (H2).

Product and organizational architecture (POA) methodology:

This methodology is helpful to benchmark the performance of the different strategies and business models used by many carriers. According to Mason and Morrison (2008), to compare different airlines, it is necessary to identify its key strategies' components. This is why the indexes evaluated in the methodology are distributed in three different areas: the product architecture – elements defining the service and characteristics of the products offered by the carrier but also useful to evaluate the consumer behavior, organizational architecture – elements that evaluate the way the company is organized, the productivity and the distribution choices, and finally the operating profits – elements evaluating the revenue achievement, profitability

and costs of an airline. The steps to conducting a POA analysis applied to the airline industry are the following:

1) Create indices to benchmark different metrics

Based on the work of Mason & Morrison (2008) and O'Connell et.al (2020), the following indices were created:

- Profitability index - analyses the EBITDA margin and operating margin.
- Cost drivers index - summary of the strategy of carriers regarding the unit costs.
- Revenue achievement index – measures the profitability of each flight (yield).
- Convenience index – measures punctuality and on-time performance (OTP).
- Comfort index – measures the comfort on-board: seat widths and seat pitch in inches.
- Sales & Distribution index – mainly the use of the internet as a distribution channel to avoid costs.
- Fleet productivity index – daily utilization of the airline's fleet in block hours and its age.
- Labor productivity index - measures the number of employees per aircraft and ask per employee.
- Airport attractiveness index – summary of how the airport is perceived by customers and the control that the airline has of its total flights.
- Market structure index – summary of the control of the airline in the domestic and international market.
- Ancillary structure index – capacity of the airline to raise ancillary revenue.
- External factors index – summary of the economic situation in the majority country in which they operate.

A list of the indexes and the data collected is available in appendix 3.

- 2) Index calculation methodology:* The benchmark ratios are based on public data available. Not every KPI of the theoretical model of Mason & Morrison (2008) was used, because of the limitation of free accessible data in certain platforms used by them. However, an attempt was made to illustrate as best as possible the reality of the carriers with the benchmarks chosen.

To calculate all the index scores, the methodology is based on the best-in-class performance. For many of the index, the “best in class” is the highest score, but in some cases is the lower score. A column is available in appendix 3 to identify which is the best in class for each ratio.

Two formulas were used depending on the best-in-class definition:

- a- Calculation of maximum “best in class index”:

$$\text{Benchmark ratio} = \frac{\text{Airlines performance}}{\text{Best in class performance}}$$

- b- Calculation of minimum “best in class” index:

$$\text{Benchmark ratio} = \frac{(\text{Worst in class} - \text{Airline performance})}{(\text{Worst in class} - \text{Best in class})}$$

A table of the benchmarked ratios can be found in appendix 4.

Some elements in the index calculation contribute to a higher extent than others. To avoid this bias, a weighting score is practiced. The weights are computed based on the correlation of the element benchmarked with the operating margin. Therefore, the formula applied for the weighted score is:

$$\text{Weighted score} = \frac{(\text{score}_a * \text{weight}_i) + (\text{score}_b * \text{weight}_{ii}) + \dots + (\text{score}_z * \text{weight}_n)}{\sum \text{weights}_{i-n}}$$

A list of the weighted scores can be found in appendix 4. And a table with the application of weighting can be found in appendix 5. With the weighting score, it is possible to compute the final score by using the following formula:

$$\text{Final index} = \left(\frac{\text{Weighted score}}{\text{Best weighted score}} \right) * 10$$

A table with the final index can be found in appendix 6.

As mentioned above, the ultimate step of this POA methodology will be to make a correlation matrix of the final scores. This matrix can be found in appendix 7.

2.3 - Data collection

The data collected for this part is composed mainly of primary and secondary sources.

The primary sources are usually filings of each airline, such as the 20-F SEC form that every foreign company that has securities trading in the US need to fill, the Annual Reports, the quarterly reports, the traffic report, and any other report of the airline related to the operational metrics (CASK, ASK, Yield, Average Stage length, etc.) or financial metrics (Revenue, Profit,

Operating Margin, EBITDA margin, ancillary revenue, sales expenses, etc.). Most of these resources will be used to perform the POA analysis and to compare the performance of the business models of each airline. As far as secondary sources are concerned, three specific articles will be used across the whole practical part: Urban M. et al (2018) that developed a framework to cluster airlines business models, Mason & Morrison (2008) which developed the POA methodology and O'Connell et. al (2020) which applied the POA methodology in the context of research about Copa Airlines in Latin America. Furthermore, the theoretical framework developed in chapter 3 will be useful for the cluster analysis.

3. Analysis of the results

3.1 - Qualitative Analysis:

3.1.1. Cluster Analysis:

According to the research conducted by O'Connell et. al (2020), there are 83 operating airlines in the region. By selecting the carriers that participated in the creation of 80% of the capacity of the region, the initial list was shortened to 11 airlines: five of them claim to be full-service network carriers (LATAM Airlines, AVIANCA, AEROMEXICO, COPA Airlines & AEROLINEAS ARGENTINAS) and four of them claim to be low-cost (VOLARIS, AZUL Airlines, GOL Airlines, Interjet & VIVAAerobus). However, because of the lack of public information available of AEROLINEAS ARGENTINAS and Interjet, the short-list was finally reduced to the following airlines: LATAM Airlines, AVIANCA, AEROMEXICO, COPA Airlines, VOLARIS, AZUL Airlines, GOL Airlines, and VIVAAerobus. This list suggests that there are only LCC and FSNC in the region, but in Chapter 2 a cluster graph of the landscape in 2016 was presented, and there were also mainline and regional airlines, but they represent less than 1% of the seating capacity each. The difference with this cluster analysis is that the main objective in this section is to verify if the short-listed carriers can be considered as FSNC and LCC, or if they have adapted their models to fight competition. The framework developed by Urban M. et al (2018) will allow us to identify the main characteristics that are present in each business model. The list of criteria is the following: the network system, the target group, the forms of cooperation, the geographical operation, the services offered, the types of airports used, the competitive situation, use of connections, and the presence of a bonus program. After consideration, the framework was adapted to the Latin America region, and the final version is the following:

The first variable identifies the network configuration of the airline. As a reminder LCC is flying with a point-to-point network structure, FSNC uses a hub-and-spoke structure and the other categories were adapted from the initial framework because some carriers in the region had a different structure. For the customer target, usually FSNCs target leisure and business passengers, and LCCs target visiting friends and relatives (VFRs) and a more price-sensitive segment of business passengers.



Fig.1 – Framework for clustering airlines business models adapted from Urban M. et al. (2018)

In terms of cooperation, usually, LCCs are not part of any alliance, they have few code-sharing agreements and joint ventures are not very common but in the case of the FSNCs, they are almost always a member of an alliance, they have several codeshare agreements to increase connectivity and in Latin America, there are many joint ventures with American carriers. For what geographical operation is concerned, usually LCCs have short-haul operations, meaning that they are mainly flying in the domestic or regional market. However, full-service carriers also operate in international markets, for example, some of them offer direct flights to Europe (London, Madrid, Lisbon, etc.). For the criteria frills/unbundled fare, the main idea is to analyze how is composed the fare package of the carrier (baggage included, snacks, Wi-Fi, seat assignment). In opposition to full-service carriers, Low-Cost have commonly a completely unbundled fare, this means that you must pay for each additional service. For the types of airports, LCCs will prefer to use secondary airports to reduce costs and FSNCs will mainly fly to primary airports to offer better comfort and connectivity to their customers. In terms of competition, there is not a particular situation characterizing each business model, but the criteria are used to analyze how is the carrier threatened in its domestic market. Finally, three

categorical criteria were added. These are to consider if the airline has connections, if they count with a bonus program (usually a loyalty program and advantages with a credit card), and finally the basic economy fare, which aims to analyze if the carrier is offering a very low-price fare in the economy category. Usually, this is a sign of hybridization of a full-service business model, in reaction to the low fares of LCC. After analyzing all the business models, three major segments were identified. As expected, LATAM Airlines, AVIANCA, AEROMEXICO & COPA Airlines can be clustered into the FSNC segment and VIVAAerobus & VOLARIS are inside the LCC segment. However, AZUL Airlines and GOL Airlines that claim to be LCC cannot be considered as such, they are more like the hybrid business model defined in the theoretical framework of Chapter 3. The results of every airline can be consulted in figure 2.

Even if there are still certain carriers that can be considered as fully low-cost or full-service network carriers, even within these categories some elements are proving that the hybridization trend is already present in Latin America.

For the full-service network carriers, three of them are flying by using a multi-hub structure. This is an adaptation very particular to the region of the hub-and-spoke model structure. This is explained because the carriers using this model (AVIANCA, LATAM, and AEROMEXICO) choose to expand their operations in the region by acquiring other carriers. As a reminder, in Chapter 1 the challenge of the franchising model was discussed. However, COPA is still a perfect example of the hub-and-spoke model. Located in Panama, their hub is the perfect passage between South America and Central/North America. As far as the geographical operation is concerned, one element that didn't cope with the standard FSNC model was the choice of Copa Airlines to operate short-to-medium flights, as they are operating only in the continent. However, according to its 20-F SEC filing report (2019), they have code-sharing agreements to flight to Europe. Finally, one very important variation from the FSNC model presented in the literary review is the fact that all the Latin American carriers of this segment were applying an unbundled fare. As discussed in chapter 4, the presence of an unbundled fare is a current trend of full-service airlines to adapt their pricing strategies to LCC competition and become much more competitive. Usually, this is an initial sign of the hybridization of an airline.

Within the LCC segment, both airlines stick to the standard model of a low-cost airline. However, there is just an element that differs from the model: the bonus program. Both

VIVAAerobus and VOLARIS have fidelity programs and partnerships with credit cards for their more loyal consumers. Usually, to reduce costs LCC tries not to invest in this type of action but in the Latin American region, or at least in Mexico, for both carriers, it is important to have loyal clients because their main competitors are buses. By using these programs, both carriers can make their offering more attractive and competitive than the one from the buses. For example, by giving discounts or free additional services to its member or giving credit cards that allow paying the tickets with free interests in 3,6 or 12 months. It is a way to stimulate demand.

Finally, two carriers claim to be low-cost but after applying the framework, it resulted that they can be considered more like hybrid carriers. First, this is easily checked when the network system is analyzed. AZUL and GOL are flying respectively with a multi-hub structure and a hub-and-spoke & point-to-point structure. Furthermore, they offer a very high comfort during their flights (WI-FI, high connectivity, lounges services, baggage included, etc.). As the FSNC segment, both airlines are practicing a partly unbundled fare, but LCC is usually not providing any additional complimentary service in their fares. Another element that shows a certain hybridization is the fact that they are part of airline alliances and premium code-sharing agreements: GOL is a member of Star Alliance and AZUL has strong relationships with Star Alliance members such as United Airlines and TAP Air Portugal. Pure low-cost carriers have issues entering this type of agreement because these airlines' programs require a very high standard of services that the cutting-cost strategy does not allow. Another element is that Azul Airlines has direct flights to Europe, so they are active in low-cost long-haul flights and possess therefore a diverse fleet of aircraft. For the choice of types of airports, AZUL has chosen as hubs mainly secondary airports, such as the Viracopos Airport at Campinas, a city located at 90 KM of Sao Paulo, or the Confins airport and the Recife Airport (AZUL, 2019). But GOL chooses to operate in mainly primary airports such as São Paulo Airport, Rio de Janeiro, Brasilia, and Fortaleza (GOL,2019). Finally, in terms of connection, bonus programs, and basic economy fare, they have shown a similar trend that FSNCs. The main reason they are not considered as FSNCs but a hybrid, apart from the fact that both define themselves as LCCs in their annual reports,

is that both choose network structures or airports that are more like the choice that LCCs would have done.

3.1.2. Strategies, strategic focus, and competitive advantages of Hybrid airlines and LCCs:

It is important to understand the different strategic focuses of each airline to compete in the domestic and/or international market. As a reminder, the theoretical framework developed in figure 1 and figure 2 of Chapter 3 will be helpful to identify the strategic focus, the competitive advantages, and the risks of each strategy.

According to AZUL's 2019 20-F SEC filing report (AZUL, 2019), in the domestic market, they are mainly in competition with GOL and LATAM. However, their strategy is to operate in exclusive routes and to create in a certain way a monopoly of that routes. For example, in 2019, only 35% and 28% of their operations were overlapping with GOL and LATAM, respectively, and the latter had both an overlap of 88%. AZUL avoids competition by serving exclusive routes in which their competitors are not present. For example, from their 11 top routes, only two of them overlapped with GOL and LATAM. In the Campinas-Rio de Janeiro route, AZUL offered 15 flights per day and GOL 2 flights, and in the Rio de Janeiro-Belo Horizonte route, AZUL offered 8 flights per day and GOL and LATAM 5 flights per day each.

When the international strategy is analyzed, they fly from Viracopos Airport which is their primary hub and a secondary airport. In this airport, they are the only ones offering direct flights to the US and Europe. And finally, when analyzing the product & network architecture of the airline, the comfort offered is very high (satellite TV, WI-FI, bonus program, high-connectivity) and they operate by using a multi-hub structure, which are signs that in a certain way they are not completely focusing on cutting-cost like a pure LCC, but in creating value for the customers by still having low-prices and targeting bus passengers, leisure passengers and price-sensitive business passengers.

AZUL Airlines:

Strategies:

Strategic focus:

According to the analysis based on the first section criteria, AZUL can be considered a hybrid airline. However, when considering the framework developed in Chapter 3, the reality is a little bit more complicated. If the AZUL's answer to the needs of the Brazilian aviation market is analyzed, it is easy to realize that their focus, at least for the domestic market is to fill the regional gap of GOL and LATAM by creating a market advantage and anticipating competition. In this sense, their strategy is like the one used by a regional carrier (RC). An element that

differentiates the Brazilian landscape from others in the region, is that the regional airline offering is not very well developed (Nuutinen H.,2009). But their main attractive attributes are that they offer low prices but also very good comfort and very high-quality services. All these elements taken into consideration allows to state that they also have a hybrid strategic focus, mixing elements from low-cost and full-service strategies. The only type of carrier that is situated between the **market & advantages of anticipation** and **hybrid strategic focuses**, is the **Emerging Regional Low-Cost Carrier (ERLCC)**.

Competitive advantages:

In conclusion, the strategy implemented by AZUL is sustainable because they benefit as a competitive advantage from the protection of competition in almost all its routes and they specialize in the needs of very specific passengers that are not at all targeted by its competitors.

Risks:

In terms of risk, AZUL is not protected from saturation if GOL and LATAM decide to enter their niche routes. But this risk does not seem very likely because it could generate a price war that GOL and LATAM may not be able to fight.

GOL Airlines:

Strategies and strategic focus:

In the case of GOL Airlines, they are the pioneers of low-cost carriers in Brazil (Nuutinen, H., 2009). They entered in 2001 when they identified a niche market that other carriers were not focusing on bus passengers. They started offering night flights at very low fares and that was the beginning of the low-cost carriers in the country. The difference with AZUL is that GOL is competing in primary airports and their network structure is composed of hubs and point-to-point routes. GOL prefers to focus on the busiest airports by passenger traffic of Brazil and currently, they have the higher shares of airport's total domestic flights in those airports (GOL,2019). This is important for the airline because it allows them to offer the highest connectivity and direct flights from the more populated cities of Brazil (São Paulo, Rio de Janeiro, and Fortaleza). In terms of product and service architecture, they are offering seat assignment, flight change, free shuttles between airports, buy-on-board services, free snacks on certain flights, in-flight entertainment (TV and WI-FI), and even a loyalty program. It is easily seen that the companies take very seriously the comfort of their customers. Since they are a direct competitor of LATAM airlines in 88% of their routes (GOL, 2019), they are forced in a certain way to still offer a similar level of comfort to LATAM. However, the main particularity

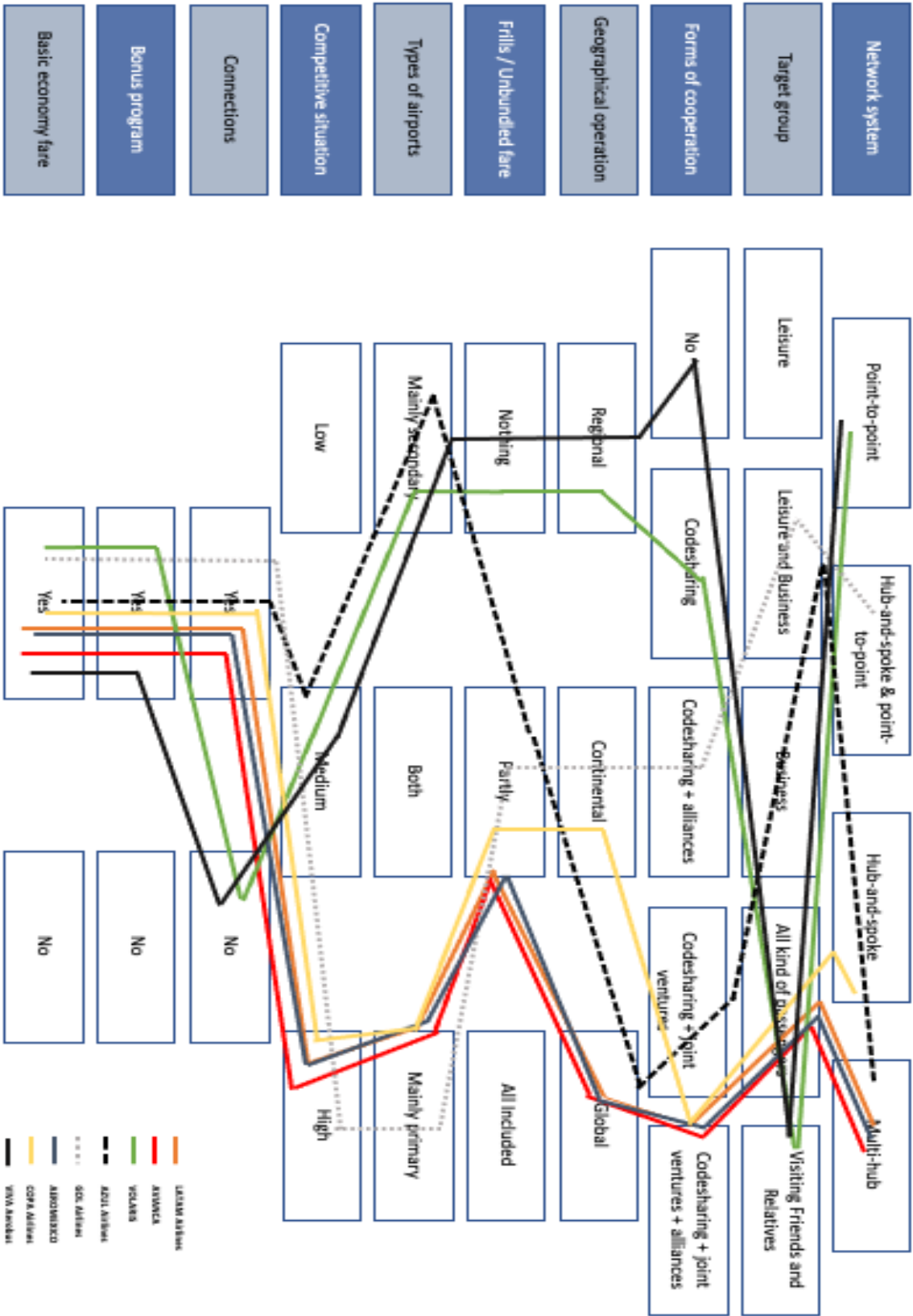


Fig.2 – Analysis of the Latin American carrier's business models

and competitive advantage that GOL has against LATAM is that they are still using some elements of the LCC model. For example, they are flying point-to-point in domestic routes, they operate solely aircraft from the Boeing 737 family, which gives them the advantage of having lower maintenance costs. Furthermore, all the aircraft are under leasing contracts which allows them to adapt their fleet in the function of their demand, particularly for low periods such as the COVID-19 crisis. All these elements together allow us to confirm that GOL Airlines is a **hybrid carrier with dominating LC characteristics (HC)**.

Competitive advantages:

In terms of competitive advantage, they manage to have very low unit costs and very high-quality services for leisure and business passengers. So, in comparison with its direct competitor LATAM, they are seen as less expensive and offering almost a similar quality. Furthermore, an additional competitive advantage is that they are MRO cost leaders in Brazil, which is very complicated to imitate. They are providing maintenance and modification to their aircraft on their own. In 2019 they even launched GOL Aerotech which will work as an MRO service provider for GOL and even its competitors.

Risks:

However, it is still a risky business model, for example, they already suffered from the Boeing 737-max groundings which force them to ground the aircraft and the deliveries of their new 737 max were stopped. Boeing is not producing other 737 aircraft but solely 737 max. According to GOL, this will produce disruptions in their operations, increase their unit costs, decrease the quality and connectivity (GOL, 2019). Finally, in this case, the typical risk of adopting a hybrid model such as the “stuck in the middle” or confusion of the image of the brand doesn’t seem to be affecting the company. However, this needs to be confirmed by the financial and performance analysis (POA).

VIVAAerobus:

Strategies and strategic focus:

When analyzing the VIVAAerobus business model they can be considered as low-cost carriers. From all the carriers analyzed, VIVAAerobus is the closest business model to the standard model presented in the literary review. As mentioned in the last section, almost all the elements of their strategy are part of the choice that a **True Low-Cost Carrier (TLCC)** needs to make. There is only the bonus program that is a very particular choice, but it is the right choice to stimulate demand and attract the VFR segment. Their positioning is to be the faster way of transport to move inside Mexico, and for that, they target people that are usually moving from

one state to another by bus several times per month. The VIVAFan program allows members to save money on round trips, it includes free baggage in certain routes and the passenger can buy a subscription that includes a certain quantity of flights per month, just like a train subscription (VIVA, 2021). For the airline, it represents an additional ancillary revenue because they are charging an annual fee for their loyalty program.

Competitive advantages:

In terms of competitive advantages, one unquestionable advantage of VIVAAerobus is its strategy to stimulate demand. Apart from offering bonus programs and a fare architecture like the one from buses, they are part of the IAMSA group, which is Mexico's bus operator leader, transporting around 300 million people per year (Schlumberger C. & Weisskopf N., 2014). This is important because it allows them to sidestep traditional distribution channels that are usually dominated by FSNC. The airline is selling tickets in IAMSA's bus stations and providing shuttles to airports, which in developing countries is an advantage because sometimes public transport does not allow to access easily secondary airports. Furthermore, it is a way to increase connectivity because having a big bus operator as co-founder allows the airline to target secondary airports, provide free shuttles, or even bundled tickets with routes that are done by plane and completed by bus. Altogether, it is a way to target customers from tier 2 and tier 3 cities in Mexico, which is just not under the scope of FSNCs flying from and to Mexico.

Risks: In terms of risks, the model is imitated by Volaris with the difference that Volaris does not have this partnership with a bus operator.

VOLARIS:

Strategies and strategic focus:

Volaris can also be considered a **True Low-Cost Carrier (TLCC)**. They are flying by using a point-to-point network structure, usually focusing more on regional operations, and targeting the visiting friends and relatives segment. They are using secondary airports to avoid the congestion of the Mexico city's airport and they possess codeshare agreements with Frontier, which allow them to offer one of the highest connectivity between Mexico and the United States. And this is key for the airlines because one key market for them is the United States cities with a large population of Mexican and Mexican American. 60% of their international passengers are flying to the US (VOLARIS, 2019). Furthermore, they also replicate their model in underserved markets in the region, such as Central America in which they also target the VFR segment of people living in the United States. Furthermore, they also stimulate demand

by attracting bus passengers to fly with them. Their focus is always put on targeting underserved routes for the middle-high, middle, and middle-low class. That's why one strategic action is to provide financing to its clients. For example, Volaris has the "Invex 2.0" Mastercard card that offers 3, 6, and 11 interest-free monthly payments of their tickets (Volaris, 2021).

Competitive advantages:

In terms of competitive advantages, in comparison with the other public traded companies (excluding VIVAAerobus) in the region, and even American carriers, they have the lowest unit costs. Indeed, according to its last report of 2019, Volaris is between the top 3 lowest-unit costs publicly traded airlines worldwide, even ahead of RyanAir and Wizz Air (VOLARIS, 2019). This is beneficial for them because, as the opposite of what VIVAAerobus does, Volaris is directly competing with AEROMEXICO and American carriers on international routes. By having the lowest cost, they can offer better fares and it allows them to be the leaders in the Mexican American communities' segment. Furthermore, replicating their model in other regions that are underserved such as Costa Rica or El Salvador, allows them to increase their sources of revenues in comparison with other LCC that mainly focus on the domestic market, like VIVAAerobus.

Risks:

In terms of risks, they are engaging in a *lot* of activities to switch bus passengers to fly with them. However, even if Volaris is the largest domestic operator in 2019, it is very difficult to position themselves as leaders of this segment when its main competitor (VIVAAerobus) is also the biggest bus operator of Mexico.

In terms of opportunities, both LCCs (VOLARIS and VIVAAerobus) have for the first time the chance to increase their operations in the Mexico City International Airport. With the COVID-19, AEROMEXICO which was the carrier operating most of the flights of their airport was forced to close some of its routes to respect their Chapter 11 restructuring plan. Also, with the bankruptcy and cease of operations of Interjet, VOLARIS and VIVAAerobus can consolidate their models in an airport that was previously avoided by LCCs because of its congestion. According to CAPA (2021), the TLCCs have an opportunity to enter larger markets in the US, such as the Mexico City- Houston route.

3.1.3. Strategies, strategic focus, and competitive advantages of FSNCs:

AEROMEXICO:

Strategies, strategic focus, and competitive advantages:

Because of the characteristics of its business model, AEROMEXICO is a **full-service network carrier**. As explained before, AEROMEXICO is suffering a lot from the presence of LCCs in its main market. However, to fight this, they are capitalizing on their main competitive advantage: their diversified network, in the international routes. According to an analysis of CAPA (2018), the carrier was already suffering from the growth of Volaris in the domestic market. The ASK growth of AEROMEXICO has been below the ones from its competitors in the domestic market: 6% in 2015- 2016 and it fell to 1% in 2017. However, for the international routes, its ASKs increased in 2015, 2017, and 2017 by 14,6%, 8%, and 20%, respectively (CAPA,2018). Another way of fighting LCC is to manage the control of Mexico city's Airport, which is a key airport to the international routes and the US transborder market. Aeromexico controlled around 40% of the flights of the airport. They were offering 43 international routes, from which 17 of those were non-stop flights to big US cities, and 42 domestic routes. By doing this, they manage to take the lead in the business passengers' segment, also they offer higher connectivity and comfort to big US cities which is one of the major criteria of Mexican business passengers. Furthermore, they have a joint venture with Delta Airlines that allows them to offer a high-quality service and higher connectivity in the best Mexico-US routes but also to increase investments in MRO services, since 2011 they are co-owners with Delta of a base of MRO services in Queretaro (AEROMEXICO,2019). Additionally, AEROMEXICO is also unbundling its fare to increase ancillary revenue and creating a low-price category to target more and more VFR passengers. In a nutshell, AEROMEXICO is fighting LCC competition by focusing on having the best international offer, the highest international connectivity from Mexico City, and by changing its fare to attract LCCs customers.

Risks:

In terms of risks, their competitive advantages can be easily imitated if for any reason they are forced to reduce their slots in Mexico city's airport. And the main proof is that because of the COVID-19 crisis they were forced to close many routes and to reduce their frequency to be in order with the US Chapter 11 of Bankruptcy criteria, opening the gates to Volaris and VIVAAerobus to increase their shares in the international routes, especially in the US transborder market. Furthermore, in terms of pricing, trying to create a less expensive category

is a good way of attracting more customers, but LCCs are still cost leaders, therefore the action is not a sustainable strategy.

COPA Airlines:

Strategies and strategic focus:

After analyzing the business model, there is no doubt that COPA Airlines is a **Full-Service Network Carrier** following a value creation strategic focus. But, because they operate as a monopole in certain underserved routes, and they are protected from the government, they have also a market and advantages of anticipation strategic focus. with

As the other FSNCs, COPA is also facing a challenge in the LCC competition. In 2016 they launched in Colombia Wingo, a low-cost carrier that focuses mostly on specific domestic routes and leisure markets to improve the position of the carrier in the country, becoming, therefore, the first Latin American carrier to experience the multi-brand strategy (CAPA,2016). But they decided to not create the airline from zero, they rebrand the Copa subsidiary in Colombia to benefit from their flight certificates, the scale of economies and focus on the underperforming routes in which they had problems operating because of the high costs. The idea was initially to make from Wingo a test, and possibly rolling-out the model to target other Latin American countries with the same airline. Also, they completely adapted the model to create a real LCC, for example, they are using Wingo to fight LCC competition in their domestic market: instead of flying from Tocumen Airport (the main airport in Panama), they use the Panama City pacific airport, an old US Air Force base located in Balboa, a municipality near Panama City. This is an actual reaction to an announcement done by VIVAColombia in 2014: the airline wanted to establish a subsidiary in the Balboa's airport, which represented an opportunity for the Colombian LCC to capitalize on the advantageous geographic location of Panama and become the first low-cost carrier connecting South America and Central/North America (CAPA, 2016). By setting Wingo's operations in Balboa airport, they are taking some of the market shares that VIVAColombia had of the Panama domestic market and differentiating both brands to avoid consumers' confusion. Thanks to Wingo, Copa is reactivating routes that they couldn't operate anymore in Colombia because as an FSNC, the costs were so high that the route wasn't profitable anymore. For the moment, the LCC brand is mainly focusing on less competitive international routes, especially in Colombia which allows Copa to offer a lower price in those routes. But they have only managed to capture 2.2% of the Colombian international market (CAPA,2016), so Wingo is still a young and small carrier. However, from the COPA Airlines point of view, in 2017 they managed 4,4% of the Colombian international market, with the

additional 2,2% of Wingo they could start to represent a higher risk for LCCs but also for FNSCs. In Colombia, Wingo has become COPA's growth driver.

Competitive advantages and strategy:

Location/ Airport attractiveness and relationship with the authorities

By choosing Panama as its hub, they have created a rare advantage. In fact, because of the geographic location in the center of the continent, Copa benefits from the fact that it can reach its hub with short-haul aircraft from any point in the Americas. Furthermore, according to IATA (2017), at the time Panama's aviation infrastructure was considered the 6th best in the world. Even if the country is facing some challenges, especially they are lacking secondary airports to answer the future demand for flying, the opportunities that the Tocumen airport offers to Copa Airlines are unique. The airport is the only one in Central America that possesses two runways at sea level, very good weather which is beneficial to avoid delays and operate without restrictions to take-off and landing. Finally, according to COPA's CEO, Panama authorities have close cooperation with the airline, which creates certain protection and opportunities for increasing its capacity (Heibron, 2017). For example, Panama has invested around 1\$ billion to expand the Tocumen Airport with 20 additional gates, allowing COPA to increase its capacity. All together these elements represent competitive advantages that are rare, not easily imitable, and sustainable to fight LCC competition and even FSNC competition.

Market structure

Another element that can be considered as a competitive advantage for COPA Airlines is the fact that even in their full-service operations, they are focusing on underserved markets located between North, Central, and South America. According to O'Connell et al. (2020) and Heibron (2017), COPA Airlines at the time possessed a monopoly on 70% of their routes. 65% of their passengers came from routes in which they have at least 50% of the market shares. This is evidence of how an FSNC could avoid both FSNCs and LCCs competition. Copa Airlines is not just fighting directly LCC competition with Wingo, but they are structuring the market in a way that they avoid LCC competition too. Altogether, these two strategies provide them a sustainable future while facing the challenges of the LCC competition.

Risks:

The strategy of creating a carrier-within-carrier is very risky, as mentioned in Chapter 4, there is always a degree of pollution from the legacy carrier to the low-cost carrier. Even if Wingo is operating as a separate brand, there are still using certain operating systems, fleets, aircraft that

were initially from Copa Colombia. As explained in Chapter 4, flying as an LCC is not only about painting the aircraft, but also about adopting the whole LCC culture, from the mindset of the employees to the operations. It is still a valid strategy and interesting idea if Wingo proves to be a very successful testbed. And for the short-term, the strategy has proven to be a model to replicate to fight the entry of an LCC. But, for a long-term perspective, the major challenge for COPA is to completely manage to separate the Wingo's operations from the ones of the legacy carriers, meaning expanding their fleet and having a completely different Air Operator's Certificate (AOC), to avoid passing legacy costs or union issues to the low-cost carrier. The other competitive advantages didn't seem to have a potential risk for the carrier. Copa has managed to find a niche focus in terms of market structure and to exploit their natural competitive advantages (airport, geographical location), while still building strong relationships to protect the airline from competition.

LATAM Airlines:

Strategies and strategic focus:

After analysis, LATAM Airlines can also be considered a **Full-Service Network Carriers** with operations mainly in domestic and international markets in South America. According to its 2019 20-F SEC Filing (LATAM, 2019), they are challenged by LCC competition in Chile, where its main competitor SkyAirlines has shifted from an FSNC model to an LCC, in Peru where VIVAAir Peru and SkyAirlines Peru are already operating. In Colombia, there is also VIVAColombia since 2012 and finally, in Argentina, they are facing competition from Flybondi and Norwegian and in 2019 Jet Smart announce the acquisition of the Norwegian subsidiary in Argentina. Very little information is available about how LATAM is facing this competition, most of their focus is directing in engaging in price competition in the domestic market and take advantage of their competitive connectivity and network in the international route.

To fight LCC competition they decided to restructure their fares (LATAM,2019). In 2017, they decided to reduce their prices in South American domestic markets, specifically in Chile, Peru, Brazil, Argentina, Ecuador, and Colombia. At the time those markets represented around 50% of its capacity and revenues. To do so, the carrier decided to launch unbundled fares in which passengers paid for the additional services that they wanted to add. The idea is to increase the generation of ancillary revenue. As the company stated, this strategy is only feasible if it is accompanied by a cutting-cost policy. To compensate for the lower prices, LATAM expected

to achieve 80% of their sales in digital channels, reducing therefore the commissions paid to physical resellers, also they were planning to improve their productivity by increasing the utilization of their aircraft by 15%. This is possible because one of their main competitive advantages is flexibility, they must switch aircraft from its passenger's operations to its cargo operation. At the time (2017), executives of the airlines told to the Center for Aviation (CAPA) that ancillary revenue was not a mature trend in the region yet, therefore it will take some education of the passengers to avoid that the passengers feel that quality has decreased.

Competitive advantage: integrating passengers and cargo operations:

Their distinct competitive advantage is their flexibility to combine passengers' operations and cargo operations. When scheduling their passengers' flights, they also add cargo operations. Therefore, on one flight, usually, they are generating two types of revenues: passenger and cargo. This automatically helps them to increase productivity and profitability per flight. Furthermore, it is a way to fight seasonal demand or even low demand during a crisis and create a more stable business: the fluctuations of the passenger's operation demand are offset with the extra cargo revenue per flight. In 2019, the cargo operation represented 10% of their total revenues. To provide a concrete example of this competitive advantage, because of the COVID-19 crisis environment change, LATAM announced that their cargo business was growing, and they decided to turn 8 of their Boeing 767s into cargo freighters. This action is expected to increase their cargo capacity up to 80% and sustain their position as the biggest passenger and cargo operator of South America (LATAM,2021).

Risks:

The main risk associated with the reaction of LATAM is that as explained in chapter 4, price reactions are usually very complicated to sustain for FSNCs. LATAM is following the recommendations stated in chapter 4 when reacting by price: they are restructuring their fare structures to make it simpler, and they are lowering the price and accompanying this strategy with actions to reduce unit cost. However, LCCs carriers are still more performant in cost reductions, and just equaling the price of LCCs is not a sustainable strategy: an LCC can always reduce its fare just to make LATAM erode its profit. But focusing on additional ways of generating more revenue, like cargo operations, is a perfect way to keep LCC away. But, for the moment, the revenue of cargo is very low to consider it as a sustainable strategy.

AVIANCA

Strategies and strategic focus:

After analysis, AVIANCA is also considered a **Full-Service Network Carrier**. AVIANCA decided to create a regional carrier in Colombia to reduce fares in certain routes that were not profitable anymore. The main difference with COPA is that AVIANCA did it under the same brand and it is not re LCC, they are maintaining the same quality of services on board. The focus is on the aircraft utilization and homogenization of the fleet flying those specific routes. “AVIANCA Express” is flying with the main airline’s fleet of ATR 72 Turboprops from Bogotá to Colombian cities like Manizales, Florencia, Yopal, Popayán, or Cali. The idea is that in the future, regional routes that were already operated by AVIANCA through the Bogota hub will be now operated point-to-point with a standardized fleet to increase efficiency and profitability. Furthermore, the mainline carrier will be focusing on more important national and international routes from its hub (AVIANCA, 2019).

Also, in 2019 they introduced the concept of branded fares in regional markets such as Ecuador and Colombia. The idea is that passengers pay for the services they want, which allows them to reduce the price gap in comparison with its competitors. Since 2019, the economy cabin is composed of four categories (XS- like the LCC offer, S, M, and L).

Competitive advantage: dominance in their main hub and their connectivity

One indisputable competitive advantage of AVIANCA is its control in their main hubs, 52 % and 90%, respectively in Bogotá and El Salvador (AVIANCA, 2019). This is important because it allows them to capitalize their frequency and connectivity, especially in the international routes, connecting South America and North America through its Central American hub in El Salvador and offering the highest frequency and best destinations outside the region (the United States and Europe). Furthermore, in terms of relationships with other carriers, they have a lot of codeshare agreements, especially with United Airlines, with is essential to consolidate their presence in the US-Transborder market.

Risks:

In terms of risks, with their CWC strategy, they are mainly facing dilution problems or confusion within the passengers. The quality of their regional carrier must be like one of the main carriers, if not people can think that Avianca is lowering its quality. An additional risk is that after this analysis, it seems that the strategy adopted by AVIANCA until 2019 to fight LCC competition is not sustainable at all. Its competitive advantage was already threatened in 2017 with the entry of many LCCs in many of their markets, and at the time the former CEO Hernan Rincon, when asked about his reaction to LCC entry in its domestic market, answered that LCCs

were expanding the market and not taking shares from them (CAPA,2017). However, when the market shares of the Colombian domestic markets are analyzed, according to the journal Finance Colombia, between 2019 and 2020, VIVAColombia grew from 15% to 24%, and this during the COVID-19 crisis (Moss L., 2021). The landscape has already changed for AVIANCA, and their competitive advantage may not be as sustainable as the company thinks after finalizing its filings under Chapter 11 in the U.S.

After this qualitative analysis, two main conclusions can be drawn:

Firstly, the Latina-American landscape is no longer only composed of two types of carriers. As stated in the literary review, the whole aviation industry has seen the appearance of many types of models that are competing by mixing elements from full-service strategies and low-cost strategies. Some of them decide to just consider only one strategy, becoming therefore a full-service network carrier or a pure low-cost carrier. In Latina America the situation is not different, the landscape is no longer composed of two types of players but by many of them: Full-Service Network Carriers (FSNC), True Low-Cost Carriers (TLCC), Emerging Regional Low-Cost Carrier (ERLCC), and Hybrid Carriers with low-cost characteristics (HC). It is possible therefore to conclude that hypothesis 1 is true: *the Latin American landscape is no longer composed of only low-cost and full-service carriers*. The result of the cluster analysis can be consulted in figure 3. Secondly, many strategies to fight LCC competition were discussed: fly in underserved routes, react on price by unbundling fares, create a regional express carrier, create its low-cost carrier. Each strategy has its advantages and its risks. Also, each carrier has its competitive advantages that they can use to avoid competition. A summary of all the information is available in figure 4. The main conclusion from this analysis is that as far as the qualitative analysis is concerned, two carriers show to be fighting sustainably LCC competition: GOL Airlines and COPA Airlines. The quantitative analysis will allow us to conclude if they are potential strategies to replicate in the region and to confirm if there is the best model to fight LCC competition in the region.

3.2- Quantitative Analysis:

Analyzing the performance of the strategies implemented by the carriers to fight LCC competition and operate in the region.

3.2.1. Deductions from the POA DATA:

The POA analysis is illustrated in different radar graphs to analyze the differences between FSNCs, LCCs, and hybrid carriers. As a reminder, the main objective is to analyze in a

quantitative way which FSNC is better positioned to fight against LCCs and hybrid carriers and to analyze if the strategies and competitive advantages presented above are performant in a financial and operational perspective.



Fig.3 – Latin American carriers' landscape in the context of this master thesis case study.

Overall, FSNCs scored higher in convenience, comfort, and market structure. But LCCs and Hybrid carriers also scored high in convenience and comfort. The conclusion to be drawn is that convenience and comfort are no longer a differentiator for FSNCs in the region. This could be explained because in the eyes of the customers the services are becoming very similar. Knowing that all FSNCs have unbundled their fares in the last three years, it looks like the leisure and business segment was not ready to accept to pay more for the services that they already had before.

Still, for certain routes, specifically long-haul international flights, LCCs are not offering at all the same convenience or comfort. An effort to educate this segment to successfully penetrate the idea of unbundled fares in the region must be done by the FSNCs.

Furthermore, according to figure 5, in terms of market structure, FSNCs are indisputable leaders. This reflects the fact that if LCC and Hybrid competition is becoming more and more challenging, FSNCs were still controlling the domestic market and the international routes from its major hub in 2019. At the time of the research, LCCs were growing in the region but the model wasn't mature yet. However, the landscape is changing. For example, because of the COVID-19 crisis, many FSNCs will be losing market shares of their domestic and international routes. To comply with their financial requirements, LATAM, AEROMEXICO, and AVIANCA will have to lose capacity in their hubs. A very interesting element to point out is

that overall, FSNCs are scoring very low in the sales and distribution index. This translates an opportunity for full-service carriers to continue their digitalization efforts. Appendix 3 shows us that the percentage of online bookings was on average much lower for FSNCs than for Hybrids or LCCs. The worsts in class within the full-service segment were LATAM and AVIANCA with 26,40% and 22,6%, respectively, and the bests in class were AEROMEXICO and COPA with respectively 54% and 66,8%.

Carrier	AZUL	GOL	VIVAAerobus	VOLARIS	AEROMEXICO
Type of carrier	ERLCC	HC/LCC	TLCC	TLCC	FSNC
Strategic focus	Market & advantages of anticipation – Hybrid	Hybrid strategy	Revenue generation & cost cutting	Revenue generation & cost cutting	Value creation
Competitive advantages	- Natural protection from competition: Focusing on underserved markets - Answer specific needs from VFR passengers not targeted by competitors Focusing on underserved routes	- Low unit cost – cost leader in Brazil. - MRO services - Hybrid focus : low cost and high-quality service. LCC dominant features	- Niche focus: bus passengers & VFRs. - Partnership with bus operator leader in Mexico. - Connectivity in regional routes	- Cost leader in the American Mexican transborder market. - Focusing on underserved routes targeting the US-transborder segments. Focusing on underserved routes	- Diversified networks in international routes. - High connectivity to big US cities. - Joint venture with Delta Airlines.
Risks of the model	Not protected from copy-cats	- Boeing 737-Max grounding - Stuck in the middle	Copied by VOLARIS	Dominated by VIVAAerobus in the bus passenger's segment.	- Not protected from copy-cats - Risk of losing market shares

Fig.4 – Theoretical framework applied to the Latin American carriers (1)

Carrier	COPA Airlines	LATAM Airlines	AVIANCA
Type of carrier	FSNC	FSNC	FSNC
Strategic focus	Value creation & Market and advantages of anticipation	Value creation	Value creation
Competitive advantages	- Location of their hub. - Airport attractiveness. - Relationship with authorities. - Market structure.	Integrating passengers and cargo operations	- Control of their main hubs. - Frequency and connectivity : especially connecting South America to North America. - Codeshare agreements and network.
Risks of the model	CWC strategy is very risk because of dilution.	- Risk of eroding its profit. - Cargo operation is not yet a big revenue generator	- CWC creates brand confusion. - Loss of market shares

Fig.4 – Theoretical framework applied to the Latin American carriers (2)

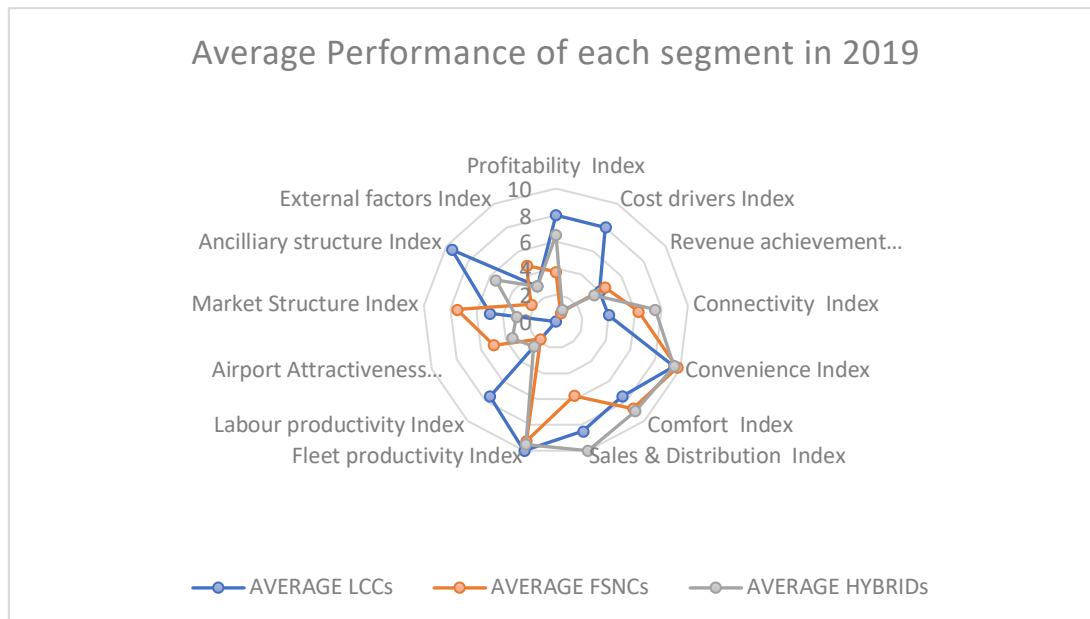


Fig.5 – Average performance of Latin American carriers in 2019

However, within the LCC or Hybrid segment, any carrier was below 60%. In terms of connectivity, Hybrids are offering on average much more routes and departures. This index is influenced by the fact that AZUL Airlines is the carrier that possesses the most complete routes offering in the region (249) but taken individually both AZUL and GOL have a standard Average Stage Length² and a standard number of departures in comparison with FSNCs. It is important to notice that they are not outstanding in any other index, which raises several questions about the efficacy of this business model to create competitive advantages against LCCs, but in the criteria in which LCCs are the best, they are usually very close to being leaders. It will be important to analyze each carrier's strategy separately and benchmarked it against the rest to conclude if the model is sustainable or not.

Finally, as expected, for this financial and operational analysis, the most outstanding model is LCCs. In 2019, they showed clear domination in the profitability index, cost index, labor productivity index, ancillary structure index. Meaning that in financial performance, it is a much healthier strategy than hybrids and FSNCs. Furthermore, by creating their loyalty programs, providing less expensive additional services (credit cards or financing), and partnering with others LCCs carriers in North America, they are managing to copy the convenience and comfort of FSNCs.

² Average Stage Length : The average distance flow measured per mile or KM, per departure.

Altogether, these elements confirm that LCCs are a real threat for FSNCs in the region. However, after discussing the strengths and weaknesses of the three business models benchmarked, it seemed important to analyze the situation from the perspective of each carrier. Since the idea is to identify sustainable business models and strategies to fight LCC competition, low-cost carriers will not be analyzed. As a reminder, in the latter section, we defined that the largest Latin American carriers were composed of 3 main segments: LCCs, Hybrid, and FSNCs. Within the hybrid segment, AZUL is an emergent regional low-cost carrier (ERLCC), following two strategic focuses: market advantages & anticipation and a hybrid strategy. GOL is following a hybrid strategy with dominating low-cost characteristics. Furthermore, within the FSNCs, the four carriers AVIANCA, LATAM, AEROMEXICO, and COPA are following mainly value creation strategies, but as we learned in the latter section COPA launched an LCC carrier, so they are also using a revenue generation strategy by adopting the multi-brand concept.

3.2.2. Discussion:

In this part, each carrier will be benchmarked against the rest of the industry. A big focus will be put on observing the performance of the carrier against the LCCs. The idea is to identify one or many models to replicate and to verify if H3, H4, and H5 are true.

In Appendix 4, a list of models identified as non-performant to fight LCC competition was identified. For the case of the full-service network carriers, the four of them (AVIANCA, LATAM, AEROMEXICO) performed in a very similar way. All of them had very high scores in the product architecture areas such as convenience and connectivity but very low scores in the organization architecture areas such as labor productivity, fleet productivity, and sales & distribution. The three of them have adopted a strategic focus that consists in creating value for the customer by differentiating in terms of the services offered (VIP Lounges, loyalty programs, on-board services, routes offered), the connectivity (very diversified network, targeting big cities in international routes) and comfort, but the problem is that type of structure demands a very intensive organizational architecture. In terms of labor productivity, the strategy followed by the carriers also demands a high number of employees. In 2019, LATAM had 122 employees per one aircraft³, AVIANCA 134 and AEROMEXICO 134 versus 60 for VOLARIS and 30 for VIVAAerobus. Also, to offer the best service, usually these carriers prefer to use physical

³ This metric usually evaluates the number of paid employees needed to operate one flight.

distribution channels, so the percentage of online bookings' is usually low: 26.40% for LATAM, 22.6% for AVIANCA, and 54% for AEROMEXICO versus 61% for VOLARIS and 75% for VIVAAerobus. Finally, for the fleet productivity, LCCs have a much higher aircraft utilization rate, around 13 block hours ⁴ for both versus 10 block hours for LATAM and AVIANCA. AEROMEXICO performed better in this area, but Mexico's city is a very congested airport, and this is a limitation for them if they want to continue improving the utilization rate of their fleet. Finally, altogether, these elements affect the ability of the carriers to perform in the profitability index and the cost driver's index. The strategies pursued by these carriers cannot be considered sustainable ways of fighting LCC competition.

The case of AZUL airlines is very particular. In terms of product architecture, they have adopted the same approach as full-service carriers, therefore they are performing like the rest of the industry in convenience, comfort, and connectivity. However, in terms of their organizational architecture, they have adopted mainly LCC characteristics which allow them to have 92 employees per aircraft which is better than FSNCs but still low against LCCs. Also, 88% of their bookings are online, which is better than LCCs, and they spend 0.002 USD cents of sales and distribution per ASK⁵. In terms of fleet productivity, they are scoring as the other carriers. The particularity for this carrier is the fact that besides they have adopted certain LCC characteristics and according to the last section, they are naturally covered from LCC competition by avoiding flying on routes in which they are present, they still have a low score in the profitability index and a low score in the cost driver index. They have the second-highest CASK of the region (10.6 USD cents) and a CASK excluding fuel of 3.39 USD cents. This means that they are expending a lot on fuel, meaning that they are not very well hedged against fuel price volatility and/or currency exchange volatility. Furthermore, for an airline that claims to be an LCC, the CASK is still kind of high versus VOLARIS (4.03 USD cents) and VIVAAerobus (0.039 USD cents). The only reason to explain this is the choice of the airline to fly as a multi-hub carrier. It seems that the operations are very costly and a way to avoid it could be to switch completely to a point-to-point model.

Mainly because of their financial performance and the strategies implemented, two carriers, outside the LCCs, were identified as models to replicate to fight against LCCs: COPA Airlines and GOL Airlines.

⁴ Block hours is a standard unit used in aviation to evaluate the aircraft utilization. It measures the time the aircraft door closes at departure until the moment the aircraft doors open at arrival after landing.

⁵ ASK : Available Seat Kilometers – a measure of the carrying capacity of the airline to generate revenue.

COPA Airlines' Results:

In the case of COPA Airlines, they are performing very well in the product architecture areas as the others FSNCs. This means that COPA is offering a similar or even better level of connectivity, comfort, and convenience. One of the elements of the formula for the success of Copa Airlines has been its control and attractiveness of its hub. As mentioned in the latter section, COPA controls 95% of Tocumen Airport and they have directly fight with LCCs to avoid entry by creating its low-cost carrier, Wingo. By controlling this strategically located Airport, they beneficiate from a natural way of cutting costs because they can reach their hub with short-haul aircraft that consume less fuel, and it is less expensive to maintain. Furthermore, because of the geographical locations at sea levels and the good weather, COPA has a natural competitive advantage to lower its take-off and landing costs. This is easily seen in the organizational architecture of the company. For example, they performed almost as well as the LCCs in fleet productivity: 11.3 block hours versus 13 block hours for LCCs. Also, with their close relationship with the Panama government, they benefit from protection and even growing opportunities.

In the organizational architecture areas, they are better positioned to fight LCC. In terms of labor productivity, they are much better positioned than FSNCs to react against LCCs: 87 employees per aircraft versus 60 for Volaris and 30 for VivaAerobus. For sales & distribution, they are performing at the same level as the average LCC around a score of 8/10 in the POA analysis. A very interesting element to point out is that COPA has managed to maintain higher productivity than its FSNCs peers. This can be also explained because COPA is not carrying high-organizational costs. As explained in Chapter 1, COPA is the only FSNC that is flying with one commercial brand in all the continent, all its operations certificates are under the same commercial name. This is important because it allows to reduce the cost of the organizational architecture.

The natural competitive advantage of COPA is its location in PANAMA. It is the only carrier with a score of 10 in the external factor index. In this country, they operate with US dollars and therefore they avoid any issue related to currency exchange and in comparison, with the region, Panama's economy is performing very well. In 2019, they had the highest GDP per Capita of the countries from which are the airlines benchmarked: 32,850 USD. Also, Panama has a very low unemployment rate (4.74%) in comparison to other countries in the region.

Altogether, these elements allow COPA to perform better than the average FSNC and the average hybrid carrier. They have a higher operating margin than LCCs: 12,79% versus 11,74% (VOLARIS) and 7,30% (VIVAAerobus), and they are the best in revenue achievement index, with the highest yield: 12.26 US cents, which means that they have better profitability of its flights. This can be explained by its market structure. As explained in the qualitative analysis, they are focusing on underserved markets located between North, Central, and South America and possess a monopoly of 70% of the routes they operate. This allows them to avoid price pressure from competitors, especially from low-cost and therefore to have a higher yield.

GOL Airlines' Results:

In the product architecture areas GOL is performing well in the convenience index when benchmarked with the rest of the industry. However, for the comfort index, it seems that they are offering a lower comfort than the FSNCs but still, for a hybrid they offer a better service overall than LCCs. As explained in the latter section, the company fight against other LCCs by differentiating its offer with better quality. They have adopted certain elements of the full-service model, such as flying from primary airports, using sometimes a hub-and-spoke network structure, offering free-shuttles between airports, buy-on-board services, free snacks, WIFI, or even TV. In the organizational structure, an element that confirms the past analysis of GOL Airlines is that they are performing as one of the bests in the fleet productivity index. In comparison with the LCCs, GOL has a very similar aircraft utilization rate of 12.3 block hours versus 12.9 (VOLARIS) and 12.8 (VIVAAerobus). Furthermore, by operating the only aircraft from the Boeing 737 family, they can lower its maintenance costs and achieve better management of their fleet. This competitive advantage of the carrier is confirmed by the quantitative analysis too. Also, in terms of sales & distribution channels, they have adopted the same approach as LCCs and they are leaders in online bookings, 90% of their sales are done online, which is even better than LCCs (VOLARIS) and 75% (VIVAAerobus). In terms of labor productivity, they are not operating very well since they are very close to the levels of FSNCs: 117 employees per aircraft versus 122 (LATAM), 134 (AVIANCA), and 133 (AEROMEXICO).

As far as the financials are concerned, GOL has a better yield (5.85 USD cents) than the majority of FSNCs and VIVAAerobus (0.530 USD cents). This can be explained mainly because of their market structure. By flying point-to-point in domestic routes, they can lower costs to offer better fares. Also, they are present and control the busiest routes in Brazil by

offering good quality but still a lower fare than its major competitor: LATAM. In this type of airport, they are flying by following a hub-and-spoke model. This combination of network structures has been key for GOL. Overall, they are the carrier that best performed in the profitability index with the highest operation margin (15.38%) and the third-best EBITDA margin (27.95%), just behind VIVAAerobus (30.10%) and VOLARIS (28.02%). Both qualitative and quantitative analysis brought data and conclusions about the efficiency of each business model to fight LCC competition.

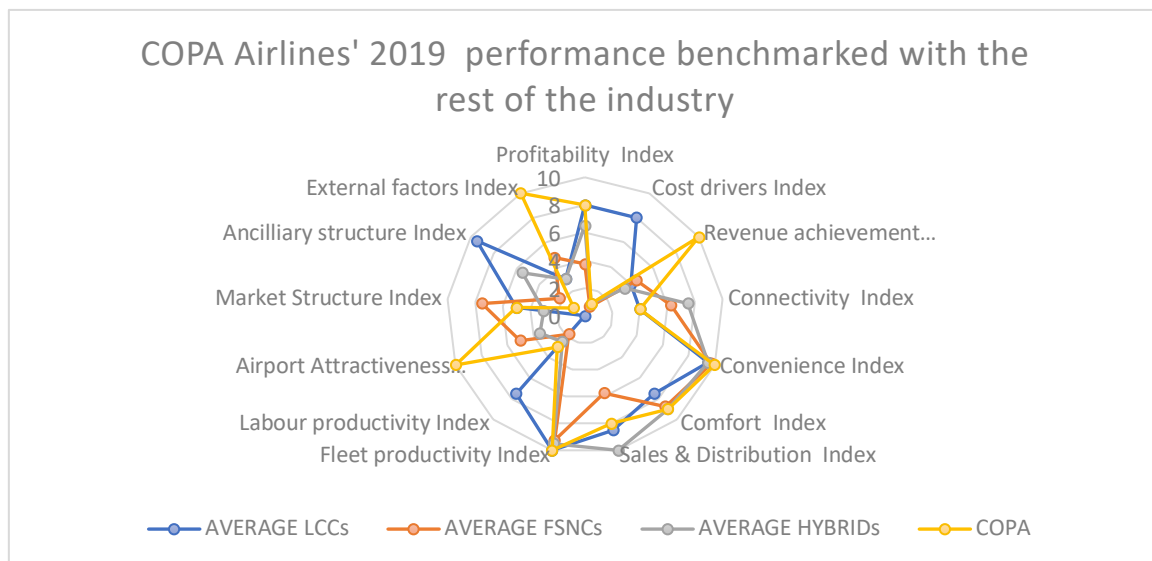


Fig.6 – COPA Airline's 2019 performance benchmarked with the rest of the Latin American carriers

When compared with the LCCs and hybrid carriers, LATAM, AVIANCA, and AEROMEXICO had the worst performance. Furthermore, the qualitative analysis revealed that the unbundled fare strategy was not enough to fight LCC competition. Simplifying its fares is interesting to react in price and reduce prices to fight LCC. But two main problems were identified: Leisure and Business passengers are not accepting this new strategy and in its, eyes the value of the service is changing. Also, as explained in the literary review: the decision drive for this segment is no longer comfort, connectivity, or convenience, but price. In the end, when reacting in price, FSNCs erode their profit if the LCC starts a price war.

An exception of the case of FSNCs exists. COPA Airlines is competing with a value creation strategy by offering a very high-quality service, good comfort on-board, and strong connectivity thanks to the geographic location of their airport. At the same time, they are adopting a market and advantage of anticipation focus. By acting as a monopoly in 70% of the routes they are serving and fighting directly LCCs. By installing their LCC in Panama, they have been able to

anticipate a market entry in a secondary airport of VIVA Colombia and to fight them in their primary hub. Furthermore, because of their big contribution to Panama's economy and its close relationship with the government, COPA is protected and benefits even from the investment that the Panama government does in the Tocumen Airport. When hybrid carriers are considered. AZUL's strategy was considered as not sustainable because even if they are anticipating competition by serving only underserved routes, its profitability is eroding because of the high cost of maintaining its network structure (multi-hub). However, when analyzing the hybrid strategy of GOL, their strategy to fight LCC was considered as sustainable because they managed to offer a high-service and therefore differs from the other LCCs carriers, but they still adopt LCC characteristics such as using the same type of aircraft, flying point-to-point in regional and domestic routes, and adopting a hub-and-spoke in international routes by choosing the airports with the biggest quantity of passengers flying in Brazil. Altogether, this combination of elements allows GOLs to maintain a high part of market shares and to have a good profitability level. According to the results of both analyses, both LCCs are performing much better than the rest of the industry. The TLCC strategy in Latin America is filling the gap

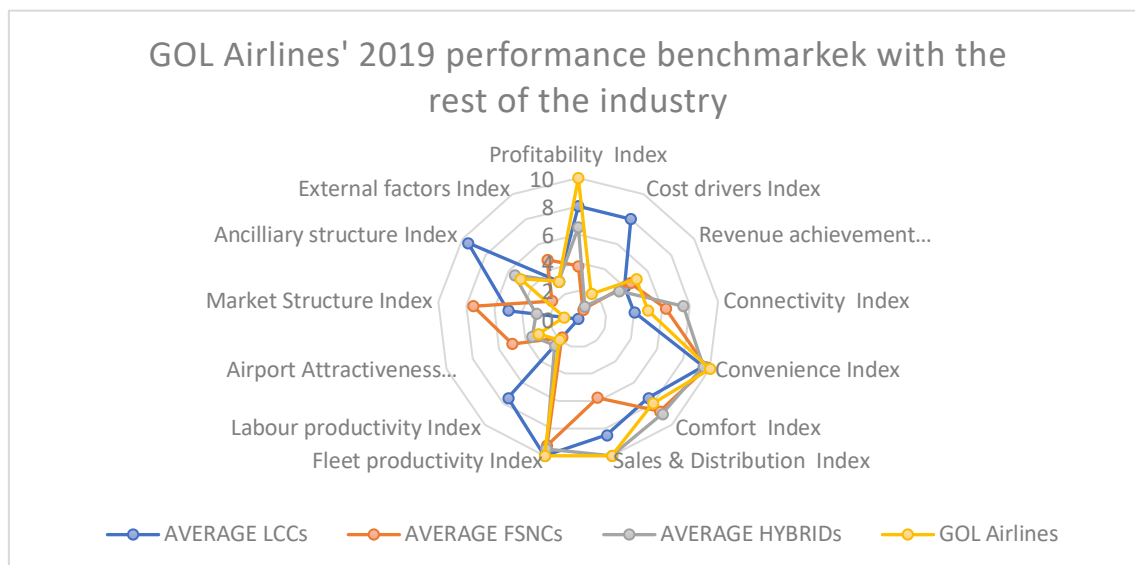


Fig.7–GOL Airline's 2019 performance benchmarked with the rest of the Latin American carriers

of the passengers forgotten by the big carriers: bus passengers and the VFRs. By doing so, LCCs are earning more and more market shares in their domestic markets.

It is not possible to confirm that any of the H3, H4, and H6 hypotheses can be truly alone. However, everything depends on how they are implemented. In the case of COPA Airlines,

anticipating LCCs and focusing on an underserved market (H6) is proving to be a sustainable strategy to fight LCCs. Furthermore, for GOL Airlines, hybridizing their model by flying point-to-point in regional flights where LCCs are mostly present and flying hub-and-spoke for international routes where mostly FSNCs are present, has allowed them to reduce costs by still having a good level of connectivity, comfort, and quality. A more in-depth recommendation for FSNCs will be provided in the general conclusion of this thesis. In the case of H5, it is not possible to confirm if it is a good way of fighting LCC competition because no carrier excluding LCCs was adopting a revenue generation & cost-cutting strategy.

What are the drivers of FSNCs and LCCs competition? What is driving the financial performance of a strategy in the region?

When calculating the weighted score of the POA Analysis, the method needed a calculation of a separated index. From those indexes, it is possible to do a correlation matrix (see Appendix 8). Many interest relationships can be derived from this matrix. From the literary review, the conclusion that the drivers of profitability had changed was drawn. In the first steps of the POA analysis, it is easy to realize that comfort, convenience, and connectivity are no longer driving the competition in the region. In fact, according to the correlation matrix, profitability is driven by fleet productivity (0.86), sales & distribution costs (0.68), revenue achievement (0.53), cost (0.42), and labor productivity (0.40). This is not surprising; fleet productivity is measuring the capacity of the airline to work its most capital-intensive assets very hard: its aircraft. Therefore, a high utilization rate and a very young fleet are key to increase frequencies and have strong fleet productivity. The more the aircraft is used, the most profitable will be the business. For sales & distribution costs, the focus is put on the digital penetration of the carrier. The most the carrier avoids paying commission fees or additional charges for using physical distribution channels, the more the profit will be higher. Revenue achievement is also very correlated to profitability: a strong yield is important to have a healthy profit. Not surprisingly at all, costs have also a high correlation with profit. The higher the CASK of the airline, the lower the profit. The CASK is usually measuring the unit cost. And finally, labor productivity is also highly correlated with profitability. Usually, the most profitable carriers are the ones that have the most productive employees. Certain indexes are inversely correlated with profitability. Those are connectivity (-0.70), Market Structure (-0.76), and comfort (-0.57). Three of the major strengths of the full-service carriers. It seems that the LATIN American region having a big network structure and the highest connectivity is not rewarded with financial performance. In conclusion, it is plausible to say that in Latin America, carriers should focus on reducing costs

and achieving higher productivity. In that sense, it is possible therefore to conclude that hypothesis 2 is true: *profitability is no longer driven by comfort, convenience, and connectivity but by cost and productivity in Latin America.*

Part IV – General conclusion:

4.1 General comments:

This research aimed to identify the competition challenges of Latin American FSNCs & LCCs and to identify sustainable strategies for FSNCs to face this competition. Based on a quantitative and qualitative approach, it can be concluded that both types of carriers are challenged by the externalities of the region, a very diversified landscape, and three main tradeoffs when competing against each other. The results of the research indicate that Latin America is challenged by high fuel costs, high taxes and charges, high MRO costs because of a lack of MRO service providers, burdensome regulation, lack of proper airport infrastructure, lack of economic & political stability, and more recently because of the COVID-19 crisis. Furthermore, the qualitative analysis, resulted that the Latin American carriers were not anymore just composed of LCCs and FSNCs, but that carriers were adapting their models in reaction to the increasing competition in the region. The cluster analysis allows us to prove that within the biggest carriers, there are four Full-Service Network Carriers, two True Low-Cost Carriers, one Hybrid Carrier with dominating Low-Cost characteristics, and one Emerging Regional Low-Cost Carrier, competing against each other. Finally, from the literature review, it is possible to state that FSNCs are challenged by three main tradeoffs: an increase of productivity means a decrease in connectivity and therefore a lower market share; when reacting to an LCC entry, they are forced to lower their price, but price competition is not sustainable; and, when an LCC entries a route, FSNCs' yield decreases, forcing them to react.

The results of the quantitative analysis indicate that profitability in the region is no longer driven by comfort, convenience, and connectivity but by cost and productivity. Furthermore, the POA analysis allowed us to confirm that the strategy that is performing the best is revenue generation and cost-cutting. In other words, LCCs which focus mainly on having higher productivity and lower costs, are performing much better than the rest of the carriers. Also, a comparison of the performance of the three segments identified (FSNCs, LCCs, and Hybrids) suggests that convenience, comfort, and connectivity are no longer differentiators in the region. Finally, there is no evidence suggesting that, alone, the value creation model, the hybrid model and the market & advantages of the anticipation model are sustainable strategies to fight LCC competition.

However, two concrete cases of best-in-class carriers were identified as potential models to replicate: COPA Airlines and GOL Airlines.

By analyzing the strategies implemented by both carriers, many suggestions are available to FSNCs for fighting LCC competition. As far as connectivity is concerned, the evidence suggests that focusing on underserved routes is a strategy that is working very well for COPA. Since LCCs are mainly flying on domestic markets, focusing on underserved international routes could be a perfect way to avoid LCC competition and achieve higher yields. When considering entering a very congested route, the case of GOL Airlines has shown that it can be beneficial for the carrier only if the carrier has a dominant position in the airport. When competing with LCCs on the same route, the FSNCs must have the dominant position in terms of market shares or the number of slots available to fly. This allows to ensure a better frequency of the flights, but also it can be a way to raise the barrier of entry to the LCC and erode its profit. When network structure is considered: GOL Airlines provides an amazing example of how using a point-to-point structure in domestic routes, and hubs for international routes can be a sustainable strategy to fight LCC competition. By doing this, the carrier can guarantee a low-cost operation in the routes challenged by LCCs, but still offering a high convenience for passengers of long-haul flights. Finally, when analyzing COPA's strategy of creating its LCC, there is no evidence to confirm that the strategy is sustainable to fight LCCs. However, the qualitative analysis allows us to conclude that the CWC strategy is a perfect way to raise barriers and fight LCC entry. As a testbed, at the time of this research, WINGO is still working but many questions are already raised about its survival after the COVID-19 crisis.

4.2 Case recommendations:

Based on these conclusions, FSNCs should consider focusing on a different strategic orientation that just differentiating in comfort, convenience, and connectivity. Many possibilities are available to them. Many practitioners agree that the most effective way of fighting LCCs is cutting costs. To do so, they should consider five strategies to implement to optimize costs: fuel consumption, employee performance, flight operations, aircraft maintenance costs, and operating procedures of the planes. By been in countries with very volatile currencies and because of the fluctuation of fuel price, FSNCs should consider having very thorough exchange rate hedging and fuel hedging strategies. Another way of reducing fuel consumption could be giving bonuses to the pilots if they manage to save a certain quantity of fuel per flight. Also, they should invest in recent fleet (the age average of the region is kind of old). For what employee's performance is concerned, a possibility could be to digitalize more and more its

processes to reduce the non-operating personnel, also avoid direct physical distribution channels and fly in reasonable hours to avoid over-time crew expenses. In terms of flight operations, airlines could switch progressively to a point-to-point network structure for domestic routes, close non-profitable routes, and alternate the routes in function of seasonality. While facing maintenance costs, they could create joint ventures with American, European, or regional carriers to create MRO facilities and benefits for a lower cost. To simplify the operation procedure, carriers should reduce the premium services (VIP lounges, reservation systems, check-in) in domestic routes, and differentiate more on international routes. Finally, with the recent developments of the COVID-19 crisis, many carriers are under the Chapter 11 US Bankruptcy law. The future landscape seems to be compromised by financial performance. Another possible strategy could be to consolidate the carriers by practicing mergers & acquisitions and improve the strategic positioning. For example, that could be the future next step for Copa Airlines.

4.3 Limitations

The first limit of this research is the availability of the data. As most airline's metrics are highly confidential, it was very hard to get for all the carriers the same information. Also, many data were available, but it required payment to access it. Many paid platforms like OAG are providing summaries of the data necessary to conduct the POA analysis but the average subscription costs more than 1000 USD. As mentioned before, the quantitative part was based on the POA methodology developed by Mason and Morrison (2008). One of the problems of applying this method is that the results of carriers operating in markets that are not completely deregulated will be in a certain way biased. Also, state-owned airlines like Aerolineas Argentinas can't be completely captured by this method because of the lack of public data available. Furthermore, the variations of the demands and the strategies of the carriers to target different segments are not captured by this methodology. Finally, the strategies developed by the carriers to protect themselves in certain routes like JVs or a close relationship with the government cannot be evaluated by the POA methodology. However, to offset this limitation, a qualitative analysis was needed and recommended for the region. Finally, the limitations of applying two very general frameworks in the qualitative part into a population of only 8 airlines could generate a generalization of the strategies and not have a proper perspective of the regions. However, it is difficult to provide an accurate solution for a very large continent such as Latin America, but because of the COVID-19 crisis, this was the best approach to avoid changing the scope of the thesis because of possible bankruptcies of carriers in the region and lack of data of carriers that are not publicly traded.

4.4 Recommendations for future research

To better understand the implications of these results, future studies could address a much higher number of Latin American carriers to confirm if the finding of this research is also applicable if the population studied is larger. Furthermore, future research is needed to determine if a combination of different business models (revenue generation, hybrid, market, and advantages of anticipation and value creation) is the key answer to arrive at a final sustainable strategy to fight LCC competition. Finally, a more in-depth analysis of COPA Airlines' and GOL Airlines' reactions to LCC competition could be realized to enrich the recommendations provided in this research.

4.5 Contributions

Despite the limits of this research, this master thesis contributed with a different methodology to analyze FSNC and LCC competition: The thesis provides a unique approach to evaluate the strategies used to fight LCC competition by FSNCs. This approach is composed of qualitative research, which is the main gap of most of the research done in the region, and a quantitative approach with more recent data than the one practiced by O'Connell et. al (2020). The main contributions of this master thesis are the creation of a qualitative framework to cluster the different strategic orientations taken by carriers and their possible competitive advantages and risks. Furthermore, this thesis contributed to the application of the business model framework developed by Urban M. et al (2018) and provided a methodology to cluster aircraft and fully understand its strategies and risks encountered. Finally, this thesis provided useful recommendations to the situations experienced by European carriers. The business model of the European legacy carriers is challenged from two sides: the continental traffic with LCCs and the intercontinental one with Middle East carriers. The big 3 legacy group carriers (IAG, AIR France-KLM, Lufthansa Group) are mainly focusing their strategies on unbundling fares. The Latin American case could be useful to understand that LCCs are mainly regionally based and that European carriers should focus mainly on reducing costs of their regional flights: unbundling fares, increasing frequency, lowering the complementary services, even consider flying point-to-point in regional routes, using secondary airports and continue differentiating themselves in terms of comfort and convenience in transatlantic routes by using a hub-and-spoke network structure.

Bibliography:

AEROMEXICO. (2019). Annual Report. Report, Aeromexico.

Agência Nacional de Aviação Civil – ANAC. (2019). *Anuário do Transporte Aéreo*. Retrieved from <https://www.anac.gov.br/assuntos/dados-e-estatisticas/mercado-de-transporte-aereo/anuario-do-transporte-aereo>

Air France. (2021). *New Safety Instructions*. Retrieved from Air France website https://www.youtube.com/watch?v=NhA0aL105Nw&ab_channel=AirFrance

Airbus. (n.d.). *Early days (1967)—Aircraft history—Airbus*. Retrieved from <https://www.airbus.com/company/history/aircraft-history/1967-1969.html>

Alamdari, F., & Fagan, S. (2005). Impact of the adherence to the original low-cost model on the profitability of low-cost airlines. *Transport Reviews*, 25(3), 377–392. <https://doi.org/10.1080/01441640500038748>

Anderson, G. (1993). Case Study. *Fundamentals of Educational Research*, 15, 161-169. Philadelphia, Pennsylvania: The Falmer Press.

AVIANCA. (2019). *Annual Report : Form 20-F*. Report, United States Securities and Exchange Commission.

AVIANCA. (2019). *Annual Report*. Report, Avianca Holdings.

AVIANCA. (2019). *Fourth Quarter 2019 Highlights*. Report, Avianca Holdings.

AVIANCA. (2019). *Report of Foreign Private Issuer Pursuant to Rule 13a-16 or 15d-16 Under the US Securities Exchange Act of 1934 : Form 6-K*. Report, United States Securities and Exchange Commission.

AVIANCA. (2021). *Holding Structure*. Retrieved from <https://aviancaholdings.com/about-avianca-holdings-sa/default.aspx?section=lines>

AZUL. (2019). *Annual Report : Form 20-F*. Report, United States Securities and Exchange Commission.

Center For Aviation- CAPA. (2016). *Colombian LCC Wingo : Copa Becomes First Latin-America Airline Group To Test Out Multi-Brand Model*. Retrieved from <https://centreforaviation.com/analysis/reports/colombian-lcc-wingo-copa-becomes-first-latin-american-airline-group-to-test-out-multi-brand-model-356378>

Center For Aviation- CAPA. (2017). *Latin America's airline CEOs discuss the market, liberalisation, challenges & opportunities*. Retrieved from

<https://centreforaviation.com/analysis/reports/latin-americas-airline-ceos-discuss-the-market-liberalisation-challenges--opportunities-part-1-348127>

Center For Aviation – CAPA. (2019). *Latin American Aviation : LCCs Take the Lead in Mature Markets*. Retrieved from <https://centreforaviation.com/analysis/reports/latin-america-aviation-lccs-take-the-lead-in-mature-markets-490219>

Center For Aviation-CAPA. (2020). *Latin American airlines hit obstacles in securing Chapter 11 financing*. Retrieved from <https://centreforaviation.com/analysis/reports/latin-american-airlines-hit-obstacles-in-securing-chapter-11-financing-539547>

Center For Aviation-CAPA. (2020). *Latin American LCCs take 58% Market Share as COVID-19 Bites*. Retrieved from <https://centreforaviation.com/analysis/reports/latin-american-lccs-take-58-market-share-as-covid-19-bites-535720>

Center For Aviation-CAPA. (2020). *Copa Airlines restarts flights backed by solid financial foundation*. Retrieved from <https://centreforaviation.com/analysis/reports/copa-airlines-restarts-flights-backed-by-solid-financial-foundation-533691>

Chen, R. (2017). Competitive responses of an established airline to the entry of a low-cost carrier into its hub airports. *Journal of Air Transport Management*, 64, 113–120. <https://doi.org/10.1016/j.jairtraman.2016.07.015>

Cerda, P. (2020). *IATA Reminds Governments in Latin America & Caribbean on Urgency of Relief to the Industry in Face of COVID-19 Crisis*. Retrieved from the website of IATA <https://www.iata.org/en/pressroom/pr/2020-04-17-01/>

Copa Airlines. (2019). *Annual Report : Form 20-F*. Report, United States Securities and Exchange Commission.

Copa Airlines. (n.d.-a). *Flights to North America, South America, Central America, and the Caribbean from the Hub of Americas*. Retrieved 25 January 2021, from <https://www.copaair.com/en/web/us/hub-of-the-americas>

De Villemeur, E.B., Ivaldi, M., Pouyet, J. (2003). *Entry In the Passenger Rail Industry : A Theoretical Investigation*. Report, IDEI- Institut d'Economie Industrielle.

Dietlin, P. (2004). *The Potential for Low-Cost Airlines in Asia*. [Master dissertation, Massachusetts Institute of Technology]. MIT Libraries.

EasyJet.(n.d). *Our routes, fares and products | easyJet*. Retrieved 25 January 2021, from <https://www.easyjet.com/en/help/booking-and-check-in/our-routes-fares-and-products>

- Fageda, X., Suau-Sanchez, P., & Mason, K. J. (2015). The evolving low-cost business model: Network implications of fare bundling and connecting flights in Europe. *Journal of Air Transport Management*, 42, 289–296. <https://doi.org/10.1016/j.jairtraman.2014.12.002>
- Flightera. (2021). *Latam Airlines Chile flights from/to Arturo Merino Benitez*. Retrieved from https://www.flightera.net/en/airport_airline/SCEL/LA
- Flightera. (2021). *AVIANCA flights from/to El Dorado*. Retrieved from https://www.flightera.net/en/airport_airline/SKBO/AV
- Flightera. (2021). *Azul Linhas Aéreas Brasileiras flights from/to Campinas Viracopos*. Retrieved from https://www.flightera.net/en/airport_airline/SBKP/AD
- Flightera. (2021). *Gol Transportes Aéreos flights from/to Sao Paulo Guarulhos*. Retrieved from https://www.flightera.net/en/airport_airline/SBGR/G3
- Flightera. (2021). *Copa Airlines flights from/to Panama City Tocumen*. Retrieved from https://www.flightera.net/en/airport_airline/MPTO/CM
- Flightera. (2021). *VivaAerobus (VB/VVIV)*. Retrieved from https://www.flightera.net/en/airport_airline/MPTO/CM
- FlightConnections. (2021). *Copa Airlines routes and airport map*. Retrieved from <https://www.flightconnections.com/route-map-copa-airlines-cm>
- Franke, M. (2004). Competition between network carriers and low-cost carriers—Retreat battle or breakthrough to a new level of efficiency? *Journal of Air Transport Management*, 10(1), 15–21. <https://doi.org/10.1016/j.jairtraman.2003.10.008>
- Forsyth, P. (2003). *Airport competition and the efficiency of price structures at major airports*. [Paper presentation]. GARS Research Seminar “The Role of Competition in the Future Airport Industry”, Leipzig, Germany.
- Gillen, D., & Gados, A. (2008). Airlines within airlines: Assessing the vulnerabilities of mixing business models. *Research in Transportation Economics*, 24(1), 25–35. <https://doi.org/10.1016/j.retrec.2009.01.002>
- Gillen, D., & Lall, A. (2004). Competitive advantage of low-cost carriers: Some implications for airports. *Journal of Air Transport Management*, 10(1), 41–50. <https://doi.org/10.1016/j.jairtraman.2003.10.009>
- GoAir. (n.d.). *GoAir Connects Two IT Hubs of India—GoAir*. Retrieved 25 January 2021, from <https://www.goair.in/bottom-menu/press-release-22nd-may-2014>
- Graham, B., & Vowles, T. M. (2006). Carriers within Carriers: A Strategic Response to Low-cost Airline Competition. *Transport Reviews*, 26(1), 105–126. <https://doi.org/10.1080/01441640500179377>

Grescoe, P. (2004). *Flight Path: How Westjet Is Flying High in Canada's Most Turbulent Industry*. Hoboken, NJ: John Wiley & Sons Inc.

Hagedorn, D. (Eds.). (2008). Conquistadors of the Sky. *A History of the Aviation in Latin America*. Florida, FL : University Press of Florida. doi: [10.1017/S1467222700008697](https://doi.org/10.1017/S1467222700008697)

Heibron, P. (2017). *Interview : Copa Airlines CEO on Building the 'Hub of the Americas' in Panama*. Retrieved from the Skift website <https://skift.com/2017/06/13/interview-copa-airlines-ceo-on-building-the-hub-of-the-americas-in-panama/>

Heinz, S., O'Connell, J.F. (2013). Air Transport in Africa : Toward Sustainable Business Models for African Airlines. *Journal of transport geography*, 31, 72-83. doi :10.1016/j.jtrangeo.2013.05.004

International Air Transport Association. (2016). *Another Strong Year for Airline Profits in 2017*. Retrieved from <https://www.iata.org/en/pressroom/pr/2016-12-08-01/>

International Air Transport Association. (2017). *The Importance of Air Transport to Panama*. Retrieved from <https://www.iata.org/en/iata-repository/publications/economic-reports/panama--value-of-aviation/>

International Air Transport Association. (2018). *Infrastructure, Costs Key to Harness Power of Aviation in Latin America*. Retrieved from <https://www.iata.org/en/pressroom/pr/2018-04-04-02/>

International Air Transport Association. (2019). *Ground Handling Charges at Monopoly Locations*. Retrieved from <https://www.iata.org/contentassets/4eae6e82b7b948b58370eb6413bd8d88/ground-handling-charges.pdf>

International Air Transport Association. (2021). *State of the region : The Americas*. Retrieved from <https://www.iata.org/en/iata-repository/publications/economic-reports/regional-briefing---americas---january-2021/>

International Air Transport Association. (2021). *Jet Fuel Price Monitor*. Retrieved from <https://www.iata.org/en/publications/economics/fuel-monitor/>

International Air Transport Association. (2021). *Economic Performance of the Airline Industry*. Retrieved from <https://www.iata.org/en/iata-repository/publications/economic-reports/airline-industry-economic-performance-june-2020-report/>

InterVISTAS (2016). *Full-Service Airlines versus Low-Cost Carriers*. Retrieved from <https://pdfs.semanticscholar.org/1f3c/94e11fed0395fd4e54992930e6706dc3935a.pdf>

Klophaus, R., Conrady, R., & Fichert, F. (2012). Low cost carriers going hybrid: Evidence from Europe. *Journal of Air Transport Management*, 23, 54–58. <https://doi.org/10.1016/j.jairtraman.2012.01.015>

LATAM. (2019). *Annual Report : Form 20-F*. Report, United States Securities and Exchange Commission.

LATAM. (2019). *Integrated Report 2019*. Report, LATAM Airlines Group.

Lohmann, G., & Koo, T. T. R. (2013). The airline business model spectrum. *Journal of Air Transport Management*, 31, 7–9. <https://doi.org/10.1016/j.jairtraman.2012.10.005>

Lopez, A.M. (2019). *Most Punctual Airlines in Latin America in 2019, based on their On-Time Performance*. Retrieved from the website of Statista, Transportation & Logistics <https://www.statista.com/statistics/794314/punctuality-of-airlines-in-latin-america/>

Long, G. (2020, May 10). *Colombia's Avianca airline files for bankruptcy over pandemic*. <https://www.ft.com/content/e0e34501-6cdb-43de-9880-2406bd99cd1c>

Mason, K. J., & Morrison, W. G. (2008). Towards a means of consistently comparing airline business models with an application to the 'low cost' airline sector. *Research in Transportation Economics*, 24(1), 75–84. <https://doi.org/10.1016/j.retrec.2009.01.006>

Mhalla, M. (2020). The Impact of New Coronavirus (COVID-19) on the Global Oil and Aviation Markets. *Journal of Asian Scientific Research*, 10(2), 96-104. doi : 10.18488/journal.2.2020.102.96.104

Mills G. (Eds.). (2017). *The Airline Revolution : Economic Analysis of Airline Performance and Public Policy*. New York, NY : Routledge.

Morrell, P. (2005). Airlines within airlines: An analysis of US network airline responses to Low-Cost Carriers. *Journal of Air Transport Management*, 11(5), 303–312. <https://doi.org/10.1016/j.jairtraman.2005.07.002>

Moss, L. (2021). *Viva Air Now Offers Discounted COVID-19 Testing for Passengers Through Collaborating Laboratories*. Retrieved from the Journal Finance Colombia website <https://www.financecolombia.com/viva-air-now-offers-discounted-covid-19-testing-for-passengers-through-collaborating-laboratories/>

Nizetić, S. (2020). Impact of Coronavirus (COVID-19) Pandemic on Air Transport Mobility, Energy, and Environment. *International Journal of Energy Research*, 44(13), 10953-10961. doi : <https://doi.org/10.1002/er.5706>

Nuutinen, H. (2009). AZUL : A third-force Brazilian Carrier in the Making. *Aviation Strategy*, 142(4), 12-15.

OAG. (2020). *Punctuality League 2020*. Retrieved from <https://www.oag.com/punctuality-league-2020-report>

OECD. (2019). *Country Statistical Profile : Chile 2019/1*. Retrieved from https://www.oecd-ilibrary.org/economics/country-statistical-profile-chile-2019-1_csp-chl-table-2019-1-en

OECD. (2019). *Country Statistical Profile : Colombia 2019/1*. Retrieved from https://www.oecd-ilibrary.org/economics/oecd-economic-surveys-colombia-2019_e4c64889-en

OECD. (2019). *Country Statistical Profile : Mexico 2019/1*. Retrieved from https://www.oecd-ilibrary.org/economics/country-statistical-profile-mexico-2019-4_g2g9e5be-en

OECD. (2019). *Country Statistical Profile : Brazil 2019/1*. Retrieved from https://www.oecd-ilibrary.org/economics/country-statistical-profile-brazil-2019-4_g2g9e786-en

Olivares, J. V., & Piglia, M. (2019). Flying the history of commercial aviation in Latin America: An introduction. *The Journal of Transport History*, 40(1), 3–7. <https://doi.org/10.1177/0022526619832275>

Oliveira, A. V. M., & Huse, C. (2009). Localized competitive advantage and price reactions to entry: Full-service vs. low-cost airlines in recently liberalized emerging markets. *Transportation Research Part E: Logistics and Transportation Review*, 45(2), 307–320. <https://doi.org/10.1016/j.tre.2008.09.003>

Oxley, D. (2020). *Air Passenger Market Analysis December 2020*. Retrieved from the website of IATA <https://www.iata.org/en/iata-repository/publications/economic-reports/air-passenger-monthly-analysis---december-2020/>

O'Connell, J., Williams, G. (2005). Passengers' Perceptions of Low Cost Airlines and Full Service Carriers : A Case Study Involving Ryanair, Aer Lingus, Air Asia and Malaysia Airlines. *Journal of Air Transport Management*, 11, 259-272. doi :10.1016/j.jairtraman.2005.01.007

O'Connell, J. F., & Connolly, D. (2017). The strategic evolution of Aer Lingus from a full-service airline to a low-cost carrier and finally positioning itself into a value hybrid airline. *Tourism Economics*, 23(6), 1296–1320. <https://doi.org/10.1177/1354816616683492>

O'Connell, J. F., Avellana, R. M., Warnock-Smith, D., & Efthymiou, M. (2020). Evaluating drivers of profitability for airlines in Latin America: A case study of Copa Airlines. *Journal of Air Transport Management*, 84, 101727. <https://doi.org/10.1016/j.jairtraman.2019.101727>

Pereira, B. A., & Caetano, M. (2015). A conceptual business model framework applied to air transport. *Journal of Air Transport Management*, 44–45, 70–76. <https://doi.org/10.1016/j.jairtraman.2015.02.006>

Pilling, M. (2004). Brand extensions, *Airline Business*, 20(3), 46–48

Pierobon, M. (2020). Ground Handling Keeps Pace in Argentina. *Ground Support Worldwide*, 9, 26-27.

Porter, M. (1985). *Competitive Advantage : Creating and Sustaining Superior Performance*. New York, USA : The Free Press.

Ríos, A.M. (2021). *Number of COVID-19 Vaccination Doses Administered in Latin America as of May 12, 2021 per Country*. Retrieved from the website of Statista <https://www.statista.com/statistics/1194802/latin-america-covid-19-vaccination-doses-country/>

Rodrigues, S.V., de Moura, H.J., Lopes Santos, D.F., Sobreiro V.A. (2017). Capital Structure Management Differences in Latin America and US Firms after 2008 Crisis. *Journal of Economics, Finance and Administrative Sciences*, 22(42), 51-74. Doi :<https://doi.org/10.1108/JEFAS-01-2017-0008>

Schlumberger, C.E., & Weisskopf, N.(2014). Ready for takeoff? The potential for LCs Carriers in Developing Countries. *The Low-Cost Carrier Business model* (pp.3-21). World Bank Group. <http://hdl.handle.net/10986/20191>

SKYMART. (2020). *Revenue Passenger Kilometers*. Retrieved from <https://skymartsales.com/glossary/rpk.php#:~:text=RPK%20%E2%80%93%20Revenue%20Passenger%20Kilometers%20or,the%20distance%20travelled%20in%20kilometers>

Sorensen, J. (2020). *The 2020 CarTrawler Yearbook of Ancillary Revenue by IdeaWorksCompany*. Report, IdeaWorksCompany.

Srisaeng, P., Baxter, G. S., & Wild, G. (2014). The Evolution of Low-Cost Carriers in Australia. *Aviation*, 18(4), 203–216. <https://doi.org/10.3846/16487788.2014.987485>

Tarver, E. (2015). *4 Ways Airlines Hedge against oil*. Retrieved from <https://www.investopedia.com/articles/investing/081415/4-ways-airlines-hedge-against-oil.asp>

Tellis, W. (1997). Introduction to Case Study. *The Qualitative Report*, 3(2), 1-14. doi : <https://doi.org/10.46743/2160-3715/1997.2024>

Urban, M., Klemm, M., Ploetner, K. O., & Hornung, M. (2018). Airline categorisation by applying the business model canvas and clustering algorithms. *Journal of Air Transport Management*, 71, 175–192. <https://doi.org/10.1016/j.jairtraman.2018.04.005>

U.S. CODE. (2018). *Chapter 11- Reorganizations*. Retrieved from <https://www.usbankruptcycode.org/chapter-11-reorganization/>

U.S. Department of Transportation. (1997). *The Low Cost Airline Service Revolution*. Report, US Department of Transportation.

Vasigh, B., Fleming, K., & Tacker, T. (2018). *Introduction to Air Transport Economics: From Theory to Applications*. Routledge.

VivaAerobus. (2019). *4th Quarter 2019 Earnings release*. Report, Grupo VivaAerobus.

VivaAerobus. (2019). *About VivaAerobus*. Retrieved from <https://www.vivaaerobus.com/en/info/about-vivaaerobus>

Volaris. (2019). *Fourth Quarter 2019 Highlights*. Report, Volaris.

Volaris. (2019). *Annual Report : Form 20-F*. Report, United States Securities and Exchange Commision.

Warnock-Smith, D., Potter A. (2005). An Exploratory Study into Airport Choices Factors for European Low-Cost Airlines. *Journal of Air Transport Management*, 11(6), 388-392. doi: [10.1016/j.jairtraman.2005.05.003](https://doi.org/10.1016/j.jairtraman.2005.05.003)

Williams, G. (N.d.). *Cost Cutting for Success : Factors Influencing Costs*. Syllabus, Cranfield University, public record.

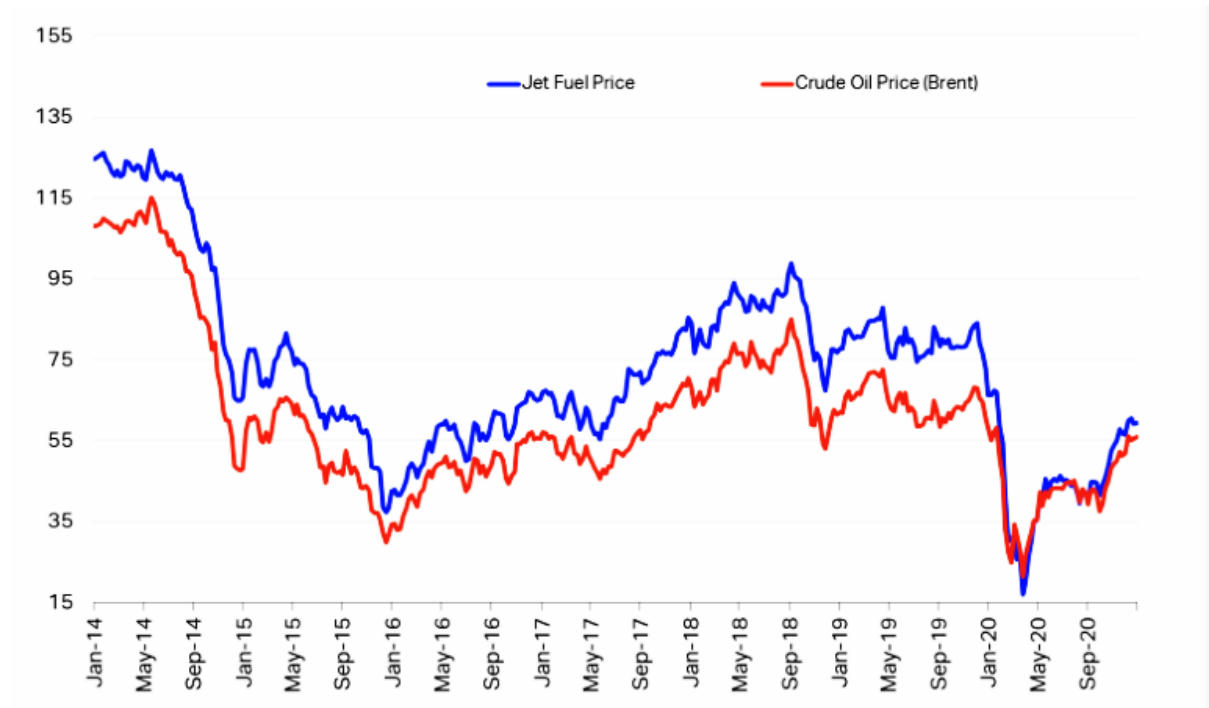
Windle, R., & Dresner, M. (1999). Competitive Responses to Low-Cost Carrier Entry. *Transportation Research Part E: Logistics and Transportation Review*, 35(1), 59-75. doi: [https://doi.org/10.1016/S1366-5545\(98\)00025-8](https://doi.org/10.1016/S1366-5545(98)00025-8)

Yin, R. (1989). *Case Study Research*. California : Sage Publication, 22-26

Zhang, A., Hanaoka, S., Inamura, H., & Ishikura, T. (2008). Low-cost carriers in Asia: Deregulation, regional liberalization, and secondary airports. *Research in Transportation Economics*, 24(1), 36–50. <https://doi.org/10.1016/j.retrec.2009.01.001>

Appendices:

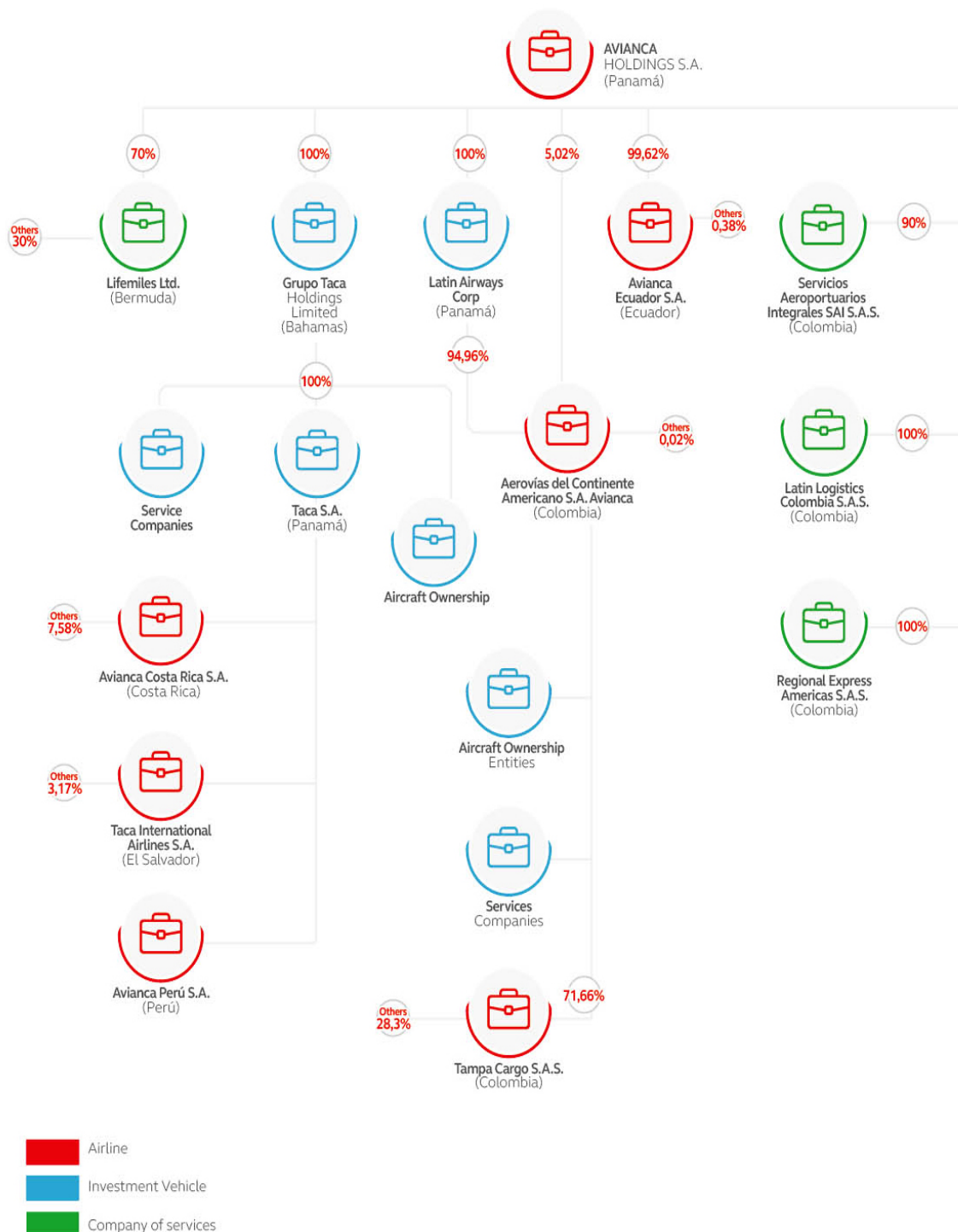
Appendix 1: Relationship between the Brent index and the Jet Fuel Price for the 2014-2020 period (\$/barrel)



Source: IATA (2021) extracted from Datastream

Appendix 2: Avianca Holdings Organisational Chart

Structure of the Holding Company



Source: Avianca Airlines organisational chart 2021

Appendix 3 : KPI Collection for POA Analysis (Based on data from 2018-2019)

Appendix 3 : KPI Collection for POA Analysis (Based on data from										
Profitability Index	BEST IN CLASS	LATAM Airlines	AVIANCA	VOLARIS	AZUL Airlines	GOL Airlines	AEROMEXICO	COPA Airlines	VIVAerobus	
EBITDA Margin	MAX SCORE	22.08%	0.79%	28.02%	21.63%	27.95%	20.29%	23.20%	30.10%	
Operating Margin	MAX SCORE	-1.18	-11.39	11.74%	-10.45%	15.38%	2.92%	12.79%	7.30%	
Cost drivers Index										
CASK = (Operating Income/ASK) (USD cents)	MIN SCORE	10.5	8.2	4.03	10.6	9	10.8	9.4	0.039	
CASK excluding fuel expenses (USD cents)	MAX SCORE	4.5	6	3.98	3.39	2.63	0.92	6.63	0.024	
Revenue achievement Index										
Yield (US cents)	MAX SCORE	5.63	1.96	9.24	2.87	5.85	1.4	12.26	0.530	
Connectivity Index										
Departures	MAX SCORE	474,500	280,466	138,084	295,354	259,377	208,415.00	131,819	35,405	
Average Stage Length (km)	MAX SCORE	1000	1,202	1,203	1,050	1,114	2,052	1,288	1,105	
Routes offered	MAX SCORE	145	135	67	249	73	85	80	118	
Convenience Index										
Punctuality (%) - customer perspective	MAX SCORE	86.41%	76.63%	75.61%	80.40%	78.04%	78.95%	92.01%	10%	
OTP (On time performance) - Airline metric	MAX SCORE	88%	78.68%	82.28%	80%	89%	91.10%	91.40%	86%	
Comfort Index										
Customer service rating	MAX SCORE	3	5	3	7	4	4	5	1	
Economy seat width (Inches)	MAX SCORE	17	20	18	18	17	17	17	18	
Economy seat pitch (Inches)	MAX SCORE	32	32	31	31	32	31	31	29	
Sales & Distribution Index										
Percentage of online booking's	MAX SCORE	26.40%	22.6%	61%	88%	90%	54%	66.8%	75%	
Sales, marketing and distribution expenses per ASK (USD cents)	MIN SCORE	0.053	0.940	0.003	0.002	0.012	0.004	0.008	0.006	
Fleet productivity Index										
Average utilisation rate (block hours)	MAX SCORE	10	10.1	12.9	11.3	12.3	12.5	11.3	12.8	
Average aircraft age (years)	MIN SCORE	9	7.33	4.6	5.8	9.9	9.5	9.2	3.29	
Labour productivity Index										
#employees	N/A	41,719	20,865	4,950	13,189	16,113	16,600	8,877	1,100	
#passenger (k)	N/A	74,189	30,538	17,478	28,000	34,300	20,689	15,424	12,019	
Passenger/employee	MAX SCORE	1,778.30	1,463.60	3,530.91	2,122.98	2,128.72	1,246.33	1,737.52	10,926.36	
Employee/aircraft	MIN SCORE	121.99	133.75	60	92.88	117.61	132.8	87.03	30.56	
ASK/employee	MAX SCORE	3,574,196.41	2,162,473.04	4,949,292.93	2,719,539.01	3,169,180.17	3,081,746.99	2,828,996.28	13,709,090.91	
Airport Attractiveness Index										
Percentage of traffic controlled by airline alliance at the hub	MAX SCORE	17%	52%	0 %	36%	33%	39%	95%	0%	
Market Structure Index										
Market Share international - country	MAX SCORE	40.80%	63.90%	19.64%	16.60%	37.70%	27.67%	80%	1.96%	
Market Share domestic (Main market)	MAX SCORE	52.60%	50.30%	28.38%	24%	10.40%	24.30%	30%	18.40%	
Ancillary structure Index										
% of ancillaries revenue of total turnover	MAX SCORE	2.40%	11.30%	39%	22.40%	17%	7.50%	4.00%	45.00%	
Total ancillary revenue per passenger (USD)	MAX SCORE	3.31	17.18	27.89	24.22	16.92	13.03	7.02	25.24	
External factors Index										
Local currency exchange rate (1 USD to local)	MAX SCORE	0.0014	0.000260	0.049	0.18	0.18	0.049	1	0.049	
GDP per capita (USD current PPPs)	MAX SCORE	24,122	14,607	19,655	15,651	15,651	19,655	32,850	19,655	
Inflation (%)	MIN SCORE	2.20%	4.30%	6%	3.40%	3.40%	6%	-0.36%	6%	
Unemployment rate (%)	MIN SCORE	6.70%	9.40%	3.40%	11.90%	11.90%	3.40%	4.74%	3.40%	

Appendix 4- POA Methodology: Benchmarked ratios.

	LATAM Airlines	AVIANCA	VOLARIS	AZUL Airlines	GOL Airlines	AEROMEXICO	COPA Airlines	VIVA Aerobus
Profitability Index								
EBITDA Margin	0,73	0,03	0,93	0,72	0,93	0,67	0,77	1,00
Operating Margin	0,00	0,00	0,76	0,00	1,00	0,19	0,83	0,47
Cost drivers Index								
CASK = (Operating Income/ ASK) (USD cents)	0,03	0,24	0,63	0,02	0,17	0,00	0,13	1,00
CASK excluding fuel expenses (USD cents)	0,32	0,10	0,40	0,49	0,61	0,86	0,00	1,00
Revenue achievement Index								
Yield (US cents)	0,46	0,16	0,75	0,23	0,48	0,11	1,00	0,04
Connectivity Index								
Departures	1	1	0	1	1	0	0	0
Average Stage Length (km)	0,49	0,59	0,59	0,51	0,54	1,00	0,63	0,54
Routes offered	0,58	0,54	0,27	1,00	0,29	0,34	0,32	0,47
Convenience Index								
Punctuality (%) - customer perspective	0,94	0,83	0,82	0,87	0,85	0,86	1,00	0,11
OTP (On time performance) - Airline metric	0,96	0,86	0,90	0,88	0,97	1,00	1,00	0,94
Comfort Index								
Customer service rating	0,43	0,71	0,43	1,00	0,57	0,57	0,71	0,14
Economy seat width (inches)	0,85	1,00	0,90	0,90	0,85	0,85	0,85	0,90
Economy seat pitch (inches)	1,00	1,00	0,97	0,97	1,00	0,97	0,97	0,91
Sales & Distribution Index								
Percentage of online booking's	0,29	0,25	0,68	0,98	1,00	0,60	0,74	0,83
Sales, marketing and distribution expenses per ASK (USD cents)	0,95	0,00	1,00	1,00	0,99	1,00	0,99	1,00
Fleet productivity Index								
Average utilisation rate (block hours)	0,78	0,78	1,00	0,88	0,95	0,97	0,88	0,99
Average aircraft age (years)	0,14	0,39	0,80	0,62	0,00	0,06	0,11	1,00
Labour productivity Index								
Passenger/employee	0,16	0,13	0,32	0,19	0,19	0,11	0,16	1,00
Employee/aircraft	0,11	-0,01	0,71	0,39	0,15	0,00	0,45	1,00
ASK/employee	0,26	0,16	0,36	0,20	0,23	0,22	0,21	1,00
Airport Attractiveness Index								
Percentage of traffic controlled by airline alliance at the hub	0,18	0,55	0,00	0,38	0,35	0,41	1,00	0,00
Market Structure Index								
Market Share international - country	0,51	0,80	0,25	0,21	0,47	0,35	1,00	0,02
Market Share domestic (Main market)	1,00	0,96	0,54	0,46	0,20	0,46	0,57	0,35
Ancillary structure Index								
% of ancillaries revenue of total turnover	0,05	0,25	0,86	0,50	0,38	0,17	0,09	1,00
Total ancillary revenue per passenger (USD)	0,12	0,62	1,00	0,87	0,61	0,47	0,25	0,90
External factors Index								
Local currency exchange rate (1 USD to local)	0,00	0,00	0,05	0,18	0,18	0,05	1,00	0,05
GDP per capita (USD current PPPs)	0,73	0,44	0,60	0,48	0,48	0,60	1,00	0,60
Inflation (%)	0,60	0,27	0,00	0,41	0,41	0,00	1,00	0,00
Unemployment rate (%)	0,61	0,29	1,00	0,00	0,00	1,00	0,84	1,00

Appendix 5- POA Methodology: List of weighted scores.

	Operating Margin
EBITDA Margin	0,59
Operating Margin	1,00
CASK = (Operating Income/ ASK) (USD cents)	0,32
CASK excluding fuel expenses (USD cents)	0,01
Yield (US cents)	0,62
Departures	-0,55
Average Stage Length (km)	-0,06
Routes offered	-0,72
Punctuality (%) - customer perspective	-0,05
OTP (On time performance) - Airline metric	0,43
Customer service rating	-0,26
Economy seat width (inches)	-0,40
Economy seat pitch (inches)	-0,12
Percentage of online booking's	0,55
Sales, marketing and distribution expenses per ASK (USD cent)	0,41
Average utilisation rate (block hours)	0,60
Average aircraft age (years)	-0,07
Passenger/employee	0,16
Employee/aircraft	0,38
ASK/employee	0,15
Percentage of traffic controlled by airline alliance at the hub	0,10
Market Share international - country	0,11
Market Share domestic (Main market)	-0,63
% of ancillaries revenue of total turnover	0,26
Total ancillary revenue per passenger (USD)	0,14
Local currency exchange rate (1 USD to local)	0,48
GDP per capita (USD current PPPs)	0,29
Inflation (%)	0,14
Unemployment rate (%)	0,15

Appendix 6- POA Methodology: Application of weighting score

	LATAM	AVIANCA	VOLARIS	AZUL	GOL	AEROMEXICO	COPA	VIVA Aerobus
Profitability Index	0,27	0,01	0,83	0,27	0,97	0,37	0,81	0,67
Cost drivers Index	0,04	0,24	0,62	0,03	0,18	0,03	0,13	1,00
Revenue achievement Index	0,46	0,16	0,75	0,23	0,48	0,11	1,00	0,04
Connectivity Index	0,75	0,56	0,29	0,82	0,41	0,41	0,32	0,31
Convenience Index	0,97	0,86	0,91	0,88	0,99	1,00	1,00	1,00
Comfort Index	0,73	0,90	0,75	0,94	0,78	0,78	0,82	0,65
Sales & Distribution Index	0,57	0,14	0,82	0,99	1,00	0,77	0,85	0,90
Fleet productivity Index	0,87	0,84	1,00	0,91	1,00	1,00	0,99	0,99
Labour productivity Index	0,15	0,06	0,54	0,30	0,18	0,08	0,33	1,00
Airport Attractiveness Index	0,18	0,55	0,00	0,38	0,35	0,41	1,00	0,00
Market Structure Index	1,00	0,99	0,60	0,51	0,14	0,49	0,48	0,42
Ancillary structure Index	0,08	0,38	0,91	0,63	0,46	0,27	0,15	0,97
External factors Index	0,37	0,20	0,33	0,27	0,27	0,33	0,98	0,33

Appendix 7- POA Methodology: Final index

	LATAM	AVIANCA	VOLARIS	AZUL	GOL	AEROMEXICO	COPA	VIVA Aerobus
Profitability Index	3	0	9	3	10	4	8	7
Cost drivers Index	0	2	6	0	2	0	1	10
Revenue achievement Index	5	2	8	2	5	1	10	0
Connectivity Index	9	7	4	10	5	5	4	4
Convenience Index	10	9	9	9	10	10	10	10
Comfort Index	8	10	8	10	8	8	9	7
Sales & Distribution Index	6	1	8	10	10	8	8	9
Fleet productivity Index	9	8	10	9	10	10	10	10
Labour productivity Index	2	1	5	3	2	1	3	10
Airport Attractiveness Index	2	5	0	4	3	4	10	0
Market Structure Index	10	10	6	5	1	5	5	4
Ancillary structure Index	1	4	9	6	5	3	1	10
External factors Index	4	2	3	3	3	3	10	3

Appendix 8- POA Methodology: Correlation matrix

	Profitability Index	Cost drivers Index	Revenue achievement Index	Connectivity Index	Convenience Index	Comfort Index	Sales & Distribution Index	Fleet productivity Index	Labour productivity Index	Airport Attractiveness Index	Market Structure Index	Ancillary structure Index	External factors Index
Profitability Index	1,00	0,42	0,53	-0,70	0,35	-0,57	0,68	0,86	0,40	-0,13	-0,76	0,33	0,33
Cost drivers Index	0,42	1,00	-0,17	-0,57	-0,01	-0,58	0,14	0,34	0,91	-0,59	-0,23	0,84	-0,21
Revenue achievement Index	0,53	-0,17	1,00	-0,29	0,03	0,06	0,09	0,30	-0,17	0,40	-0,02	-0,31	0,71
Connectivity Index	-0,70	-0,57	-0,29	1,00	-0,35	0,56	-0,18	-0,71	-0,40	0,00	0,48	-0,30	-0,28
Convenience Index	0,35	-0,01	0,03	-0,35	1,00	-0,65	0,33	0,55	0,10	0,13	-0,34	-0,36	0,40
Comfort Index	-0,57	-0,58	0,06	0,56	-0,65	1,00	-0,41	-0,71	-0,56	0,58	0,35	-0,34	0,08
Sales & Distribution Index	0,68	0,14	0,09	-0,18	0,33	-0,41	1,00	0,77	0,37	-0,17	-0,83	0,31	0,16
Fleet productivity Index	0,86	0,34	0,30	-0,71	0,55	-0,71	0,77	1,00	0,41	-0,12	-0,75	0,25	0,34
Labour productivity Index	0,40	0,91	-0,17	-0,40	0,10	-0,56	0,37	0,41	1,00	-0,50	-0,29	0,76	-0,03
Airport Attractiveness Index	-0,13	-0,59	0,40	0,00	0,13	0,58	-0,17	-0,12	-0,50	1,00	0,03	-0,71	0,75
Market Structure Index	-0,76	-0,23	-0,02	0,48	-0,34	0,35	-0,83	-0,75	-0,29	0,03	1,00	-0,36	-0,10
Ancillary structure Index	0,33	0,84	-0,31	-0,30	-0,36	-0,34	0,31	0,25	0,76	-0,71	-0,36	1,00	-0,51
External factors Index	0,33	-0,21	0,71	-0,28	0,40	0,08	0,16	0,34	-0,03	0,75	-0,10	-0,51	1,00

Appendix 9- POA Results: not-performing model against LCC competition.

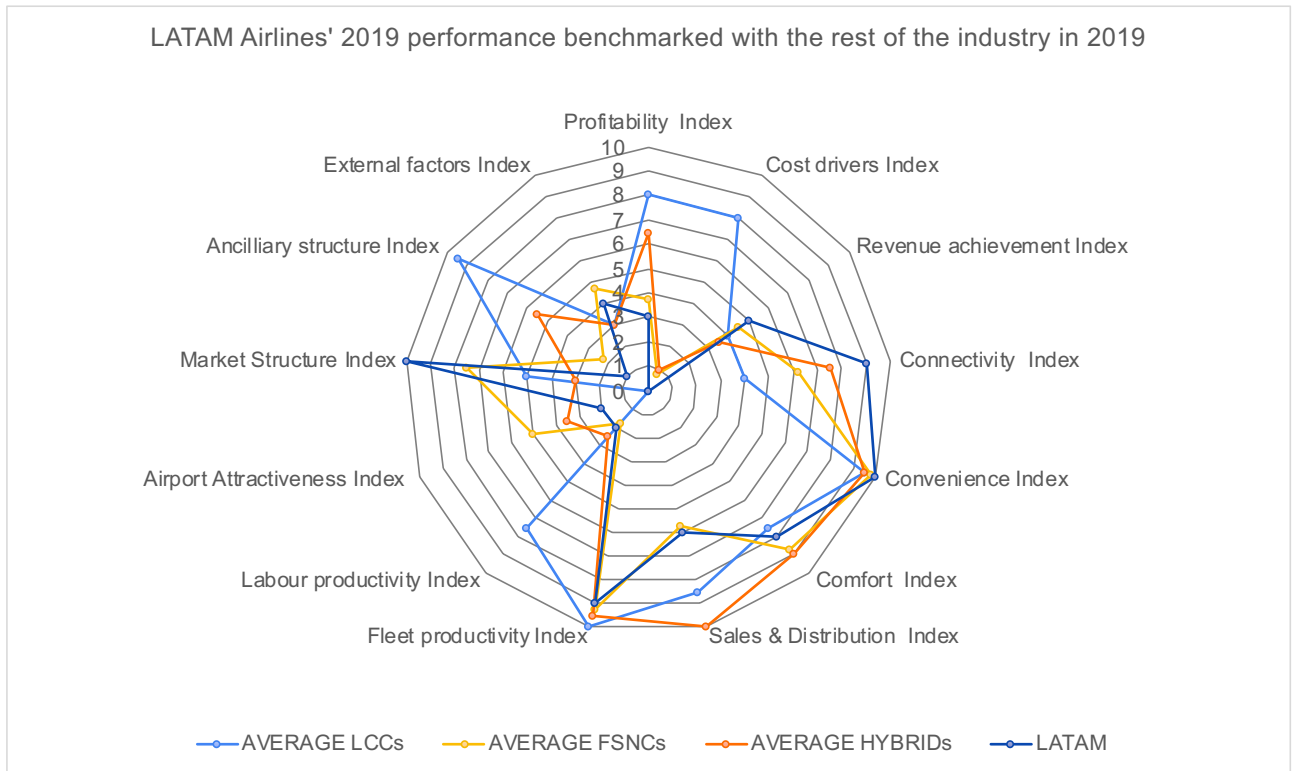


Fig.1 –LATAM Airlines strategy performance benchmarked with the rest of the industry

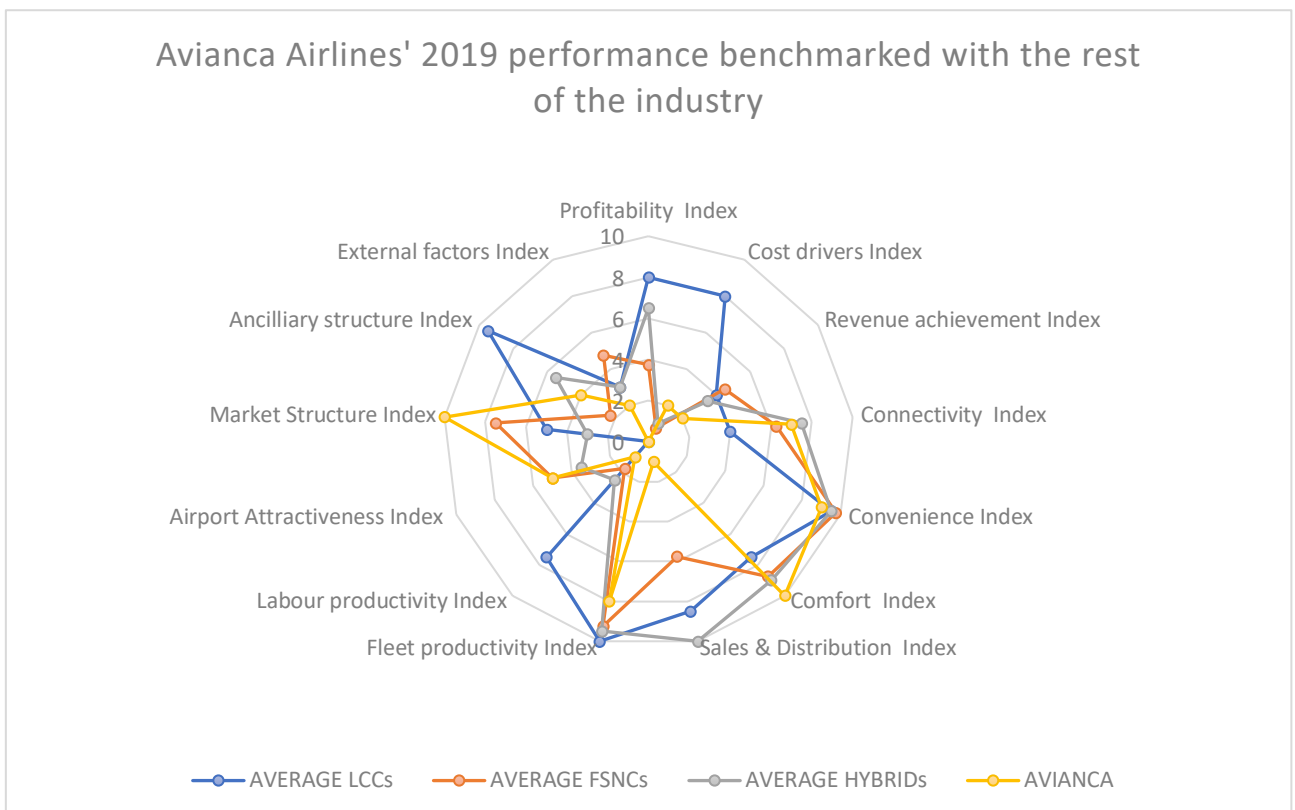


Fig.2 –AVIANCA Airlines strategy performance benchmarked with the rest of the industry

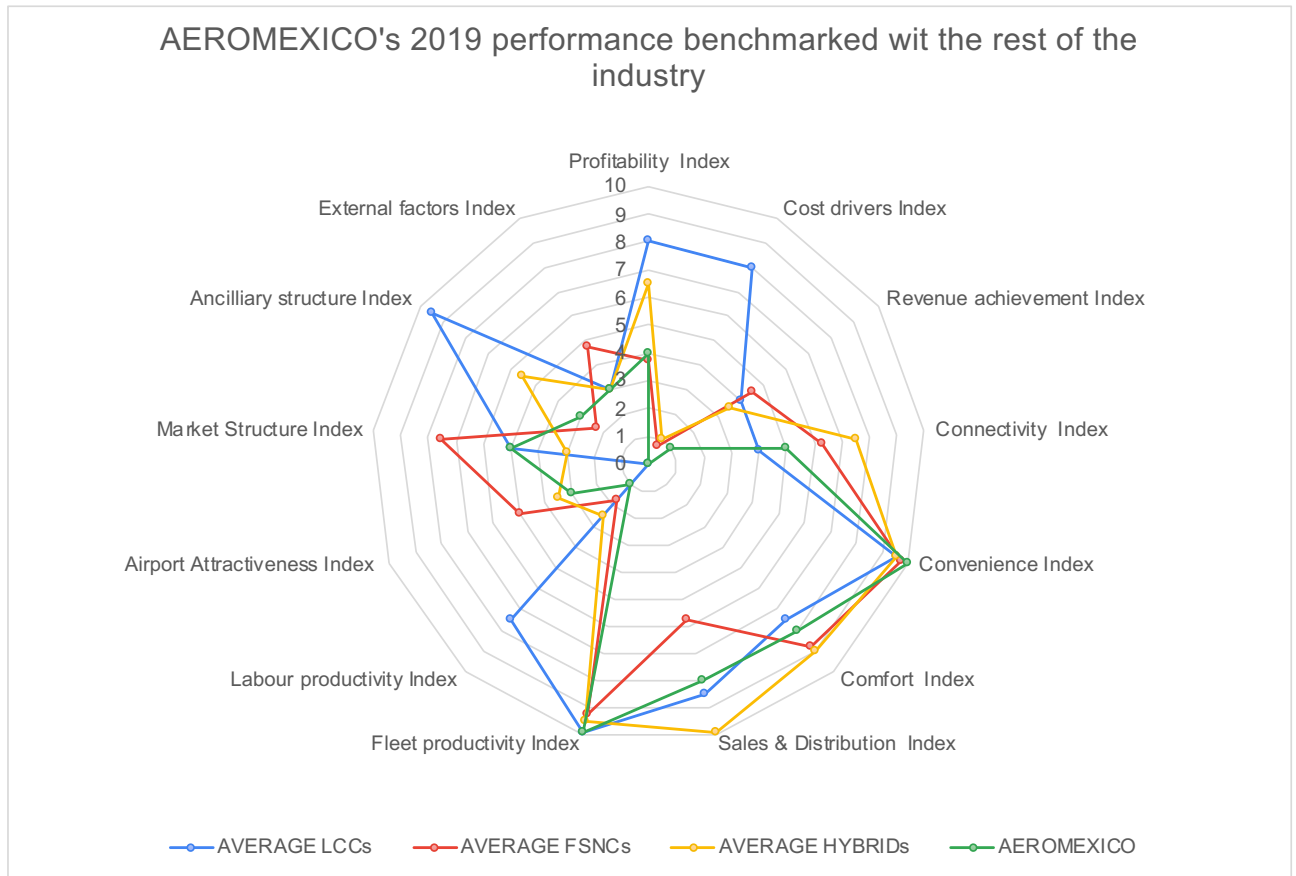


Fig.3 –AEROMEXICO strategy performance benchmarked with the rest of the industry

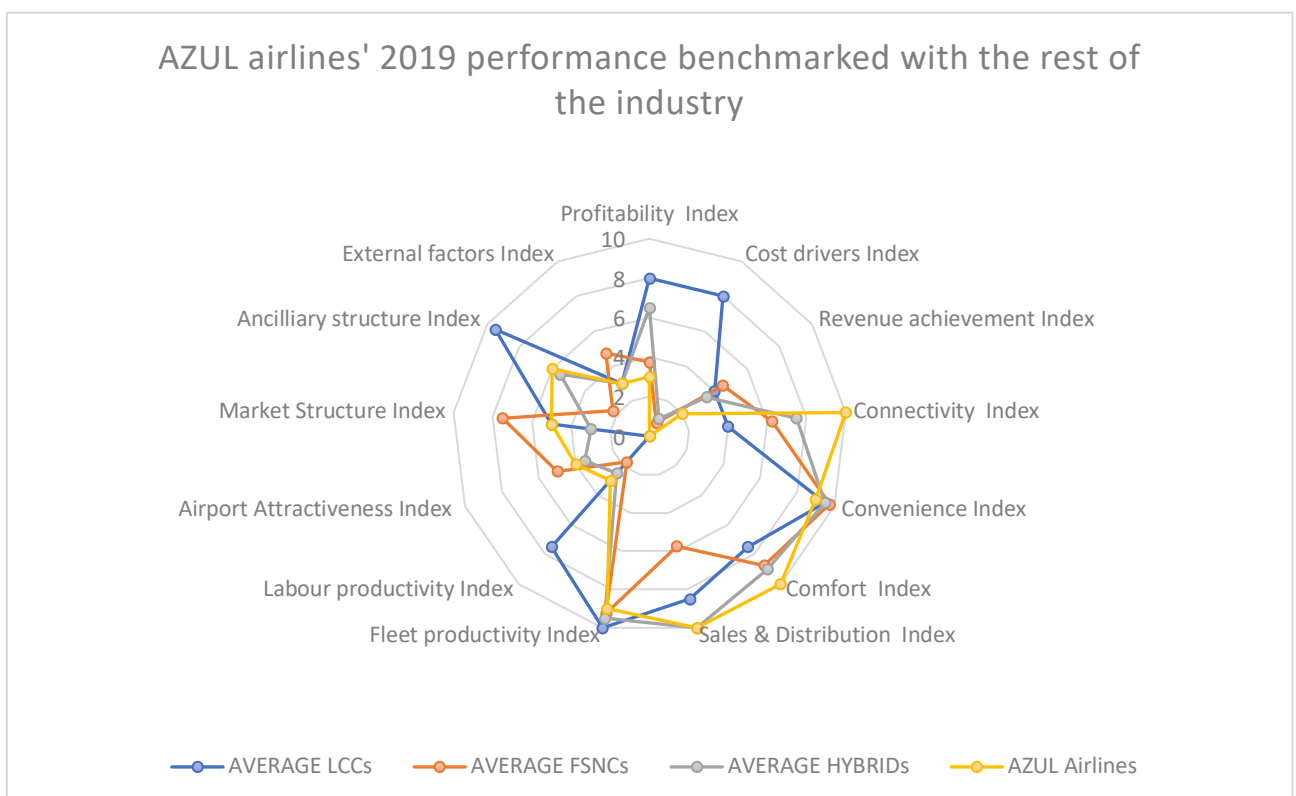


Fig.4 –AZUL Airlines strategy performance benchmarked with the rest of the industry

