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Capturing and Delivering Value in the Trans-Atlantic Air Travel Market: The Case of the Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways Strategic Joint Venture

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Abstract
This paper presents a case study of the Air France-KLM, Delta Air Lines, and Virgin Atlantic transatlantic joint venture, one of the world's largest strategic passenger joint ventures. The study used a qualitative research approach. The data gathered for the study was examined by document analysis. The strategic analysis of the joint venture was based on the use of Porter's Five Forces Model. The study found that the joint venture has evolved over time through the addition of KLM Royal Dutch Airlines, Alitalia, and Virgin Atlantic Airways to the original joint venture between Air France and Delta Air Lines. The joint venture has provided significant synergistic benefits to the partners and has allowed the partners to access new markets and to participate in the evolution of the transatlantic air travel market, one of the world's major air travel markets. The joint venture has also enabled the venture partners to enhance their competitive position through strengthened service offerings, a comprehensive route network that offers customers a high level of connectivity, and greater flight frequencies within their own route networks, all of which creates value for the partners. A limitation of the study was that the annual revenue, revenue passenger kilometres performed, or passenger load factors data was not available. It was, therefore, not possible to analyze the business performance of the joint venture.

Keywords
Air France-KLM; airlines; alliances; case study; Delta Airlines; joint venture; KLM Royal Dutch Airlines; Porter's Five Forces Model; Virgin Atlantic Airways

1. Introduction

The global air transport industry has witnessed a number of significant changes since the deregulation of the United States air travel market in the late 1970s and the European industry in the 1990s. These changes include a reduction in the number of major airlines, the intensified reorganization of airline routes into hub-and-spoke networks, the rapid growth in the number of low-cost carriers (LCCs) and, still occurring, the formation of strategic alliances between international carriers. The latter represents a significant innovation in the global airline industry. Since the first major alliance between KLM Royal Dutch Airlines and Northwest Airlines in the early 1990s, the number of far-reaching strategic alliances has been increasing. [1]

Over the past decade or so, airlines have sought to extend their reach and service offerings on a global basis. Because of the cost associated with overcoming various rigidities in international air transport markets – bilateral air services agreements (ASAs) restrictions, prohibitions against cabotage, the availability of airport slots and other facilities, and so forth, large full-service network carriers (FSNCs) have found it advantageous to link up with other airlines, thereby forming global networks. [2] Furthermore, airlines all around the world have focused on strategic alliances for satisfying customer needs. This is especially so in the current air transport industry environment which is dominated by global integration, demanding customer requirements, and rapidly changing technologies. [3] Airlines have also ratified strategic alliance agreements and partnerships in order to create competitive advantage, reduce their costs, and to expand their marketable network reach. [4]

In the broadest sense, alliances involve collaboration between two or more businesses that retain their autonomy during their relationship [5]. In the global airline industry there are many different types of alliances: asset pools [6, 7], blocked-space, revenue sharing and "wet-lease" agreements [8], code-share agreements [9, 10], cost-sharing ventures [7, 11], equity investments [7, 12], feeder agreements [7, 13, 14], interline pro-rate agreements [15], marketing alliances [7, 9, 16], and joint ventures [7, 9]. The focus of the present study is on the latter strategic option.

The objective of this paper is to examine the development and evolution of the transatlantic strategic joint venture between Air France-KLM, Delta Airlines and Virgin Atlantic Airways. An additional aim of the study is to examine how the joint venture has enhanced the partner's competitive position in the transatlantic air travel market. The Air France-KLM, Delta Air Lines and Virgin Atlantic Airways joint venture was selected for the study as this is one of the world's largest airline joint ventures. Also, the joint venture was selected for the case study due to the availability of documentary evidence that was readily available in the public domain that covers then joint venture inception through to the time of the present study.

The remainder of the paper is organized as follows: the literature review presented in Section 2 commences with an overview of joint ventures and subsequently examines Porter's Five Forces Model. The study's research method is described in Section 3. The case study is presented in Section 4. The key findings of the study are presented in Section 5.

2. Background

2.1 Joint venture partnerships

Firms enter into alliance agreements for various strategic reasons. Amongst these, the one central to this study is the strategic joint venture. According to Yan and Luo [17], international joint ventures "are joint ventures that involve firms from different countries cooperating across national and cultural boundaries". In the global airline industry, a joint venture has been defined as a joint business that extends beyond existing partnerships and is one which encompasses code-sharing or being a member of a global alliance.[18] Thus, joint ventures are separate entities which are typically owned jointly by two or more firms. The joint venture also represents a partial combination of the partner's resources [19], and the owners participate in governing the new business entity. [20, 21]

2.2 The motives for joint venture partnerships formation

The motives for firms forming joint ventures has attracted a lot of attention in the extant literature. One critical reason that firms decide to form a joint venture is the reduction in risk. [22, 23] By combining resources and expertise the two firms can reduce the risk to both parties as the risks can be equally shared.[24] Furthermore, Harrigan [25] suggests that "joint ventures offer shared-equity control and shared returns, with lower risks to bear if firms pursued strategic objectives alone".

A further motivation for forming a joint venture is the joint saving of costs [26] as well as the pooling of competencies and distinctive resources. [23, 26, 27] A common motive for the formation of joint ventures is the objective of achieving cost savings through the rationalization of fixed costs or through the sharing of the partners' capital investment programs. [28] The investment capital required for the joint venture can be easier to arrange as financial institutions will evaluate the strength of two or more firms instead of just one single firm. [29]

Gaining access to new markets is another often cited reason that firms form a joint venture. [25, 30, 31] In addition to gaining access to new markets, a joint venture can enable a partner to expand the size of its customer base. This is achieved by using its partner's strength in different geographic markets.[28] Joint ventures also enable the partners to increase their market share, whilst also enhancing their competitive position in markets.[32] This latter motivation is especially important to the present study as full-service network carriers (FSNCs) compete in the premium and leisure travel market segments [33, 34]; these market segments are often characterized by extremely high levels of competition.

Synergy has been highlighted in the literature as a further motivation for the formation of joint ventures.[21] This is because the joint utilization of complementary resources, core competencies, and skill sets possessed by the joint venture partners can create synergistic effects.[30] Such benefits may not be captured if the firms are acting alone.

A further motivation for forming a joint venture is to enable the partners to participate in the industry's evolution [32], whilst at the same time helping to reduce competitive volatility.[25] Furthermore, the formation of a joint venture may enable the partners to pre-empt competitors (first movers' advantages), the partners may gain rapid access to better firms, the partners can add capacity or vertical integration, the partners may also achieve advantageous terms, and providing the joint venture with the best partners [25]. Furthermore, a joint venture may also enable the partners to capture competitive advantage. This competitive advantage is captured by the joint venture partners pre-empting competitors, thus enabling the joint venture firms to expand their customer base (as well as their market-share).[35]

2.3 The joint venture success factors

Many key success factors have been suggested in the literature for joint ventures. First, the selection of the partner is of vital importance. There must be the correct "fit" for the specific joint venture. For this "fit", the partners need to have complementary technical skills and resources, compatible cultures, and clearly-specified objectives and performance criteria.[28] Second, there must be a spirit of trust, cooperation, and integrity between the joint venture partners. Third, both strategic and operational synergies must prevail between the partners. The potential results of the joint venture need to be reasonable.[35] Fourth, as the joint venture matures the parent firms must be prepared to address possible new risks. They also need to be prepared to change the structure of the joint venture organization in response to changing operating conditions.[36] Finally, a critical factor is a favourable past association with the other partner(s).[37, 38, 39]

2.4 Rationale for forming strategic alliances and joint ventures in the global airline industry

Joint ventures (JVs) are being ratified across the world airline industry, thereby enabling airlines to deliver greater choice to consumers whilst at the same time growing their businesses. Examples of joint ventures include Air France-KLM-Alitalia and Delta Airlines across the Atlantic; Japan Airlines, British Airways and Finnair linking Japan and Europe [40]; and the Delta Air Lines and Korean Air joint venture across the Pacific.[41, 42]

There are a variety of reasons and strategic factors which drive the formation of strategic airline alliances and joint ventures in the global airline industry. These range from overcoming bilateral air services agreements (ASAs) restrictions through to the alliance members sharing access to assets, resources and competencies [1]. Figure 1 shows the specific factors or rationale that has motivated airlines to form strategic airline alliances.

2.4.1 Economic restructuring of the global airline industry

Economic restructuring through the philosophy of "economic disengagement" by governments around the world, has, over the past three decades, had a substantial impact on the world airline industry. The principal forms of industry restructuring have occurred through privatization of airlines and deregulation of markets. [43] The 1944 Chicago Convention on International Civil Aviation established the bilateral systems of air services agreements (ASA's) between governments, which have since governed international air transport.[44, 45] The international air transport market that developed was characterized by national airlines from each country serving routes, airlines often charging the same air fares, and often sharing markets and revenues. Some bilateral air services agreements (ASAs) also stipulated conditions governing responsibility for such matters as passenger and aircraft ground handling. The terms of the bilateral agreements reflected the negotiating power and current air transport policies of the respective countries involved and resulting productivity was often quite low with the costs often being high.[46]

Since the end of the 1970s the international air transport industry regulatory regime has been characterized by the continuous deregulation of air transport markets. This trend commenced with the deregulation of the United States domestic market in 1978 [47, 48] followed by Canada, the United Kingdom, Australia and New Zealand in the 1980s and the completion of full deregulation of the European Union in April 1997. [43] Consequently, airlines are increasingly free to allocate their resources in both space and time. [47] Following deregulation, the world air transport system has become much more competitive.[49]

A further, and linked, aspect of economic restructuring is a global movement towards the privatization of state-owned airlines.[50, 51] Nonetheless, despite this gradual process there are still some international airlines that remain publicly owned or have major government shareholdings.[43]

The European Union third air transport market liberalization package implemented from April 1997 permitted European Union (EU) registered airlines to purchase majority ownership of other EU carriers and establish airlines in other EU countries.[52, 53] In the United States, for example, foreign shareholdings of up to 49% of the airlines issued shares (equity) and 25% of voting stock is possible, although the United States Government also imposes an ad hoc control test to ascertain whether the foreign shareholder would substantially influence decision making irrespective of the level of shareholding.[43, 54]

In addition, alternative methods of strategic development, namely internally generated growth and mergers and acquisitions are often precluded as viable growth strategies for international airlines, and hence, the formation of strategic

Figure 1. The factors influencing the formation of strategic alliances and joint ventures in the global airline industry. Source: adapted from [1]

alliances is, in many instances, the only available form of market entry available to them.[43]

2.4.2 Gain entry to international air travel markets

In order to gain access to an air travel market which is restricted by bilateral air services agreements (ASAs) an alliance enables an airline to serve such markets without obtaining the right to do so through country-negotiated bilateral agreements. Thus, global airline service networks are most likely to be formed by alliance partners residing and operating in different continents in order to benefit most from the enlarged route network served by becoming an alliance member.[55]

2.4.3 The creation of a global seamless route network

Customers prefer airlines who offer a large route network since they can minimize their travel time, increase the number of online connections, and participate in better frequent flyer programs.[55] Accordingly, airlines are seeking to optimize their "global reach", in the belief that those who offer a global service (with a competitively credible presence in each of the major air travel markets) will be in the strongest strategic position. Hence, globalization, and especially developments in key air travel markets is an important external driver for strategic airline alliance formation.[43] Furthermore, in the global airline industry, a joint venture enables the partner airlines to coordinate their flights, airline route planning, and their route networks. The joint venture partners can also coordinate the level of seating capacity in a market.[9] In addition, the strategic alliance therefore enables airlines to provide their clients with a greater range of potential routes and destinations.[56]

2.4.4 Economies of scale, scope and learning

Undoubtedly, a prime motive for collaboration amongst airlines is to improve profitability; economies can be realized through shared airport facilities, combined sales operations, for example, in combination with an extended route network.[57] Thus, a principal driver for alliance formation is for the airlines to achieve cost economies of scale, scope and experience.[46] Economies of scale exist where the average cost per unit of airline output declines as the level of the airline's output increases [58]. Joint activities, for example, in parts-pooling or aircraft ground handling, help airlines to reduce their costs and/or create economies of scale.[55] In addition, strategic alliances reduce airline costs through economies of scale associated with joint marketing, maintenance, training, computer reservation systems, and through the elimination of duplication and redundancy in operations.[58]

Economies of scope occur when the cost of producing two (or more) products jointly is less that the cost of producing a single product.[59] Such economies can be achieved by the alliance members when they link up their existing route networks so that they are able to provide connecting services for new markets, and where marketing costs can be shared amongst alliance partners [60] that may have strong entrenched positions in certain air travel markets.[43]

An important motivator for alliance participation is the benefit to be derived from economies of learning (or experience).[61] Incumbent suppliers possess more information on the market being served and can therefore tailor their services to satisfy specific customer requirements. New entrants, however, would be required to commit resources to acquire such information in order to capture market share, but alliances enable the information to be gained from existing suppliers.[43]

2.4.5 Access to assets, resources and competencies

Specific resources, skills or competency inadequacy or imbalance can be addressed by an airline by allying with partners who have a different set of such skills and can therefore compensate for their partner airlines internal deficiencies. The air transport industry regulatory framework based on bilateral air services agreements (ASA's) and take-off and landing slots and congestion at certain airports located around the world, mean that airlines possessing licenses or authority to operate services on a route and hold slots at a congested airport have important and marketable assets that are attractive to alliance partners [43]. Alliances can therefore provide relatively easy access to a route [56] by permitting access to a partner's assets which may have been established over prolonged periods and which may have enjoyed government intervention.[43]

2.4.6 Maintain a market presence

Strategic alliances assist airlines to maintain market presence in markets where the specific characteristics and growth potential would render the single operation of an airline unprofitable.[62]

2.4.7 Risk sharing

Strategic alliances are viewed as an attractive mechanism for hedging or mitigating risk. This is because neither partner bears the full risk and cost of the alliance activity.[63, 64] Developing new or air existing routes, for example, becomes considerably less risky if the airline partners have firmly entrenched marketing strengths in the two markets at either end of the routes.[43, 56]

2.4.8 The use of strategic alliances to help shape the market

This is critical to understanding strategic airline alliances. Overcapacity is often an acknowledged airline industry problem; one solution being to reduce the number of airlines. By collaborating through a strategic alliance, airlines are, in effect, reducing the level of competition.[55] Strategic alliances may, therefore, be used by airlines as a defensive strategy to reduce the level of competition since an advantage of an alliance is converting a competitor into a partner. Smaller, relatively weak airlines may regard alliances as the only viable means in which to compete against larger more sophisticated rivals.[43] On the other hand, strategic alliance formation may form part of an offensive strategy, by linking with a competitor, for example, in order to place pressure on the profits and market share of a common rival.[65]

2.5 Porters Five Forces Model

Before a firm can define and implement its business level strategy, it must be fully cognizant of what forces will influence profits in the industry.[66] Porter [67, 68] has provided a dynamic and focused analytical framework – Porter's Five Forces Model – for determining the level of competition present in an industry. Porter notes that there are five forces that determine the attractiveness of an industry as well as the long-run industry profitability: threat of entry by potential new market entrants, the threat of substitutes, the bargaining power of buyers, the bargaining power of suppliers, and the intensity of rivalry between existing competitors (Figure 2).[67, 68, 69] The collective strength of these five forces will determine the limit of an industry's profit potential.[70]

2.5.1 Risk of entry by potential competitors

Porter [68] has noted that "new entrants to an industry bring new capacity, the desire to gain market share, and often substantial resources. In some industries there are high barriers to market entry whereas other industry's may be quite easy to enter.[69] The six key barriers to market entry include economies of scale, product differentiation, capital requirements, cost disadvantages independent of size, access to distribution channels, and government policy [68].

2.5.2 Threat of substitutes

The presence of substitute products can lower the potential of an industry [68] as well profitability because they restrict price levels.[69] According to Uçmak and Arslan [69], the threat of substitutes is dependent upon the buyers' willingness to substitute products, the relative price, and performance of the substitute product, and the switching costs to substitutes.

2.5.3 Bargaining power of buyers

Buyers may be individuals or firms that purchase the output of an industry.[70] A buyer group is regarded as powerful when

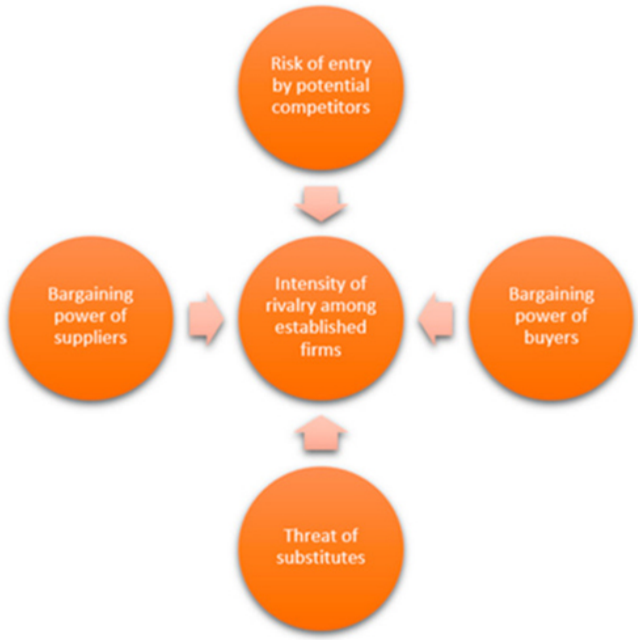

Figure 2. Porter's Five Forces model. Source: adapted from [71]

it concentrated or when a buyer purchases in large quantities, products are standardized, it earns low profits, the industry's product is regarded as unimportant to the quality of the buyers' product or services, the product(s) produced by the industry do not save the buyer money, and buyers threaten to integrate backwards into an industry [69].

2.5.4 Bargaining power of suppliers

Suppliers are firms that supply materials and other products into an industry [69]. The cost of items purchased from a supplier may have a substantial impact on the firm's profitability. In cases where suppliers possess high bargaining power over a buyer, then in theory, the firm's industry is less attractive.[69] The bargaining power of suppliers will be high when there are many buyers and few dominant suppliers, there are undifferentiated, highly valued products, suppliers pose a credible threat of integrating into the industry, and the industry is not a customer of the supplier group.[68, 69]

2.5.5 Intensity of rivalry among established firms

The rivalry of the firms competing in an existing market can also influence industry profitability.[71] Incumbents competing in the industry use tactics including price competition, product introduction, advertising campaigns, and higher levels of customer service. The intensity of rivalry is greatest in the presence of the following conditions:

- Numerous competitors or equally powerful competitors competing in the industry;
- Slow industry growth levels;
- There are high fixed but marginal costs;
- Lack of differentiation or switching costs;
- Capacity is typically introduced in large increments; and
- High market exit barriers [72].

3. Research approach

3.1 Research approach

The research approach in this paper was based on the use of an instrumental case study approach.[73] Creswell [74] notes that in an "instrumental case study, the researcher focuses on an issue or concern, and then selects one bounded case to illustrate this issue". Accordingly, an instrumental case study is the study of a case, for example, a firm, that provides insights into a specific issue, redraws generalizations, or builds theory.[75, 76] The present study was designed around the established theory of strategic alliances and joint ventures. The key issue examined in the present study was the development and evolution of the strategic transatlantic joint venture between Air France-KLM, Delta Airlines and Virgin Atlantic Airways. Air France-KLM, Delta Air Lines and Virgin Atlantic Airways were thus the study's case companies.

The research undertaken in the present study used a qualitative case study research design.[73, 76] The goal of this approach is to expand and build theories rather than perform statistical analysis to test a study's specific hypothesis.[77]

3.2 Data collection

Data for the study was obtained from a range of documents, company materials available on the internet, airline industry press articles, press releases, and records. These documents provided the sources of case evidence. The documents collected and examined in the study included press releases, and the Air France-KLM, Delta Air Lines, KLM Royal Dutch Airlines, and Virgin Atlantic Airways websites. An exhaustive source of the air transport-related magazines – Air Transport World, Airline Business, Aviation Week and Space Technology and Flight International was also conducted. These airline industry-based publications were accessed in the Proquest ABI/INFORM and EBSCO Information Sources databases. A search of the SCOPUS and Google Scholar databases was also undertaken in the present study. The key words used in the database searches included "Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways transatlantic joint venture", "synergistic benefits of the Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways transatlantic joint venture ", "joint venture partner airline route networks ", "joint sharing of costs and revenues", "competitive position of the Air France-KLM, Delta Air Lines and Virgin Atlantic Airways joint venture", "airline joint venture route network development", value captured and delivered by the Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways transatlantic joint venture", "evolution of the Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways transatlantic joint venture".

The study used secondary data. The study followed the three principles of data collection as suggested by Yin [78]: the use of multiple sources of case evidence, creation of a database on the subject and the establishment of a chain of evidence.

3.3 Data analysis process

The empirical data collected for the case studies was examined using document analysis.[76, 79] Document analysis is quite frequently used in case studies and focuses on the information and data from formal documents and company records that were gathered in the study.[80, 81, 82] The documents collected for the present study were examined by four key criteria: authenticity, credibility, representativeness and meaning.[83, 84]

Before proceeding with the formal analysis of the documents that were gathered for the study, the context in which the documents were created was determined and the authenticity of the documents was carefully assessed.[83] Authenticity entails an assessment of the gathered documents for their soundness and authorship. According to Scott and Marshall [83], "soundness refers to whether the document is complete and whether it is an original and sound copy". Authorship relates to such issues as collective or institutional authorship. In this study the source of the case study documents was primarily from Air France-KLM, Delta Air Lines and Virgin Atlantic Airways media releases as well as relevant articles published in the leading air transport industry-related magazines: Air Transport World, Airline Business, Aviation Week and Space Technology, and Flight International. The documents collected in the study were all readily available in the public domain. The credibility criterion concerns the accuracy and sincerity of a document.[83, 84, 85] In the present study, the evidence for the case study was corroborated using various kinds of documents that were sourced from various sources, for example, company news releases, articles publishing in the leading air transport industry magazines, and relevant articles published on the Internet.[86]

The representativeness criterion involved an assessment of the availability and survival of the documents that were collected for the study. No major difficulties were experienced in obtaining the documents as all the relevant documents could be easily accessed in the public domain. The fourth criterion, meaning, is a very important aspect of document analysis. Meaning occurs at two levels. The first is the literal understanding of a document, that is, its physical readability, the language used, whether it can be read, and the date of the document. [83] When conducting document analysis in a study, it is important for the researcher(s) to interpret the understanding and the context within which the document was produced. This enables the researcher(s) to subsequently interpret the meaning of the document. The evidence found in the documents collected and used for the present study were all clear and comprehensible.

The document analysis process in the study was undertaken in six distinct phases which followed the recommendations of O'Leary [87]:

- Phase 1: This phase involved planning the types and required documentation and their availability;
- Phase 2: The data collection involved gathering the documents and developing and implementing a scheme for the document management;
- Phase 3: Documents were reviewed to assess their authenticity, credibility and to identify any potential bias;
- Phase 4: The content of the collected documents was interrogated, and the key themes and issues were identified;
- Phase 5: This phase involved the reflection and refinement to identify and difficulties associated with the documents, reviewing sources, as well as exploring the documents content; and
- Phase 6: The analysis of the data was completed in this final phase of the study [87].

The documents gathered for the study covered the period 1989 to 2018, that is, the documents covered the period from the inception of the Air France and Northwest Airlines joint venture which formed the roots of the subsequent transatlantic joint venture between Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways through to the present time of the study.

Following the guidance of Yin [78], all the collected documents were downloaded and stored in a case study database. The documents collected for the study were all in English. Each document was carefully read, and key themes were coded and recorded. This study also followed the recommendation of van Schoor [86], who has noted that in order to avoid bias, documents from different sources should also be carefully analyzed in the study. In addition, triangulation was employed to add discipline to the study. This was achieved by collecting documents from multiple sources. This approach helped verify the themes that were detected in the documents collected in the study. [76, 79]

4. Case Study Results

4.1 The evolution of the Air France-KLM, Delta Air Lines and Virgin Atlantic Airways Joint Venture

The origins of the Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways Joint Venture date back to 1989 when KLM Royal Dutch Airlines ratified a pioneering agreement with United States-based Northwest Airlines.[88] This agreement followed the anti-trust immunity granted to the two airlines by the United States Department of Transportation (DOT) in 1993.[89] This alliance agreement was also facilitated following the signing of an "Open Skies" agreement between the United States and the Netherlands.[90] An "open skies" agreement is a type of air services agreement (ASA) in which the contracting parties exchange freedoms of the air in a liberal and generous manner.[91] Anti-trust immunity means that the two partner airlines were authorized to operate their trans-Atlantic flights as a joint venture in relation to pricing, flight scheduling, product development, and marketing. In August 1997, Northwest Airlines committed itself to a further 13 year "enhanced alliance agreement" with KLM [89]. This alliance was often referred to as the "Wings" Alliance, and this was the airline industry's oldest airline pair alliance.[92]

In 1999, Air France and Delta Air Lines formed the "Sky Team" global alliance.[9, 93] In 2001, Aeromexico, Alitalia, CSA Czech Airlines and Korean Air joined the alliance. Continental Airlines, KLM, and Northwest subsequently joined the alliance in 2004.[9]

As previously noted, Air France acquired KLM in 2004. In 2003, Air France paid €784 million for KLM, through a complex share swap which effectively resulted in the privatization of the French flag carrier. Following its offer to acquire KLM, the French governments shareholding fell to 44%, with other Air France investors holding 37%, with the remaining 19% of the combined group held by KLM shareholders.[94] Air France's takeover of KLM was completed in early May 2004, with approximately 90% of KLM's shareholders giving their approval for the deal.[95] The pan-European vision included a dual-hub philosophy based on Paris Charles de Gaulle and Amsterdam's Schiphol Airports [96].

In October 2006, Air France and Delta Air Lines signed a joint venture agreement that covered the transatlantic services.[97] The 50-50 joint venture shared revenue and cost on the two partners transatlantic operations.[98] The agreement was like the groundbreaking joint venture agreement between KLM and Northwest Airlines that commenced in 1993. Air France and Delta Air Lines predicted that their joint venture would produce around $USD 1.5 billion in annual revenue during the first phase, which covered flights from Delta Air Lines US hubs to London Heathrow Airport, Lyon and Paris, in the second phase of the joint venture agreement, the two partners projected more than $ USD 8 billion in annual revenues [97, 98] In Phase 2, the agreement was extended to include all the partner's transatlantic flights. In addition, the two partners foresaw new routes being launched as part of joint venture agreement, including London Heathrow Airport to Los Angeles.[96] The first phase of the agreement commenced in April 2008 and concluded in March 2010. The second phase of the agreement commenced in April 2010. The joint venture agreement covered all transatlantic flights operated by Air France and Delta Air Lines between Europe and the Mediterranean on one side and the United States, Canada, and Mexico on the other as well as flights between Los Angeles and Tahiti, French Polynesia. [97, 98]

During early 2008, KLM and Northwest Airlines expanded their highly profitable transatlantic joint venture to include three new routes from London Heathrow Airport. The new routes were made possible following the conclusion of the European Union-United States "Open Skies" agreement. Two days prior to the celebration of the 10th anniversary celebrating the tenth anniversary of their joint venture, Northwest Airlines announced plans to launch new services by mid-2008 from London Heathrow Airport to Detroit, Minneapolis, and Seattle using six slots leased from KLM. [99] An airport slot is "most commonly known as a aircraft landing or aircraft take-off right during a specified period of time". [100]

In early 2009, Air France-KLM acquired a 25% shareholding in Alitalia. [101, 102] The investment by Air France-KLM in Alitalia was to be complemented through joint marketing and cooperation on routes, especially between Italy and France and between Italy and the Netherlands. [103]

Air France and Delta Air Lines established a joint venture on October 17, 2007, which was due to be implemented on 1 April 2008. The joint venture included all routes between their hubs, as well services from London-Heathrow Airport. On May 20th, 2009, Air France-KLM and Delta Air Lines formally signed a joint venture agreement involving joint operations and the sharing of revenues and costs on their transatlantic routes. [104]

On October 29, 2009, Delta Air Lines acquired Northwest Airlines in a $USD 2.6 billion merger that created the world's largest airline. An ambitious plan following the takeover was to link the long-established strength of Northwest Airlines throughout Asia with Delta's expanding overseas network, whilst also leveraging the benefits from the transatlantic SkyTeam alliance that included Air France-KLM.. [105]

On July 5th, 2010, Alitalia joined the Air France-KLM Group and Delta Air Lines as a member of the trans-Atlantic joint venture. Launched in April 2009, the Air France-KLM Group and Delta Air Lines multi-party agreement created a single, coordinated network for passengers flying across the Atlantic. The joint venture allowed the partner airlines to share revenues and costs on their trans-Atlantic routes. Through the four-airline joint venture, passengers were offered convenient access to the world's largest trans-Atlantic network. The airlines offered almost 250 flights and approximately 55,000 seats each day. With the addition of Alitalia, the joint venture accounted for approximately 26% of total transatlantic capacity, with annual revenues estimated at more than $USD 10 billion. Alitalia's home base at Rome joined Amsterdam, Atlanta, Detroit, Minneapolis, New York-JFK and Paris-Charles de Gaulle airports as the core hubs of the joint venture. Additional trans-Atlantic services were operated from Cincinnati, Milan Malpensa, Memphis, and Salt Lake City. Wherever traffic rights permitted, the partners offered customers codeshare services between the United States and the European Union. In in many instances the service is beyond the key hubs, creating a single network for seamless airline-to-airline connections between points in North America and the European Union. Governance of the joint venture was to be equally shared between Alitalia, the Air France-KLM Group and Delta Air Lines. Alitalia representatives immediately joined the joint venture's 11 working groups responsible for implementing and managing the agreement in the areas of network, revenue management, sales, product, frequent flyer, advertising/brand, cargo, operations, information technology, communications and finance. Alitalia was also included in all joint venture initiatives, including joint sales contracts, which launched in January 2009. Alitalia's addition to the joint venture became effective on April 1, 2010 as part of a long-term agreement effective until at least March 31, 2022. [106, 107]

As noted earlier, Delta Air Lines purchased Singapore Airlines 49% share-holding in Virgin Atlantic Airways in 2012. Following the acquisition of its stake in Virgin Atlantic Airways, Delta filed with the regulatory authorities for anti-trust immunity on Virgin Atlantic Airways transatlantic routes. The partnership was separate to Delta Air Lines existing transatlantic joint venture partners Air France-KLM, and Alitalia. According to the anti-trust immunity application with the United States Department of Transportation (DOT), Delta and Virgin Atlantic Airways would coordinate with these airlines on traffic flows across the Atlantic. The partners stated that following the granting of immunity approval, the carriers would launch a new service between London Heathrow Airport and Seattle. Seattle was a growing focus city for Delta Air Lines. In addition, the partners would add new services between London and Delta's Salt Lake City hub, as well as additional frequencies between London and Boston, Detroit, and Newark Airports. [108] The United States Department of Transportation (DOT) tentatively approved the alliance between Delta and Virgin Atlantic Airways. Under the joint venture arrangements Delta Air Lines and Virgin Atlantic Airways planned to coordinate on network planning, pricing, sales, as well as other functions through the metal neutral joint venture, which included revenue and profit sharing. [109] In mid-2017, Delta Air Lines, Air France-KLM and Virgin Atlantic Airways sought closer ties and these carriers decided to form a broader and longer term transatlantic joint venture between the airlines. Delta Air Lines purchased a 10% stake in Air France-KLM, and Air France-KLM purchased a 31% stake in Virgin Atlantic. [110, 111] The combined joint venture was designed to strengthen the partner airlines transatlantic route network as the airlines continued to battle for market share with the low-cost carriers (LCCs) [112]. Under a Memorandum of Understanding (MOU) that was signed by Delta Air Lines, Air France-KLM and Virgin Atlantic, the carriers were to apply for the regulatory approval to combine the existing Delta-Virgin Atlantic joint venture and the joint venture between Delta Air Lines, Air France-KLM and Alitalia into a unified joint venture. [110]

On May 15, 2018 Air France-KLM, Delta Airlines and Virgin Atlantic Airways signed definitive agreements that paved the way forward for the airlines expanded transatlantic joint venture. The formal agreement signed between three airlines established the governance as well as the commercial and operational terms of the expanded joint venture. Upon completion of the agreement, Air France-KLM would acquire the 31% stake held by the Virgin Group, valued at £220 million. The Virgin Group still held a 20% stakes and Delta Air Line retained its 49% stake in Virgin Atlantic Airways. [113] In addition, Delta Air Lines and China Eastern Airlines each acquired an 10% shareholding in Air France-KLM. [114, 115] Air France-KLM, Delta and Virgin Atlantic would also coordinate their efforts to secure the appropriate regulatory approvals. [113, 116] The expanded joint venture, with Alitalia included, offered around 300 nonstop transatlantic flights per day as well as convenient flight schedules. [117] An important element of the new joint venture agreement was that it bought Virgin Atlantic Airways into the SkyTeam alliance joint venture fold. The inclusion of Virgin Atlantic Airways allowed Air France-KLM to profit from more nonstop connectivity from London Heathrow and London Gatwick airports to the United States. [118]

The combination of the existing joint ventures of, firstly, Air France-KLM, Delta Air Lines and Alitalia, and secondly, the Delta Air Lines and Virgin Atlantic Airways, within a unified joint venture framework marked the expansion and reinforcement of one of the world airline industry most advanced partnership models. The joint venture will enable the partners to:

- Provide customers with an unrivalled value proposition on transatlantic air routes;
- Drive the capacity growth of the airlines;
- Create an associate partner status which would enable the inclusion of other potential partners;
- Extend a partnership over a 15-year time period [115];
- The new joint venture arrangements will have the most comprehensive route network;
- Competitive fares and frequent flyer benefits;
- Customers are also able to benefit from the co-location of facilities at key hubs to improve connectivity as well as being granted access to each partner's airport lounges (for premium passengers) [113]; and
- Generate significant annual synergies due to a new code share to/from London, sales coordination, the extended partnership, and cost savings. [115]

Uncertainty surrounded Alitalia, which filed for extraordinary administration in early 2017 and was not amongst the partners announcing the enhanced joint venture. [114] Alitalia was dropped from the joint venture pact and was not included in the joint venture application filed by Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways with the United States authorities on 20 July 2018, with the partner airlines citing Alitalia's ongoing restructuring for the move. [119]

4.2 The application of Porter's Five Forces Model to the Air France-KLM, Delta Air Lines and Virgin Atlantic Airways joint venture

The attractiveness of the world air travel market is determined by the five major forces. The rivalry amongst the incumbent competitors (central driving force), the bargaining power of buyers, the bargaining power of suppliers, the threat of new entrants into the industry (limitations of market entry), and the threat of substitute products or services. [67, 68]

4.2.1 Intensity of rivalry among established firms in the transatlantic air travel market

There is extremely intense rivalry present in the airline industry. There are a range of economic characteristics that influence and drive the intensive rivalry within the airline industry:

- Perishable product: the airline product is intangible in nature, which is instantly perishable and cannot be stored. [90] The transportation capacity is only available for a period and disappears once the aircraft departs on its assigned flight. Costs for providing capacity are hence largely sunk costs in the short-term. This produces severe pressure on price discounting. [120] Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways all offer both premium (business) and leisure travel classes on their aircraft. This strategy enables them to capture value from these two discrete market segments.

- Similar products: within a service class, the airline product is homogenous in nature, and thus, the product is highly similar across airlines. [53, 120, 121] The International Air Transport Association [120] notes "that the core transportation service is not differentiated across airlines, at least not within the broad types of airlines (full service network airlines, low-cost airlines)". Furthermore, new product initiatives are rapidly copied by competitors. [120] Virgin Atlantic Airways, for example, has endeavored to differentiate its premium passenger service offering by providing its "upper class" (business) passengers with a chauffeur service – this enhances the airline's value offering.

- Low marginal cost structure: in the airline industry, high fixed costs exist at the individual airline level. [120] In addition, marginal costs for additional passengers are quite low [53], and this reinforces price discounting by airlines. The International Air Transport Association [120], has observed "that the variable costs per aircraft, however, are significant and have increased as jet fuel prices have risen over the past few years". Jet fuel prices are one of the largest costs for Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways.

- Significant exit barriers: in the airline industry, aircraft capacity typically remains in the market, and only disappears in the very long run, even when specific airlines may leave the market. Also, aircraft can be transferred to another geographical market quite easily. Airport infrastructure (boarding gates, airport slots) never fully disappears and can be returned to service at low marginal cost, even if these assets are left idle for some time. In an average year, less than 1% of airlines exit the market. There are a number of barriers that restrict the ability of an airline to reduce overall capacity on specific routes: first, airlines are forced to incur a capital loss if they decide to sell aircraft during an industry downturn; second, the gradual reduction of aircraft capacity in reaction to slumps in both passenger and air cargo demand is complicated by the requirement to retire capacity by aircraft, not by seat; third, use-it-or-lose-it rules and regulations on airport slots creates barriers to exit from air routes; fourth, the full service network carrier (FSNC) business model means that lost traffic from an existing city pair or service can have a flow-on effect on the economics in other parts of the airline's route network; and fifth, reducing capacity in a market by operating smaller aircraft on specific services increases the average cost per ASK [120].

- Capacity: incremental capacity may be required for one of both of two purposes; growth within the existing route network – the aircraft acquisition could be necessary to accommodate traffic growth that has been come from either or both an expanding market or an increased market share; and new capacity may be required to satisfy new missions, for example, the operation of ultra-long haul services [121]. The capacity added by a single aircraft is typically higher than the demand arising from the addition of one new connection.[120] In addition, new airport infrastructure generally becomes available many years after an investment decision has been made.

- Industry growth: the airline industry growth has been rapid but volatile and highly heterogenous across geographies. This volatility has resulted in repeated short periods of profitability, even during times when the average returns have been low. [120]

- Heterogeneity of firms; in individual air travel markets, airlines tend to be in more heterogenous positions. While the market for an airline between two origin-and-destinations (O & Ds) or city pairs may be the core market for an airline that provides direct services, it is often a marginal market for another airline, which is providing the service through a transfer connection at its hub. Between such heterogenous competitors the ability to avoid deep price competition is less likely. The International Air Transport Association [120], have noted that "airlines are exposed to the specific policy context in their home markets". When they compete internationally, they compete against rivals operating under different conditions. This can impact the competitive interaction between the two airlines in ways unrelated to underlying efficiency or value proposition. In addition, airlines often confront different cost structures based on the period they have been in business, and hence, different economic incentives. Over time, labor cost tends to increase and the pressure to expand forces airlines to increase the complexity of their operations [120]. The transatlantic market is served by both full-service network carriers, such as Air France-KLM, Delta Air Lines and Virgin Atlantic and the low-cost carriers, for example, Norwegian Air Shuttle or WOW Air. Norwegian Air Shuttle or WOW Air primarily compete based on price, offering low fares, which are offset by ancillary revenues, for instance, baggage fees. In contrast, American Airlines, British Airways, Lufthansa, SWISS International Airlines, and United Airlines, the key competitors to Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways on the transatlantic, all offer customers connections via their respective hub airports. Furthermore, these airlines will have differing cost bases to that of Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways.

Overall the intensity of rivalry amongst incumbents competing in the airline industry is high.

4.2.2 Risk of market entry by potential competitors

The threat of new entrants in the airline industry is high. Over the past four decades, 1,300 new airlines were established, on average around 30 per rear (excluding those operating non-Western built jet aircraft). However, the entry of new airlines into the industry has been quite cyclical. Nonetheless, airlines enter the market quite regularly, principally through existing airlines expanding their services to new markets (carrier-within-carrier strategy). The simple threat of entry by a potential competitor to the industry, appears to have limited impact. Prices reduce following entry, but not in anticipation nor to deter entry. Entry barriers do play some role for the new entrants but are viewed as being very low for incumbent airlines [120].

The barriers to entry are high due to the following factors:

- Economies of scale are present on the demand side, that is, it is easier for airlines to generate demand with a strong brand, an extensive distribution presence, and a large route offering many connections. [120] Furthermore, an incumbent's hub-and-spoke operations increase their effectiveness by being undertaken on a substantial scale. Thus, it can very difficult for small new entrants to break in to the industry. In point-to-point (P2P) air travel markets, no such protection for the incumbents is in existence. [90]

- Supply-side economies of scale are limited should an airline grow beyond a level of approximately 50 aircraft. This creates some disadvantages for new entrants but not for incumbent carriers looking to expand into new markets. Because the addition of new capacity is lumpy in nature, airlines operating in adjacent geographies confront the lowest entry barriers. This is because they can serve a new destination through spare capacity on existing aircraft. [120]

- Access to product distribution channels is quite easy for new entrants. Global distribution systems (GDSs) and the internet now enable new airlines to list and make their flights available for sale through a larger number of aggregator websites and travel agencies. [120, 122] Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways services are readily available through aggregator websites, such as, Expedia.

- Legacy rights on airport slots provide some advantages. [120] In cases where airport slots continue to be awarded under the "Grand Father" rights principle, it will be most difficult for new entrants to obtain access to attractively-timed slots at congested airports. [90] However, there is secondary trading of slots at congested airports [123], and hence, there are no advantages until slot capacity is reached. If infrastructure does not grow in the accordance with travel volumes, however, it can become an increasing bottleneck restricting entry at the most highly frequented hub airports. [120]

- A considerable amount of capital is required to purchase and acquire new aircraft. [120] Prior to the global financial crisis (GFC), however, external finance was widely available from several sources including investors, banks, and aircraft manufacturers. In addition, the growing prominence of the aircraft leasing firms reduces capital requirements. However, it remains quite difficult for new entrants to satisfy the operational cash flow requirements through persistent industry downturns. [120]

- In the airline industry, customer switching costs are low. [120, 124]

- Government policies to defend the position of the existing national flag carrier were historically quite important but, in most markets, now are no longer important. The situation, however, is different in some emerging markets, where entry to the industry does occur but only in ways that are sanctioned by government [120].

- Staff resources – particularly pilots and aircraft technicians – are also important. During downturns or recessionary periods many trained people will have the misfortune of being made redundant, and thus, may be well prepared to secure new roles at relatively low salaries and wages in order to secure their employment. [90]

Overall the threats of new entrants into the airline industry is high.

4.2.3 Bargaining power of buyers

According to the International Air Transport Association [120], "the bargaining power of airline customers is high and rising". Buyers are primarily comprised of individuals and corporations [124]. The purchasers of corporate travel, including government agencies and corporate travel agencies who purchase airline tickets in bulk, possess substantial bargaining power and use their significant bargaining power and purchasing leverage to obtain lower prices. Individual passengers do not possess such leverage, but they do benefit from full information, lower switching costs, often have a large variety of airlines to choose from their air travel requirements, and limited differentiation. Specifically, with the growth in the size of the Internet, individuals can obtain full pricing information by searching the websites of airlines and the online travel firms, for example, Expedia. Whilst, airlines can utilize frequent flyer programs and advertising to promote switching costs and differentiation, customers for the most part confront very low switching costs and have the option to choose amongst many airlines that essentially provide the same service. [124] Customer loyalty to specific airlines may be relatively low, but frequent flyers often react to the incentives offered in customer-loyalty programs. [120] For instance, some airlines have a frequent flyer program that rewards customers who have flown a specified number of miles. [125] Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways offer comprehensive frequent flyer programs.

Customer buying power is driven by a set of underlying factors:

- Aggregator websites: Aggregator websites have consolidated consumers' purchasing power. Websites focus on price comparison and, as previously noted, increases the transparency of prices across airlines. The global distribution systems (GDSs) have made it quite easy for new aggregator websites to enter the market [120]. Air France-KLM, Delta Air Lines and Virgin Atlantic use a GDS as part of their product/service offering distribution system.

- Travel agents: travel agents now often represent the entire demand for large corporations, with significant power to move demand across airlines. Notwithstanding, travel agents need to comply with corporate travel policies that have become more price oriented [120]. Air France-KLM, Delta Airlines, and Virgin Atlantic Airways also utilize travel agents as a key part of their product/service offering distribution system.

- Business travelers: flight frequency is a key differentiator between airlines of a similar type on a given service. [90, 120, 121] Airlines have endeavored to create switching costs, but these are primarily meaningful for business travelers. Loyalty programs create switching costs through the expiration and inflation of frequent flyer miles (or points) that creates incentives for the member(s) to use miles/points to remain loyal to a given airline/alliance but reduce their value. [120] Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways each have a frequent flyer scheme that has been carefully designed to reward customer loyalty. The partner airlines place a very high focus on the premium air travel market segment, and thus, attempt to retain the premium passengers through the frequent flyer programs.

- Leisure travelers: as noted, individual leisure travelers almost entirely select an airline based on price, and often have a low willingness to pay (WTP) for shorter travel time or airline-specific services. [120] Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways have a leisure travel product, which is stimulated and optimized through pricing initiatives, frequent flyer benefits, and marketing and advertising campaigns.

Overall the level of bargaining power of buyers in the airline industry is regarded as high.

4.2.4 Bargaining power of suppliers

In the airline industry, the bargaining power of suppliers is high for some critical inputs. As a group, the suppliers capture higher returns on capital (ROC) than the airlines themselves.

- Airframe and aircraft engine manufacturers: On a global basis, airframe and aircraft engine manufacturing is highly concentrated, and thus, these suppliers possess high bargaining power. The level of switching costs between airframes and aircraft engines is moderate. For airlines, there are some fixed costs associated with the introduction of a new aircraft/engine type to its fleet. For new aircraft, the time lag between the placement of the order and production creates some switching barriers. The airframe manufacturers have important, and significant, alternative markets, particularly so for the market for defense equipment [120]. Furthermore, the aircraft manufacturers enjoy considerable bargaining power as there are many airlines but only two major aircraft manufacturer's – Airbus and Boeing Commercial Airplanes- and two regional jet manufacturers – Bombardier and Embraer. [124] Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways have long-standing and valued relationships with Airbus and Boeing, which helps mitigates possible supplier power.

- Labor: airlines are highly dependent upon their skilled workforce, particularly pilots and technical staff. The full-service network airlines (FSNCs) are especially vulnerable to disruptions at their hub airports. This vulnerability raises the power of unions at these locations. For other services, like station/ground handling services, general administration, outsourcing is an alternative that has been widely used in the industry. In the airline industry, unions often tend to be local monopolies. Furthermore, within airlines there are typically different unions for different types of personnel, with each having the ability to disrupt the airline's operations. In the airline industry, there are substantial cost differences between new entrants, airlines that are in bankruptcy protection, and unionized incumbents, where high wages and salaries are paid to employees that possess specialized skills, such as pilots. Airline employees remain powerful where labor regulations and the airline's hub-and-spoke route network system provides them with critical leverage. In addition, the International Air Transport Association [120], notes that "because union power often rises as companies mature, the nature of labor relations also erodes industry structure by encouraging entry (and bankruptcy) to avoid union-related costs, even if there is no productivity advantage".

- Airports: many local airports are monopolies [126, 127] that do not confront significant competition from nearby secondary airports. [120] There is limited entry by new airports, consequently, the main restraint on the exploitation of market power is through economic regulation or, to a lesser degree, competition policy. The pricing power that the local monopoly provides to an airport is significantly dependent upon the potential traffic to which it provides access [120]. Airport switching costs are high [128], particularly for the full-service network carriers (FSNCs) that are focused on providing connections for their customers. [120] The Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways route network is based on the hub-and-spoke route network design, where peripheral spoke cities are linked to the respective hub airports. Delta Air Lines operates multiple hubs, with its primary hub being Atlanta. The primary hub for Air France is Paris Charles de Gaulle, whilst Virgin Atlantic's key hubs are London Heathrow and London Gatwick Airports. Due their scales and long historical business relationships, these airlines appear to enjoy a close and productive relationship with the airport operators.

- Airport ground handling and catering services: In general, airport operations include aircraft ground handling/baggage handling and passenger terminal operations. Ground handling can be divided into terminal area and airside area operations. The main duty of the airport terminal area is passenger handling; the main duty of airside is the ramp service of an aircraft. [128] In the airline industry, ground handling agents often operate as local monopolies or oligopolies. Airlines are often the dominant or only buyers of ground handling services provided by these firms. The ground handling agents' services are typically homogenous and there are many potential entrants outside of the industry with the requisite skills. The switching costs for an airline seeking to change (or consider) a ground handling agents services are small. The primary barrier to market entry is regulation that provides ground handling agents with local monopoly rights. Many airlines perform their own ground handling but the level of outsourcing of these functions to independent handlers is anticipated to rise significantly. A number of the smaller ground handling agents belong to larger international groups. The International Air Transport Association [120] notes that "ground handling/catering providers have limited bargaining power, largely because airlines have the option of providing the service in-house".

- Sources of financing: firms specializing in debt financing have many investment opportunities and can demand finance terms that deliver solid returns considering the risks associated with the airline industry. The providers of equity capital, often critical to survival during periods of distress, can push for attractive conditions. Considering the low overall market capitalization of the airline industry, investors view equity positions in airlines as being high risk. This is despite the high-return opportunities [120].

- Air traffic control: the suppliers of air traffic control (ATC) and airport services often have monopoly power, and in such cases, airlines are required to pay whatever ATC and airport service charges are levied upon them. [90]

Overall the level of bargaining power of suppliers in the airline industry is regarded as high.

4.2.5 Threat of substitutes

The International Air Transport Association [120], have observed that "the most powerful substitute to aircraft travel is not an alternative mode of transport, but the decision not to travel" at all. This is especially the case for leisure travelers that can allocate their discretionary expenditure on other activities or purchases [120].

The threat to the airline industry from other substitutes has in the past played a moderate role, but in recent times has started to become more significant in some market segments. The substitution is dependent upon the relative cost/benefit profile of other transport modes and communication mediums vis-à-vis air transportation:

- Aircraft are still the fastest mode of transport and the real cost of transport has declined significantly over the past few decades or so. However, increased security measures have influenced passenger processing times, and this has had an impact on the overall attractiveness of scheduled airline transport relative to substitute transport modes.

- The significant decline in the real cost of air travel has increased the advantage of air travel versus substitutes, and further technological improvements are most likely to be made [120].

- Airlines can also confront competition from surface-based transport modes. [90] Thus, the development of high-speed rail networks [129, 130], and the congestion and environmental problems confronted by the air transport industry suggest the railways could have a greater role in working with the airlines to provide an integrated transport service for medium-distance journeys (up to 800 km) [129]. Unlike airlines, railways can provide city-centre to city-centre travel, and the use of rail has been shown to severely influence the business travel market once city-centre to city-centre rail journey times can be brought down to less than three hours. [90]

In addition, a potential substitute threat is that of electronic methods of communication on the market for business travel. Video-conferencing, teleconferencing, and electronic mail (e-mail) all have the potential to reduce the amount of business travel, and their use may result in business travelers travelling less, whilst also satisfying their requirements for effective communication. [90]

Overall the threat of substitute products or services in the airline industry is medium to high.

4.3 The strategic benefits for Air France-KLM, Delta Air Lines and Virgin Atlantic Airways from their joint venture

As noted earlier, joint ventures are formed by firms for a variety of strategic reasons. [7, 9] Table 1 summarizes the strategic benefits that the joint venture has provided to Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways to date. As can be observed in Table 1, the transatlantic joint venture is delivering a range of strategic benefits to the partner airlines. These include synergistic benefits, the joint sharing of revenue, coordination of flight schedules to optimize passenger loads and passenger connectivity, enhancing the partner airline's position in the market, joint sharing of costs, and the shared use of knowledge, competencies, and resources.

As previously noted, airlines are viewing joint ventures as an ideal strategic option to better compete in the global airline industry, and particularly, in the transatlantic air travel market. Examples of other transatlantic joint ventures are the British Airways, Iberia, American Airlines and Finnair joint venture, and the Lufthansa, Austrian Airlines, Swiss, Brussels Airlines, United Airlines, and Air Canada joint venture. [131] These joint ventures have primarily focused on joint marketing, optimized flight schedules, enhanced route networks, and code-sharing on one another's aircraft. In addition to being able to combine passenger reservations, ticketing, aircraft maintenance, and financial reporting, partners have been able to undertake joint route network planning, coordinate capacity and pricing, as well as pooling revenues [9].

To date, the joint transatlantic venture between Air France-KLM, Delta Air Lines, and Virgin Atlantic appears to have been very successful and is underpinned by long-standing business relationships between the joint venture partner airlines. Table 1 has shown that the joint venture has provided the partners with a range of strategic benefits and has enabled the joint venture partners to compete very effectively in both the leisure and premium transatlantic air travel markets. As noted earlier, airlines typically segregate the air travel market into both premium (business) and leisure class travelers. [53, 90, 132] The partners bring a range of complementary resources and distinctive competencies to the joint venture, and they appear to have very clearly identified objectives and performance criteria. There has been a long period of favorable cooperation between the partner airlines. At the time of the present study, Air France-KLM Delta Air Lines, and Virgin Atlantic Airways were awaiting the final regulatory approvals for the equity investments being made between the partner airlines. There has been a very long history of favorable past cooperation in the transatlantic market between the partners, but especially so between Air France-KLM and Delta Air Lines. The transatlantic joint venture has provided the partners with arrange of synergistic benefits and increased efficiency measures, for example, the colocation of facilities, enabling premium passengers to share the partner airline airport lounges. The partnership has also provided customers, either premium or leisure, with a vast range of travel offerings arising from the shared route networks between the partner airlines.

The transatlantic air travel market dynamics are changing due to the rise of the low-cost airlines, such as Norwegian Air Shuttle or WOW Air, who have entered the market and who basically offer a low cost, no frills service. At the time of the present study, Air France had launched its own low-cost carrier titled "Joon" to counteract the growing threat of the low-cost carriers. [133]

The joint venture partners deliver value to their customers through a very high level of flight connectivity via their multiple and gateway hubs thereby facilitating their value proposition. The airlines also deliver and capture value through their product offerings for the key market segments; the product offerings focus on both the premium (business) and leisure travel market segments requirements. Also, their premium frequent flyers can earn mileage or points on the partner's services and, whilst awaiting their flights, have access to the various partner's lounges (premium passengers) the latter adds to the overall passenger experience.

5. Conclusion

This paper has examined, for the first time, the transatlantic passenger joint venture between Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways. This is the one of the world's largest joint ventures. Despite the increasing trend in joint ventures in the world airline industry, there has been relatively limited research undertaken on such initiatives. Thus, this study adds some valuable insights to the literature. The study was underpinned by a case study protocol and research

Table 1. The Air France-KLM, Delta Air Lines, Virgin Atlantic Airways Strategic Joint Venture Benefits

Joint Venture Benefit	**Air France-KLM, Delta Air Lines, Virgin Atlantic Airways Joint Venture**
Sharing of risk	By combining their route networks and coordinating their sales, the joint venture partners are optimizing the carriage of passengers on their respective services. At the same time, they are reducing the risk of unavailed seats, which enables the partners to optimize their passenger load factors1.
Synergistic benefits	Higher passenger load factors, enhanced market presence, leveraging knowledge and market expertise, sharing of lounge facilities, and greater passenger volumes
Joint sharing of costs	The joint venture partners envisage that cost savings will arise as a result of the joint venture arrangements.
Joint sharing of revenues	The partners have agreed to pool the revenues from the services offered to their customers
Accessing new markets	The combined joint venture was designed to strengthen the partner airlines transatlantic route network. The combination of the partner's networks has opened new origin-and-destinations (O & Ds) or city pairs.
Participate in the industry's evolution	The Transatlantic market between North America and Europe is still one the largest intercontinental markets in the world [137]. The strategic joint venture has enhanced the partner's position in this very important air travel market.
Enhancing the competitive position in a market	The joint venture is underpinned by a very high level of flight connectivity via multiple hubs and gateway cities thus enhancing their customer value proposition for both leisure and premium class passengers.
Overcome ownership restrictions	This was not applicable as the strategic joint venture is managed directly by the partners.
Take advantage of offered capacity	The partners can achieve higher passenger load factors from the greater connectivity of the route networks and from the number of new and existing origin-and-destinations (O & Ds) or city pairs.
Shared use of knowledge, competencies, and resources	The partners offer complementary technical skills, in-depth market knowledge, and resources and there is a very high level of cooperation between the partners
Joint procurement of fuel and amenities	No details of this were available at the time of the study
Capturing competitive advantage	Greater network opportunities and capacity have enabled the airlines to attain an enlarged market presence, higher load-factors, and increased passenger volumes.

Note (1) Passenger load factors are the number of fare-paying passengers as a proportion of the total number of seats on the aircraft [134].

framework that followed the recommendations of Yin [81] and applied Porter's Five Forces Model for the first time in assessing the Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways transatlantic passenger joint venture. The case study has highlighted the strategic benefits that the joint venture can offer to the partner airlines. The study found that the Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways transatlantic joint venture, has enabled the partners to deliver and capture significant value. A limitation of the current study was that key business performance metrics, such as revenue, revenue passenger kilometres performed (RPKs), and passenger load factors were not available in the public domain. Should these data become available then a future study could compare the business performance of Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways transatlantic joint venture vis-à-vis its competitors.

In conclusion, the Air France-KLM, Delta Air Lines, and Virgin Atlantic Airways transatlantic joint venture has evolved over time, with the two original partners Air France and Delta Air Lines adding new partners – KLM Royal Dutch Airlines, Alitalia, and Virgin Atlantic Airways. In recent times, Alitalia has ceased to be a member of the joint venture. The joint venture has enhanced the partner airlines competitive position in the transatlantic air travel market. The partners offer passengers the choice of a highly substantial number of origins-and-destinations (O & Ds) or city pairs throughout the United States, Europe, and the United Kingdom. This enables them to deliver and capture value. The airlines have developed major hubs, which enhance and optimizes the possible service offering and flight connectivity, and thus, enhances the value proposition that the airlines are able to offer to their customers.

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