

Factors affecting airline decision to join alliance: evidence of global full-service carriers (FSCs)



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This paper illustrates the determinants of airlines' decision to join global alliances. The author adopted various models and compared a variety of literature reviews to find out supporting ideas of the advantages of forming cooperative alliances. The result shows that airlines with several passengers' volumes and full-service airlines lead to the participation between airlines with five beneficial emphases – reduction of utility cost, driving growth opportunities through globalization, strengthening market position, improvement of service quality, and enhancing passengers' loyalty. These all present competitive advantages compared to non-airline alliances. Most collaborations have been joined by international airlines, however, some airline alliances are operated regionally as non-full members. Also, the key success of airline alliances would be searching. Therefore, this study offers a concise approach for an airline seeking strategies to improve efficiency conduct to sustainability.

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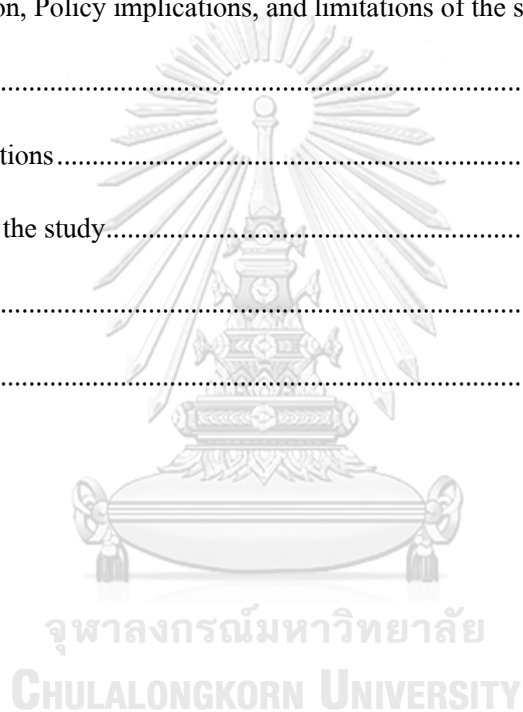
Thikhamporn Benyaapikul



## TABLE OF CONTENTS

|  | <b>Page</b> |
|--|-------------|
| ABSTRACT (THAI).....   | iii         |
| ABSTRACT (ENGLISH).....  | iv          |
| ACKNOWLEDGEMENTS.....  | v           |
| TABLE OF CONTENTS.....   | vi          |
| Chapter I: Introduction.....   | 1           |
| 1.1 Background of the study.....   | 1           |
| 1.2 Purpose of the study.....  | 5           |
| 1.3 Research objectives.....   | 6           |
| 1.3.1 Identify airline alliances in the business area:.....                                  | 6           |
| 1.3.2 Determine the factor influences airline to join alliance successfully:.....            | 6           |
| Chapter II: Literature Review.....   | 6           |
| 2.1 History of airline alliances.....  | 6           |
| 2.2 Global Airline Alliances.....  | 8           |
| 2.2.1 Star Alliance.....   | 9           |
| 2.2.2 SkyTeam Alliance.....  | 12          |
| 2.2.3 OneWorld Alliance.....   | 14          |
| 2.3 Airline alliances and Strategic alliances-factors influence the operational success..... | 15          |
| 2.3.1 Details of Airline alliances and Strategic alliances.....                              | 15          |
| 2.3.2 Importance of Airline Alliances.....   | 17          |
| 2.3.3 Key operational success of airline alliance.....                                       | 19          |
| Chapter III: Empirical Study.....  | 19          |

|  |    |
|--|----|
| 3.1 Theoretical.....   | 19 |
| 3.2 Data .....   | 22 |
| 3.3 Empirical model.....   | 22 |
| Chapter IV: Empirical Results .....  | 25 |
| 4.1 Descriptive Results.....   | 25 |
| 4.2 Regression Results .....   | 28 |
| Chapter V: Conclusion, Policy implications, and limitations of the study ..... | 31 |
| 5.1 Conclusion.....  | 31 |
| 5.2 Policy implications.....   | 32 |
| 5.3 Limitations of the study.....  | 33 |
| REFERENCES.....  | 34 |
| VITA.....  | 40 |





# Chapter I: Introduction

Nowadays, only one of transportation that could transfer people across the world to meet is international airline transport, and this business became full marketing arrangement. An airline alliance is one of their marketing strategies that could benefit to expand its network, resources, and reduce the cost of operation to be stronger in competitiveness. The alliance of airline became the important role in air transport, which relatively through the collaboration of business agreements, such as price and inventory sharing, schedule coordination, and airport facilities. By the following elements, an airline in alliance's network is able to provide flights at the large number of cities under price competitive to others (Brueckner, 2013).

The competitiveness and marketing strategies of alliances is playing the key roles to the global airline transport business. Each alliance able to make the majority airline covered through the large network, combined, and extended to reach almost the world (Lin, 2013). If only airline itself, it could reach just only half percentage of the world air traffic, but with alliance joined, it can be quote and share the air tickets smoothly. From the ICAO sixth meeting (2013) identify that more than 80 percent of air traffic across the Atlantic and the Pacific is covered by three main alliances: Star Alliance, OneWorld, and SkyTeam.

In this section, the topic of the study would be introduced which are the factors that could be determining and leading airlines' decision to collaborate with alliances, as well as the benefit from joined the alliances to an airline and passenger.

## 1.1 Background of the study

An airline decided to conjoin alliances, determining to involve their decision, and conducted to achieve the success of global airline alliances. Various airlines are successful in their businesses by operating strategic management and marketing. Shaw

(2011) stated that the corporate strategies of each airline are the key point to establish profitability, effectiveness, and sustainability to overcome another competitor in the same industry. When it comes to the changes of customer behavior or business trend/circle, they have been already preparing the tactics to handle every situation. Nevertheless, the EU-U.S. department of transportation (2010) stated that some airlines try to figure it out later which make them laggard in the airline business because non-allied airlines encounter the difficulty of accessing information by themselves. Moreover, delayed information receiving of airline market changes leads to a vulnerable ability to changes its strategy.

Airline industry has high competitiveness and complexity moreover carriers whose strategy is practical could survive and become successful. One of the effective strategies is joining a global alliance. Alliance is collaborating to seek competitive advantages, network, globalization, coordination, and business opportunity together among airline members (Crail and Lupini, 2021). There are top three global airline alliance groups which are star alliance, one world, and sky team which market share engulfs half of the global airline alliances. The benefit is the reduction of operating costs and expansion of business networks persuade airlines' collaboration. Gaggero and David (2012) stated that airline alliances are introduced in the 1990s. Moreover, the progression of alliances attracts worldwide attention for recently last five to ten years apart.

The decided of joining an alliance effects to fares which are depending on the level to access the information or types of alliances. Kleymann and Seristö (2004) showed that there are nine diversity of airline alliances' agreement which are cost-sharing, assets pool, pro-rate agreement, code-sharing, feeder, market alliance, joint ventures, equity stakes, and integrated feeder. However, the fares and level to access strategic operation are depending on the agreement.

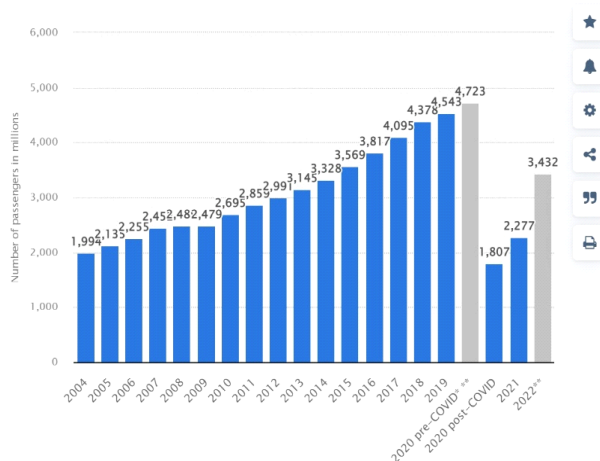
Furthermore, Smyth and Pearce (2006) stated that airline especially airline networking is significant in expanding wider economic growth in domestic and international approaches. For example, IATA (2021) shows that the connectivity between cities of passengers' flight leads the flow of selling goods and enabling a flow of technologies including an ideas among the airlines through networks. The result of Smyth and Pearce (2006) studied that airline networks create a capability to serve various destinations, access wider customer markets, access to cost efficiency, allow airline networks to get efficient techniques in operation, and receive information and knowledge oversea among members.

Additionally, airline traveling plays an important role nowadays because of convenience which leads the number of passengers is continuously increasing over time to time as figure 1 below. IATA (2021) stated, at present, people traveled by international air travel around 4.5 billion people each year for connect international flights from region to region. Moreover, from 2004 to 2021, the flight number, measured in million dollars, consistently enhanced each year as shown in figure 1. Otherwise, due to the pandemic, the year 2020 to present will not state in the report because it was not a normal situation and affected all over the world's air traffic situation, resulted a vary to the data.

Lastly, even though high competitiveness of business, several numbers of new airlines start-up are introduced each year (Rains, 2021). However, most of them are low-cost airlines which are barely seen in forming alliances due to short routing itself. Also, it cannot generate the comparison to full-service airlines because of different products. Full-service airlines infrequently enter the market due to business operations are requiring an expensive cost, a high number of professional employees needed, require technology advancement in operation, and not easily forming. Nevertheless,

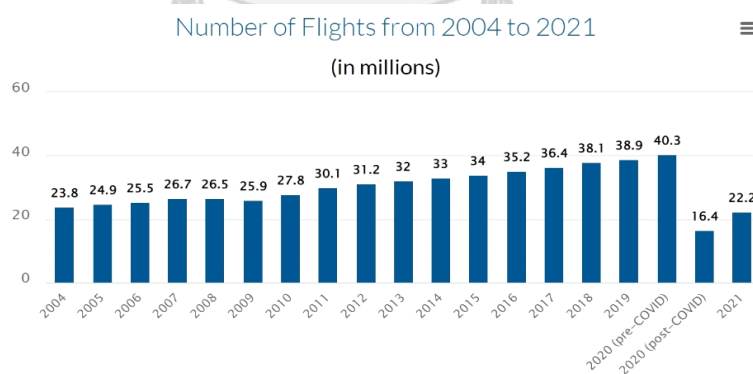
the world’s full-service airlines continuously join alliances grouping to gain competitive advantages in their kinds.

**Figure 1:** Number of passengers from 2004 to 2021 (in million)



Source: Statista (2022)

**Figure 2:** Number of Flights from 2004 to 2021 (in million)



Source: IATA 2021

Designed by FinancesOnline

Source: IATA (2020)

## 1.2 Purpose of the study

The study conducts under the secondary research method of combination and comparative literature reviews of airlines' strategic alliances which lead to the diagnosis process of airlines to adjudicate on being allied or non-allied. Additionally, this study purposes to deliver an expansion regarding the knowledge about the airline industry and the benefits of cooperative between airlines on passenger welfare and airline business. The target is to notify the explanation of airlines towards the environment, demand, and competitive market, also to push them forward, historical, and modern airline alliances through the development of global alliances and strategic improvement over the airline business.

The aim is determining on airline strategic through alliances globally, which develop an individual study on which factors could drive an airline to join alliance sustainability and lend to the successful in business. As a result of the study, it would transfer an obvious understanding of business collaboration through airline alliance as a sample.

Regarding, I, familiar with airline industries in Thailand, am necessary to study deeply details of airline collaboration which can benefits to the accessibility of understanding the workload at the present time. Hence, the advancement of working positions needs to profoundly know the background of the airline industry for extending workload to generate higher revenues.

### 1.3 Research objectives

#### 1.3.1 Identify airline alliances in the business area:

The objective is to review the lists of top global airline alliances along with the sort of origin of alliances grouping, including leading airline in each three main alliances.

#### 1.3.2 Determine the factor influences airline to join alliance successfully:

In this part, the objective is to discuss and identify the significant of airline indicators which could support airline to be networking globally.

## Chapter II: Literature Review

### 2.1 History of airline alliances

Hayward (2020) shows that airline cooperation was first introduced around the 1930s-1940s as a small scale of alliances between Pan American World Airways (Pan Am) and Panair do Brasil (Panair) to share routes among airlines. These two airlines are relevant because Pan Am is the stakeholder of Panair until the 1940s. In the 1960s, Panair decided to ally with Aerolineas Argentinas and Lufthansa to deal with the industry's competition. Over 40 years of operation, Panair do Brasil, one of the largest Latin American airlines, decided to terminate out of the airline business in 1965. Another case from the studied of Hayward (2020), in 1989, Northwest Airlines and KLM are the world's second allies to proceed with code-sharing, infinite landing rights, and sharing customer loyalty programs. Both airlines were able to share their resources under the obligation, beyond that, was not required. In addition, they were not expanding cooperatively with other airlines.

Lin (2013) said that the development of airline alliances had been forming in 1997, significantly, under the name of the Star Alliance. The Star Alliance could be counted as the first formally global airline alliance by collaborating five global airlines which are United Airlines, Air Canada, Scandinavian Airlines, Lufthansa, and Thai Airways. This alliance assembles driving airlines into a single network to provide new services' features to international passengers. Consequently, the logo Star Alliance represents five stars of five founding airlines. Furthermore, the second global airline alliance called the Oneworld alliance established in 1999 along with five members which are American Airlines, British Airways, Canadian Airlines, Cathay Pacific, and Qantas. The third global alliance grouping is SkyTeam, introduced in 2000 under four airline networks assembled which are Delta Air Lines, Aeroméxico, Air France, and Korean Air.

**Picture 1:** Three mains airline alliance logo.



**Source:** Future Travel Experience website (March, 2020)

The aims of forming airline collaborations were providing benefits to passengers as a priority and corporation business among airlines to drive sustainability. From the studied of Dresner and Windle (1996) said that joined alliance and code-sharing agreements had small benefit to an airline in first stage while it could profitability in term of revenue incremental to both airline itself and alliance partner. Moreover, and the most important, the benefit is totally appeared to the passengers.

Furthermore, the studied of Hu, Caldentey, and Vulcano (2013) through game-theoretic approach on codeshare revenue by prorating and independent inventory control systems to maximize their own expected revenues. The research found that prorated system from code-sharing agreement significantly generate higher revenue and greater network expanding to an airline. However, Weber (2005) indicated that air travelers would appreciate with offering convenience at airport facilities greater than network expanding.

Nevertheless, each airline's revenue and profit are not required to share with alliance groupings, but airlines must be faced with additional costs and marketing concerns such as alliance-specific investment, for example, reservation system welding or airport facilities moving (Lin, 2013).

To conclude, airline alliances are beneficially to both airlines and passengers. The airlines could gain more traffics and revenue by offering more destinations and number of flights, together with costs and prices sharing to meet the competitiveness and business protection among the members. For passengers, they able to consume the frequent flyers benefits as a customer sharing loyalty program, check-through baggage between member airlines, easier to make ticket reservation, more comfortable on flights finding due to the various destinations offering, and even feel pleasantly from brand symbolism of alliances (Lin, 2013).

## **2.2 Global Airline Alliances**

There are many alliance groupings around the world, but top market shares could be conducted into three main alliances, which approach approximately 53.4 percent of the world's scheduled traffic, measured by passenger traffics as shown in table1. Plus, from the research of Sathapongpakdee (2021) reported, the high-pressure



completion of the air travel industry is continuously increasing due to post pandemic situation that steady reopening of national borders and ease of travel restrictions which demand for passengers to travel again. However, airline's heavily on financial crisis from the pandemic will continually risk of force out of business.

**Table1:** Airline Strategic Alliance Group Facts

| Alliance Name        | Membership      | Year founded | Passenger per year | No. of destination | No. of employees | Fleet size | Revenue (Billion \$US) | Market Share |
|----------------------|-----------------|--------------|--------------------|--------------------|------------------|------------|------------------------|--------------|
| <b>Star Alliance</b> | 26 full members | 1997         | 1,739 million      | 1,300 airports     | 431,500          | 5,013      | 213.2                  | 21.7%        |
| <b>SkyTeam</b>       | 19 full members | 2000         | 676 million        | 1,036 airports     | 395,000          | 3,054      | 152.9                  | 16.1%        |
| <b>OneWorld</b>      | 13 full members | 1999         | 535 million        | 1,000 airports     | 350,000          | 3,500      | 142.4                  | 15.6%        |

Note: The table has been adapted from Star Alliance, One World, Sky team official website (Star Alliance, 2019; One World, 2019; Sky team, 2019)

### 2.2.1 Star Alliance

As mentioned above, Star Alliance is one of the largest and oldest alliance that reach a maximum number of airline members over other alliance groupings. The Star Alliance originated of forming an alliance group that has a various number of members and generates the highest revenue, including market share among alliances. As the table 1 shows that most of passengers chose to fly with Star Alliance more than other alliances due to gigantic number of destination and flag carriers' hubs, more than thousands million passengers per year. It provides a reward program to collect air mileage within alliance that almost passengers around the world currently join the Star

Alliance loyalty program. From the study of Debora (2012) investigated that Star Alliance formed due to the strict regulations in several countries that limit foreign ownership and the ability limitation to access new market at minimum investment. Also, the reason of Star Alliance could gain more members, mainly because of increase collaboration in several areas. Once joined alliance, member is rarely to leave, only leave alliance when that airline had merged or bankrupt such as TACA Airlines joined Star Alliance in 2012 and exited the alliance in 2013 because of merged with Avianca in 2013 (Star Alliance history chart, 2021).

Their business is global gigantically; it can offer passengers almost two hundred countries served with is covered most of destinations in the world. Nowadays, Star Alliance is still the first who reach the highest world's airline alliance market share of 21.7 percentages in total (Star Alliance, 2019).

**Table2.2.1:** Star Alliance Member Airlines, logo, year joined alliances, and Country of Origin.

| No. | Member Airlines | Logo  | Year joined | Country of Origin |
|-----|-----------------|---|-------------|-------------------|
| 1.  | Aegean Airlines |  | June 2010   | Greece            |
| 2.  | Air Canada      |  | May 1997    | Canada            |
| 3.  | Air China       |  | Dec 2007    | China             |
| 4.  | Air India       |  | July 2014   | India             |
| 5.  | Air New Zealand |  | March 1999  | New Zealand       |
| 6.  | ANA             |  | Oct 1999    | Japan             |
| 7.  | Asiana Airlines |  | March 2003  | South Korea       |

|     |                       |   |            |                |
|-----|-----------------------|---|------------|----------------|
| 8.  | Austrian Airlines     |    | March 2000 | Europe         |
| 9.  | Avianca               |    | June 2012  | Latin American |
| 10. | Brussels Airlines     |    | Dec 2009   | Europe         |
| 11. | Copa Airlines         |    | June 2012  | Latin American |
| 12. | Croatia Airlines      |    | Dec 2004   | Croatia        |
| 13. | EGYPTAIR              |    | July 2008  | Egypt          |
| 14. | Ethiopian Airlines    |    | Dec 2011   | Ethiopia       |
| 15. | EVA Air               |  | June 2013  | Taiwan         |
| 16. | LOT                   |  | Oct 2003   | Europe         |
| 17. | Lufthansa             |  | May 1997   | Europe         |
| 18. | SAS                   |  | May 1997   | Scandinavia    |
| 19. | Shenzhen Airlines     |  | Nov 2012   | China          |
| 20. | Singapore Airlines    |  | April 2000 | Singapore      |
| 21. | South African Airways |  | April 2006 | Africa         |
| 22. | Swiss                 |  | April 2006 | Switzerland    |
| 23. | TAP                   |  | March 2005 | Portugal       |
| 24. | Thai Airways          |  | May 1997   | Thailand       |

|     |                  |   |            |         |
|-----|------------------|---|------------|---------|
| 25. | Turkish Airlines |  | April 2018 | Turkish |
| 26. | United           |  | May 1997   | America |

**Sources:** Adapted from Star Alliance (2019)

### 2.2.2 SkyTeam Alliance

The SkyTeam is the newest alliance with fast-growing on their operations and services. SkyTeam reach a market share following Star Alliance at 16.1 percent of world's airline alliance. The number of passengers, destinations, and operations of SkyTeam is also familiar with One World alliance. The SkyTeam alliance network serves almost two handers' countries and a thousand destinations worldwide to passengers (SkyTeam, 2019). From the research of Lordan, Sallen, Simo, and Prieto (2015) resulted clearly on three main airline alliance with focused on routing network; the SkyTeam has second rank of resilient route network while the Star Alliance is number one due to large networking from airline covering all regions (Fahriza, 2016).

**Table 2.2.2:** SkyTeam Member Airlines, logo, year joined alliances, and Country of Origin.

| No. | Member Airlines | Logo  | Year joined | Country of Origin |
|-----|-----------------|---|-------------|-------------------|
| 1.  | Aeroflot        |  | April 2006  | Russia            |
| 2.  | Aero México     |  | June 2000   | Mexico            |
| 3.  | Air Europa      |  | Sept 2007   | Spain             |
| 4.  | Air France      |  | June 2000   | France            |
| 5.  | Alitalia        |  | July 2009   | Italia            |

|     |                        |   |             |              |
|-----|------------------------|---|-------------|--------------|
| 6.  | China Airlines         |  CHINA AIRLINES                                      | Sept 2011   | Taiwan       |
| 7.  | China Eastern Airlines |  CHINA EASTERN                                       | June 2011   | China        |
| 8.  | Garuda Indonesia       |  Garuda Indonesia<br><i>The Airline of Indonesia</i> | March 2014  | Indonesia    |
| 9.  | Czech Airlines         |  CZECH AIRLINES                                      | March 2001  | Czech        |
| 10. | Delta Airlines         |  DELTA   | June 2000   | US           |
| 11. | Kenya Airlines         |  Kenya Airways                                       | Sept 2007   | Kenya        |
| 12. | KLM Airlines           |  KLM   | Sept 2004   | Dutch        |
| 13. | Korean Air             |  KOREAN AIR  | June 2000   | Korea        |
| 14. | TAROM                  |  TAROM   | June 2010   | Romania      |
| 15. | Vietnam Airlines       |  Vietnam Airlines                                  | June 2010   | Vietnam      |
| 16. | Middle East Airlines   |  MEA   | June 2012   | Lebanon      |
| 17. | Aerolineas Argentinas  |  Aerolineas Argentinas                             | August 2012 | Argentina    |
| 18. | Saudia                 |  SAUDIA  | May 2012    | Saudi Arabia |
| 19. | Xiamen Airlines        |  XIAMENAIR   | Nov 2012    | China        |

**Sources:** Adapted from SkyTeam (2019)

### 2.2.3 OneWorld Alliance

The outstanding of OneWorld is awarded airline alliance on services that impress passengers all over the world. Nowadays, OneWorld is individually alliance that offers most of frequent flyers to access the airport's facilities such as lounge and fast-track lane for check-in and immigration. Even through only few airline members join the team, OneWorld is still having the potential to be the one of the top three ranks with approaching 15.6 percent of the world's airline alliance market share (OneWorld, 2019). The studied of Atkinson (2011) found that OneWorld alliance largely dependent antitrust immunity between American Airlines and British Airways which deeply enable joint venture partnerships and restrict other airlines to join the alliance. If OneWorld requires to gain greater revenues; the members must be increased both airline's network and depth of partnerships to optimize profit to alliance, especially networking to Southeast Asia which OneWorld is not yet covered (Fahriza, 2016).

**Table 2.2.3:** OneWorld Member Airlines, logo, year joined alliances, and Country of Origin.

| No. | Member Airlines   | Logo  | Year joined | Country of Origin |
|-----|-------------------|---|-------------|-------------------|
| 1.  | American Airlines |  | March 2014  | America           |
| 2.  | British Airways   |  | Feb 1999    | United Kingdom    |
| 3.  | Cathay Pacific    |  | Feb 1999    | Hong Kong         |
| 4.  | Finnair           |  | Feb 1999    | Finland           |
| 5.  | Iberia            |  | Feb 1999    | Spain             |
| 6.  | Japan Airlines    |  | April 2007  | Japan             |

|     |                       |  |            |           |
|-----|-----------------------|--|------------|-----------|
| 7.  | Srilankan Airlines    |   | May 2014   | Sri Lanka |
| 8.  | Malaysia Airlines     |   | Feb 2013   | Malaysia  |
| 9.  | RAM (Royal Air Maroc) |   | April 2020 | Morocco   |
| 10. | Qantas                |   | Feb 1999   | Australia |
| 11. | S7 Airlines           |   | June 2010  | Russia    |
| 12. | Royal Jordanian       |   | March 2007 | Jordan    |
| 13. | Qatar Airways         |  | Oct 2013   | Qatar     |

**Sources:** adapted from OneWorld (2019)

## 2.3 Airline alliances and Strategic alliances-factors influence the operational success.

### 2.3.1 Details of Airline alliances and Strategic alliances

Airline alliance is the collaboration between airlines; to achieve the goal of competitive position over the market, members selected the alliances' group that suitable to their objective for optimal organization and pursuit the comparative advantage. Bhassakorn (2013) stated that one of the most powerful strategies is joining a global airline alliance which could reinforce market position, sharing operational facilities, driving growth opportunity and customer loyalty, extending the air traffic network, reduction of utilities cost and complexities. Nevertheless, the studied also mention that alliance joining can enforce higher in bargaining power over suppliers.

Furthermore, the relationship between airline and airport is also the key of airline alliances' development. The studied of Albers, Koch, and Ruff (2005) said that the benefits and issues of airline-airport alliance could be determined into three based which are capacity, marketing, and security. The airline and airport with good relationship is significantly to improve competitive strategies to airline and alliance such as alliance between Lufthansa and Munich airport serves as an illustration.

**Table 2:** Phases in cooperating an airline alliance

| PHASE  | TYPES OF AGREEMENT  | AIRLINE BRAND           | DEGREE OF ENTRY/EXIT    | TYPES OF ALLIANCES  |
|--|---|-------------------------|-------------------------|---------------------|
| <b>Phase1:<br/>Revenue<br/>Generation</b>          | <ul style="list-style-type: none"> <li>-Prorate</li> <li>-Code sharing</li> <li>-Joint Frequent Flyer Program</li> <li>-Block space</li> <li>-Network coordination</li> <li>-Schedule/Capacity coordination</li> <li>-Joint sales</li> <li>-Shared lounges, etc.</li> <li>-Alliance logo</li> </ul>         | Separate Airline Brands | Easiest                 | Commercial Alliance |
| <b>Phase2:<br/>Cost<br/>Reduction</b>              | <ul style="list-style-type: none"> <li>-Common ground handling</li> <li>-Joint engineering/Joint maintenance</li> <li>-Joint sales in third countries</li> <li>-Joint call centers</li> <li>-Common IT Platform</li> <li>-Joint flights</li> <li>-Joint Purchasing</li> <li>-Fleet harmonization</li> </ul> | Separate Airline Brands | More tough but possible | Commercial Alliance |
| <b>Phase3:<br/>Joint<br/>Ventures<br/>Oriented</b> | <ul style="list-style-type: none"> <li>-Franchising</li> <li>-Joint Product Development</li> <li>-Sharing of aircraft and crews</li> <li>-Single operating company (joint passenger joint cargo service)</li> <li>-Full merger</li> </ul>   | Single Airline Brands   | Hardest                 | Strategic Alliance  |

**Sources:** Adapted from Doganis (2006)



Studied of Doganis (2006) identified the main ideal of airline alliances to create benefits between among alliance members and deals with complexity. Table 2 provides an overview of various types of alliances from the easiest way to entry alliance to the hardest way of joining and leaving an alliance. Theoretical, a truly strategic alliance could be done as a single airline brand as shown in the final phase. However, in general, most airlines are signing agreements only for commercial; phase one or two, because of different airlines prefer to have independent cooperative in strategies, aircrafts, operations, and so on.

### **2.3.2 Importance of Airline Alliances**

The nature of business has difficulty to be done by a single firm (Coase, 1937). Due to the complexity and competitiveness of the airline industry, the coordination with the alliance could assist and reduce the difficult of being single business airline; the reason will be explained as follows.

Firstly, an airline needs to gain new opportunity to expand networks which drives customer demand and traffic to airline itself. In contrast, passengers have more choices by choosing another preferable airline in the alliance; nonetheless, demands will be driven to the groping of alliances directly. However, suggestion of study from Goh and Uncles (2003) found that there are no major differences in benefits between each alliance and the most important is determining airline choice by passengers.

Secondly, gaining competitive advantages and strengthening market position in alliances grouping. The studied of Kleymann and Seristö (2004) stated that highly competitive business has high business pressure, if they operate an airline and manage its asset independently would be even harder because of sizes of airline, unattractive to customer's reward program, less destination compared to airline operated as a group,

and so on. Even though joining alliance collaboration, market position in the home market is still the strengths of airlines plus the benefit of joining alliance.

Thirdly, alliances group could be sharing operational facilities such as parking lot, shared rewarded program, code-sharing, data sharing, airport facilities, pooling purchase, bargaining power over suppliers, and so on. Thus, joining an alliance group achieves economies of scale in various ways.

**Table 3:** Alliances' benefit

|             | Competitor taming | Strengthen market position in | Value enhancement | Efficiency gains through joint | Economies of density | Learning | Hub | Network enlargement | Environment Control |
|-------------|-------------------|-------------------------------|-------------------|--------------------------------|----------------------|----------|-----|---------------------|---------------------|
| Core Member | YES               | YES                           | YES               | YES                            | YES                  | YES      | YES | YES                 | YES                 |
| Second Tier | YES               | YES                           | YES               | SOME                           | SOME                 | SOME     | NO  | SOME                | FEW                 |
| Contributor | SOME              | NO                            | YES               | NO                             | YES                  | NO       | NO  | NO                  | NO                  |

**Sources:** Adapted from Kleymann and Seristö (1999)

The table 3 shows the benefit of joining alliance grouping differentiated by level of integration and tier. The benefits are depending on the agreement between airlines. However, the agreement is under the law of regulation, preventing every merger from stolen data (Kleymann and Seristö, 1999).

Nonetheless, alliance grouping is not supporting only an airline that participating alliance but also plays the key roles in country's economic growth in the scale of long term. Especially, in developing countries, the benefits from an access to the global transport able to reach the new market and investment through the wide connections by airline alliance, and boots the production efficiency (Smyth and Pearce, 2006).

### 2.3.3 Key operational success of airline alliance

The studied of Bissessur and Alamdari (1998) showed that they have developed a methodology to measure the key success of airline collaboration, analyzed from six major global airline alliances with fifty-two inter-hub paths. The studied suggested that the key success of alliances is the increased number and level of airline networks, which results that enhancing inter-hub traffic. The level of inter-hub traffic would be increased by seeking a partner who has already an existing large network. Partnering with a large network size leads to better and wider network operation and destination, as well as significant traffic offered, which attracts remaining members. Furthermore, passengers get beneficial in various choices of destination which can collect frequent flyer. The result is that a large alliance grouping leads to gaining a competitive position and success over other alliances. Nevertheless, while seeking a network the network overlap should not be in the same alliances because the least number of network overlap leads to an increased number of passenger traffic.

Another key for successful of airline alliance is consumers satisfaction. The study of Janawade (2008) found that providing the value of customers and airline itself is important to alliance market. The value also depends on customer belief system; however, this system is the key could help airline value and, moreover, valuable of participated alliance groupings.

## Chapter III: Empirical Study

### 3.1 Theoretical

The studied of Gaggero and Bartolini (2012) studied the empirical of determinants of airline alliances under the factors that could possible well-established of an airline

alliance. Therewith the econometric theoretical, this paper will apply theoretical of consumer welfare and antitrust immunity.

Regarding the studied of airline network and consumer welfare is the statically studied by Israel, Keating, and Willig (2013) under the quantitative of non-price characteristic of airline networks. It can conclude that concentrate on airfare is not only focus, nevertheless, should also take an account on sizing of airline networking. In the other words, larger network airline enchanted consumer welfare. However, some investigated found that code-sharing has no significant impact to consumers. The studied of Armantier and Richard (2008) on the consumer welfare on codeshare agreement, resulted that consumer has preference for flight attributes and face the fare different at the same flight. Thus, as a conclusion from this studied, only the code sharing has no significant impact to consumers. The consequence is an increased the surplus for connecting passengers but decreased surplus for non-stop passengers.

Bilotkach (2019) refers an antitrust immunity as the right for an airline partner able to set the fares within their join network, such as add-on fare to codesharing network. Bilotkach and Hüscherlath (2011) had studied on antitrust immunity for airline alliance and found that the airline alliance led to freedom of airlines operating, including pricing decisions and scheduling, which are increasingly well developed in international airline market scale. Anyhow, the development of airline may raise antitrust which reasoning to the policy actions for an airline antitrust. Moreover, the result of antitrust immunity can be found in measurement of airline codesharing and airline fare. From the studied of international airfares under the effects of code-sharing and antitrust by Brueckner (2003) show that an airline code-sharing and immunity are substituted, at the way round, the studied also show antitrust immunity able to reduces the fare which it resulted to an airline's revenue and development. From the studied

provided evidence that airline cooperation in the fare setting process is generated substantial benefits for passengers.

The expanded of airline alliance additionally affect to an airline profitability and competitiveness. As the studied of European airlines under a scope of an alliance consolidation and consumer welfare by Brueckner and Pels (2005), the results show that airlines benefit through the higher revenue, reduce overall social surplus. Besides, from this studied, it results negative outcome to less competitiveness to airlines in each alliance. Regardless, the studied of Bilotkach and Volodymyr (2005) show that alliance benefit the interline passengers, along with antitrust immunity, leads to higher airline fares for non-stop route between the hubs of alliance partners which means that an alliance with antitrust immunity is likely to decrease individual carriers' profit.

The dimensions of the empirical study will be focused on the size of airline company and the degree of competitiveness of an airline (Gaggero and Bartolini, 2012). The size of airline could possibility answer and identify the return after joined an alliance, while the competitiveness accounts for the strategic among airline competitors. I expect as the same result with Gaggero and Bartolini (2012) as the positive on the variables that able to link to the size and competitiveness of airline.

Another factor that can be possible affect to the empirical study is the commission or incentive for joining the specific alliance. Regardless of lacking the airlines essential and confidential data, I would leave this matter factor for further research development.

### 3.2 Data

The samples are focusing on world's main full-service airlines both participated and non-participated in alliance group. This study applies causality analysis of the data in year 2019 regarding to avoid the pandemic situation that collapsed the air-travel industry in 2020 until this present. The data set are generated from Travelport Airlines' database and airline annual report year 2019.

### 3.3 Empirical model

The econometric model by Gaggero and Bartolini (2012) had represented as choices between an airline that joined alliance and not participated, also, capture the effect of variables that able to determine at different alternative.

$$Alliance\ Choices_i = \alpha_1 Pax_{it} + \alpha_2 LF_{it} + \alpha_3 IB_{it} + \gamma_1 YB_{it} + \gamma_2 AP_{it} + \gamma_3 AMS_{it} + \delta_1 NC_{it} + \delta_2 GDP_{it} + \delta_3 EU_i + \delta_4 USA_i + \varepsilon_{it}$$

Then, I prefer act in accordance with Gaggero and Bartolini's (2012) model but constructed with airline essential variable such as available seat kilometers or ASK of airline and percentage of Marketing Information Data Transformation (MIDT) by carriers. The ASK able to represent the measurement of passenger carrying capacity of airline per year and MIDT would represent an airline booking made by travel agencies worldwide. I believe that both variables can ensure the size of market share and network of airline more specifically.

Besides, dependent variable, alliances choices by Gaggero and Bartolini (2012), would be changed to be the decision to join alliances where choices between join alliances and not participated in any alliance (non-Alliance).

Main model:

$$Decision\ to\ join_i = \alpha_1 PAX_i + \alpha_2 FLE_i + \alpha_3 LOF_i + \alpha_3 FCL_i + \alpha_4 ASK_i + \alpha_5 YIB_i + \alpha_6 MIDT_i + \delta_1 GDP_i + \delta_2 REG_i + \delta_3 DNC_i + \varepsilon_{it}$$

The independent variables are separated as two characteristics as the mythology of Gaggero and Bartolini (2012). First, variables categories as of airline itself (*the parameter*  $\alpha_i$ ) which are Passenger ( $PAX_i$ ), Fleets of airline ( $FLE_i$ ), First class operation ( $FCL_i$ ), Load factor ( $LOF_i$ ), Available seat kilometers ( $ASK_i$ ), Year in business of an airline ( $YIB_i$ ), and Carriers' Marketing Information Data Transfer ( $MIDT_i$ );

| Variable | Meaning  | Measurement                                       |
|----------|--|---|
| PAX      | The variable Passenger                           | The size of an airline.                           |
| FLE      | Fleets of airline                                | The demand of an airline                          |
| FCL      | First class operation                            | The size of an airline.                           |
| LOF      | Load Factor                                      | The utilization rate of an airline.               |
| ASK      | Available seat kilometers                        | A passenger carrying capacity of airline per year |
| YIB      | Year in business of an airline                   | Consolidation of airline in the market            |
| MIDT     | Carriers' Marketing Information<br>Data Transfer | Passengers' movement over the year                |

- The variable Passenger ( $PAX_i$ ) is the total number of passengers in millions to represent the size of an airline.
- Fleets of airline ( $FLE_i$ ) basically is the number of airline's aircraft which could measure the demand of an airline.

- First class operation ( $FCL_i$ ) to ensure that airlines' size is large enough to operate luxury class and took further step in its development process.
- Load factor ( $LOF_i$ ) is the variable that can measure the utilization rate of an airline.
- Available seat kilometers ( $ASK_i$ ) can be consider a passenger carrying capacity of airline per year.
- Year in business of an airline ( $YIB_i$ ) where can be assumed older airline are more likely to join an alliance because they might consolidated in the market.
- Carriers' Marketing Information Data Transfer ( $MIDT_i$ ) is contained information about airline bookings made by travel agencies worldwide connected to the ticketing distribution system which able to determine passengers' movement over the year.

Second categories are variables about countries' economic of airline at the origin (*the parameter  $\delta_i$* ) which are included Gross domestic product ( $GDP_i$ ), Regional of sample airlines ( $REG_i$ ), economic development status of sample carriers ( $DNC_i$ ), and airline national carriers ( $ANC_i$ );

| Variable | Meaning                               | Measurement   |
|----------|---------------------------------------|---|
| GDP      | Gross domestic product                | The economic foundation of the country where airlines are based |
| REG      | Regional of sample airlines           | Antitrust concerned   |
| DNC      | Country's economic development status | Antitrust concerned   |
| ANC      | Airline national carriers             | Ensure the carriers' size and stability of the state            |
| SON      | Airline state ownership               | The Strong market share where airline based                     |



- Gross domestic product ( $GDP_i$ ) had been chosen to be measured the economic foundation of the country where airlines are based.
- Regional of sample airlines ( $REG_i$ ) and Country economic development status of sample carriers ( $DNC_i$ ) to measure the antitrust concerned. Under the studied summation of Fox (1991) said that the levels of economic development are significant connection with antitrust. The developed countries are always efficiency in antitrust demand than the developing countries. Moreover, the regional is a variable that could be associated with antitrust immunity due to the economic development level.
- Airline national carriers ( $ANC_i$ ) could ensure the carriers' size under assumption; if the sample carriers are a national carrier meaning that these carriers would be greater in market size of its country.
- Airline state ownership ( $SON_i$ ) could suggested that if the airline is state owned, the following airline would generally strong business in its homeland due to subsidize on financial ability by its government.

In second categorizes, all of variables are represented as a dummy variable except the Gross domestic product which using numerical data from World Bank database 2019.

## **Chapter IV: Empirical Results**

### **4.1 Descriptive Results**

The table 4 shows the number of observations and descriptive statistic of each variable selected by the airlines in the sample. More than over 50 percent of samples are chosen to be non-alliance. Most airlines are operated with a hundred aircrafts,

which could implied that an observation airlines are operated with high demand on its route, as well as the available seat kilometers show the capacity of airline that are in line with the number of fleets and passenger carried. In addition, loading factor of the airline observations are contain overall at 77 percent possible capacity. These are in-line with the sample represented that American Airlines has the highest number of fleets at 857 fleets together with almost 90 percent of loading factor. Even so ASK of American Airlines is not as high as Lufthansa, regarding the American Airlines operating mostly on domestic flights while Lufthansa is outstanding in international routes.

The average year in business of overall airline are 46 years old, the oldest airline is KLM at age 102 years and still be efficiency operated. In 2004, KLM joined SkyTeam and cooperated with Air France to create Air France-KLM, which is one of the largest air carriers, but still separately operate and retain its own hub, flights, and logo (Nolen, 2013).

From the descriptive result show that nowadays airline's strategy is focusing on selling air ticket through its own channel directly instant of sell via agency as in the pervious. This could be implied to the demand of air services are remaining rapidly growth by airline itself during year before pandemic. Although, most of full-service airline as in observation have only 19 percent that operating first class. This could be implied that most of full-service airlines are generally expand their airline with affordable prices and easily to construct code-share fares with other airline more simplicity. Presently, most airlines are still focusing on high-end segmentation on air services, still, they mostly use business booking class with the difference levels instant of only two levels, business and first class, such as Japan airline that have normal business, flex business, and first classes for wildness passenger choices. To separate

booking class into different levels can generate greater revenue to the airline which is a normal procedure revenue management strategy of current airline.

**Table 4:** Descriptive statistic results

| Variables                      | Observations | Mean       | S.D.       | Min     | Max         |
|--------------------------------|--------------|------------|------------|---------|-------------|
| Alliance (%)                   | 145          | 44%        | 0.94       | NO = 0  | YES = 1     |
| Passengers                     | 145          | 33,506,386 | 70,711,673 | 140,000 | 561,620,000 |
| Fleets                         | 145          | 108.7      | 158.43     | 1       | 857         |
| First class operation (%)      | 145          | 19%        | 0.39       | NO = 0  | YES = 1     |
| Load Factor (%)                | 145          | 77%        | 0.78       | 46%     | 96%         |
| Year in Business               | 145          | 48.16      | 28.76      | 1       | 102         |
| Carriers' MIDT (%)             | 145          | 36.93%     | 26.09%     | 0%      | 95.20%      |
| ASK (Kilometer)                | 96           | 79,051,052 | 98,044,260 | 333,000 | 528,000,000 |
| Country development of carrier | 145          | 53%        | 50%        | 1       | 857         |
| National carrier               | 145          | 69.65%     | 46.13%     | NO = 0  | YES = 1     |
| Airline state ownership        | 145          | 48.96%     | 50.16%     | NO = 0  | YES = 1     |

Investment in aviation industry is require a lots of funds where most regions, especially in developing countries, have the states holding huge amounts of shareholder as called as state ownership. More than half of the full-service airlines are national carriers, however, from the descriptive statistic, only 49 percent is state ownership airlines and 53percent is a national airline of developed country. The percentage number could be measured the level of strongness stability of state that airline are based. Also, it could be implied all following the financial of the airline company, such as the subsidies from government regarding shortage of revenue.

## 4.2 Regression Results

The results of regression estimation of variables of airline itself and countries' economic of airline origin are report in Table 4.2 and Table 4.3, respectively.

The positive parameter that is the key determinant of decision to join an alliance is Load factor. When the airline operates with high level of loading factor or at level of almost full capacity, the probability to become a member of alliance is increased. The truth is airline becoming an alliance may represent a way to expand the fleets' capacity.

Regarding the role of competition, the estimate model shows the significant a positive effect of First class operation on the probability of airline may decide to join an alliance. The airlines that operate First class have 54 percent decided to join alliance rather than not to join. The result is consistent with the idea of airlines having high market share and market size are large enough to operate high-end class, thus, the airline with first class operated will seeking for more opportunity to gain its incentive and expand its network between an airline under luxury air travel segmentation.

Year in business represent the number of years since the airlines' has found where the result has shown positive and significant impact on probability of decision joining alliance. The result is in line with the idea of measurement that older airlines are better consolidated in the market and ready to take a further step in their development process (Gaggero and Bartolini, 2012). Additionally, the year of airlines has been in the market could rely the reputation of the business, which this can reduce the bargaining transaction costs.

**Table 4.2:** Decision to join alliance under variables categories as of airline itself  
(the parameter  $\alpha_i$ )

| Variables                                  | Decision to join alliance<br>variables categories as of airline itself |
|--|--|
| Passenger ( $PAX_i$ )                      | -0.000000<br>(0.187)   |
| Fleets of airline ( $FLE_i$ )              | 0.000236<br>(0.938)  |
| First class operation ( $FCL_i$ )          | 1.54515<br>(0.061)**   |
| Load factor ( $LOF_i$ )                    | 11.50531<br>(0.032)***   |
| Available seat kilometers ( $ASK_i$ )      | 0.000000<br>(0.165)  |
| Year in business of an airline ( $YIB_i$ ) | 0.0372342<br>(0.003)***  |
| Carriers' MIDT ( $MIDT_i$ )                | 0.0144442<br>(0.315)   |

Notes: t statistics are in parenthesis ;(\*\*\*) (\*\*) and (\*) denote significance at the 1%, 5%, and 10% levels

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Nevertheless, Passengers variable has negative sign and not significant which implies that airline characterized by high traffic volumes are not more likely to participate in alliance. In the other words, the larger number of passengers, the less likely to make a decision to join alliance. Regarding a huge airline with high volume of passengers normally operate with high level of economic of scale. Furthermore, the marketing indicators, which are Available seat per kilometers, Fleets, and Carriers' MIDT, show the positive parameter but not significant. This could be implied according with passengers variable, with large number of market share and size, an

airline may not decide to join alliance because they can operate and manage revenue to be competitiveness by themselves.

**Table 4.3:** Decision to join alliance under variables categories as of countries' economic of airline origin (*the parameter  $\delta_i$* )

| Variables   | Decision to join alliance<br>variables categories of economic ( $\delta_i$ ) |
|---|--|
| Gross domestic product ( $GDP_i$ )                | 0.000000<br>(0.671)  |
| Regional of sample airlines ( $REG_i$ )           | 0.1574245<br>(0.510)   |
| Country's Economic development status ( $DNC_i$ ) | -0.5200823<br>(0.564)  |
| Airline national carriers ( $ANC_i$ )             | 2.266099<br>(0.011)***   |
| Airline state ownership ( $SON_i$ )               | -0.2272717<br>(0.763)  |

Notes: t statistics are in parenthesis ;(\*\*\*) (\*\*) and (\*) denote significance at the 1%, 5%, and 10% levels

Table 4.3 shows the result of econometric estimation of variables under categories of countries' economic by airline at the origin. Only National carriers' variable has positive sign and statistically significant result. This could imply that market size by an individual airlines' per countries are potential to carriers to make decision of joining alliance. The priorities of national airlines, typically an airline in developing countries, are desires to expand their routing network and traffic to be more internationally. However, if specifically looking into the market strategy, the airline classifies routes as international such as airline in Europe or Southeast Asia may need to expand their traffic network wildness. Otherwise, the airline that focusing strategy

routes within domestic, such as the United States, may not take the international route and expand too wide networks as a priority. This can be concluding the non-significant result of Regional of observation airlines.

Gross domestic product characterized by positive parameter, although not significant. This variable has not specific meaning in term of decision to join alliance, but it ensures the macroeconomic in those countries that affect the demand of travel industry. Thus, the positive coefficient could be indicated positive in demand of the industry. Differently from economics' development status (developed or developing country) and airline which is under state ownership variables, which two variables are neither negative coefficient or not significant to the estimation model.

Finally, the probability to make the decision to join an alliance by each airline is depending on airline's strategy option. Also, the estimation equation is not specific which alliance that airline should enter, but only alternative decision to join an alliance.

## **Chapter V: Conclusion, Policy implications, and limitations of the study**

### **5.1 Conclusion**

This paper has conducted the empirical study of airlines' decision to join an alliance with applying choice model (join or not join) to full-service carrier observations in 2019. The results of empirical analysis support the idea that airline decided to join alliance for expanding its network and traffic as a main key strategy. The effect of first-class operations number, load factor, and airlines who is a national

carrier show all positive relationship to join alliance. Moreover, the factor that could influence the consolidated and developed by make the decision to join alliance is the airline that has been staying in business for long-term. In addition, the insignificant and negative estimated coefficient is also correlated dilemma as the determinants of alliances. However, the empirical study cannot suggest the major decision to choose a specific alliance, but consideration to enter or not is depends on airline strategies option (Gaggero and Bartolini, 2012).

## 5.2 Policy implications

The advantage can be generated to both sides; the airline and the alliance. I would suggest the policy implications into two parts; first is the implication for airline for expanding its opportunity. Second is for airline alliance community where searching for its competitiveness by invited a carrier to join alliance.

The small airline could gain advantage by deciding to join an alliance or through antitrust immunity by codeshare agreement to expand its network and opportunity to increase the revenue. Also, it could measure the brand representative of an airline through the reputation of alliances. However, the new coming airline should be aware of an additional costs followed by joining an alliance such as airport facilities and technological improvement that alliances would be required.

For alliances that prefer to expand its traffic and network can focus and select the national carrier with high level of capacity because they already have high market share and better brand reputations regarding the main carrier in their hub. Besides, alliance can be more advantage in team of brand representative by focused on high-end travel segmentation through airline that operates first class. Regarding to the research, airline with first class operating seems more likely to join in alliance greater than the airline that operated without first class.



### 5.3 Limitations of the study

Pandemic affects economy worldwide especially travel and tourism because of the lockdown as strict enforcement from government regulations over past 2 years. Thus, the number of passengers and air traffics during the situation could not count as a normal dynamic situation. The cost of operation of all single airlines is needed to reduce heavily; however, world airline financial performance is forecast to make losses more than 52 billion dollars (IATA, 2021). The Airline Industry has been expected to recover in all regions in 2022 and resume the flights as normal.

Hence, this individual study excludes the period of the huge pandemic. Due to the pandemic spacing worldwide, this affects heavily to travel business especially the air travel business. The airline needs to adept itself to generate revenue through cargo and apart about air traffic by passengers carried. Presently, airline's alliance had been created generally in each year where some of created does not show an outstanding number of world's market share. Then, I prefer to study only three alliances as above to represent and determine the factors of airline to collaborate as alliance. Furthermore, the airline alliance common fee and commission has not been found publicly, thus this research would not state the fee in alliances as well.

To minimize the limitations in this research, I decided to track the airlines data only year before pandemic and more focused on market share which including total number of passengers per year, available seat kilometers (ASK), and percentage of booking via agents and airline's offices. Finally, I may leave the alliances commission to further research due to lacked data source.

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