A STRUCTURE-CONDUCT-PERFORMANCE ANALYSIS OF COMMERCIAL AIR TRANSPORTATION INDUSTRY IN INDONESIA

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ABSTRACT
To project the performance of an industry and a company, the market structure is one of the things that needs to be looked at. In addition, company behavior in the form of various strategies to increase customers also needs to be analyzed. Past performance will also be used to project industry and company performance. This research is descriptive research that aims to analyze the structure, behavior, and performance of the air transportation industry in Indonesia. The data used is secondary data and is limited to national airlines and the data used is also for domestic flight services in 2016-2020. Data were analyzed using a quantitative approach in the form of certain formulas, such as CR4, MES, and IHH. The results of the analysis conclude that the Indonesian commercial air transportation industry is in the form of a tight oligopoly or a dominant company with a competitive fringe. The behavior of national airlines in attracting consumers is carried out through various strategies, such as cooperating with other parties in marketing, providing onboard service strategies, and increasing timeliness. The performance of the aviation industry in 2016-2018 tends to increase. However, in 2019 and 2020 it tends to decrease. This can also be seen from the growth in passengers for each airline. In terms of load factor, Garuda and City Link experienced a significant decline from 2019 to 2020.

1. INTRODUCTION

The development of the aviation industry in 2020 and 2021 can be said to have fallen quite badly. This is due to the unfinished corona virus pandemic. After significant growth in 2009-2018 (Utama & Rezki, 2021), in 2020, the corona virus has stopped most of the flights around the world. However, at the end of 2021, with the corona virus getting under control, flights were reopened, and the aviation industry was starting to get excited.

2022 is expected to be a revival of the aviation industry. Minister of Transportation Budi Karya Sumadi (Kementerian Perhubungan, 2022) said that the Government was optimistic that the aviation industry in Indonesia would revive in the near future. Considering that Indonesia is an archipelagic country that really needs connectivity through air transport, with the easing of community activities, the aviation industry will be used again by the community. Eid 2022 is a blessing and the beginning of the revival of the aviation industry. Several national airlines have an average increase in ticket sales of up to 30% (Puspa, 2022).

It is hoped that the development of the aviation industry will continue and there will be no phenomenon of the outbreak of the Covid-19 case. Currently, the aviation industry is still very dependent on the handling of the Covid-19 pandemic (Hakim, 2021). International flights which are still very limited in 2021, starting in 2022 have re-opened which has had an impact on increasing tourists in several tourist areas in Indonesia, including in Bali.

Graph 1: Number of Passengers at Main Airports 2021-2022
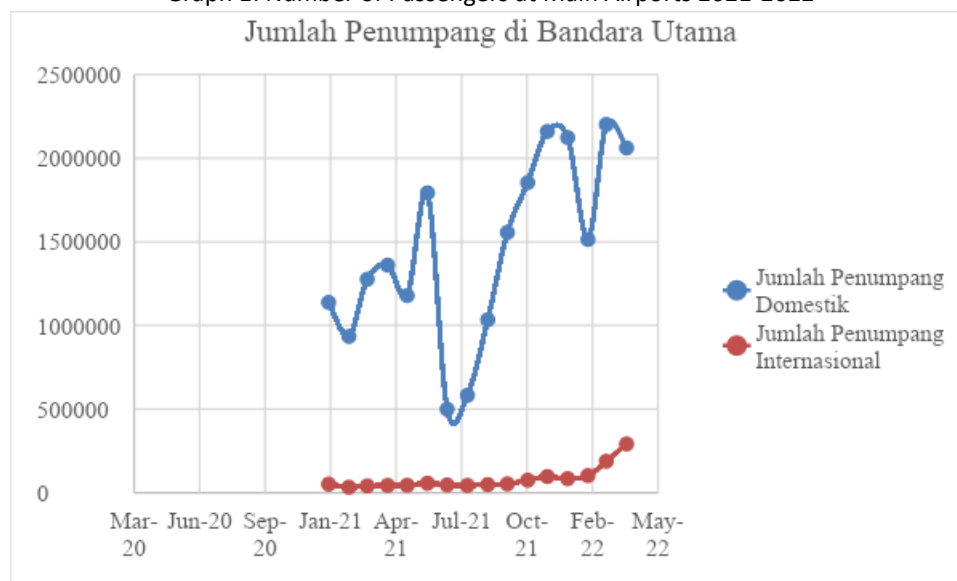
Source: Central Bureau of Statistics, 2022

Based on graph 1, the number of passengers at Indonesia's main airports fluctuates for domestic flights. This is because the PSBB policy changes depending on the amount of spread of the corona virus. Meanwhile, international flights will start to grow at the end of 2021. This indicates that 2022 will be the year *recovery* aviation industry (Kementerian Perhubungan, 2022).

With the growth of the aviation industry in Indonesia at this time, it can lead to business competition to gain a larger market share. Airlines that are still operating today will increase their market share again after economic activity recovers. The airline will try to return to profits after the previous 2 (two) years suffered substantial losses.

The growth in the number of passengers over the last year up to April was 67%. This certainly indicates that the aviation industry has recovered. Marketing strategies through promotions have started to bloom in various ticket applications and flight agents. To protect the aviation industry and consumers, the Government has issued Minister of Transportation Regulation Number 106 of 2019 concerning Upper Limit Fares (TBA) and Lower Limit Fares (TBB) for regular economy class flights. This arrangement is to avoid price wars between airlines, in addition to protecting consumers from airline price games.

In Law No. 5 of 1999 and Government Regulation Number 44 of 2021 concerning the Prohibition of Market Monopoly Practices and Unfair Competition and in Law No. 8/1999 concerning the Protection of Consumer Rights, the Government guarantees that the public will get a fair price from airlines and ensuring that there is no monopoly and unfair competition from airlines. To avoid this, it is very important to know the structure, behavior and performance of airlines that carry out aviation business actions in Indonesia. In this study the aviation industry observed was the passenger-specific commercial aviation industry using the SCP approach (*Structure-Conduct-Performance*).

This research is different from research Anggara P Pidada (2017) in terms of the year used and different measurement criteria. This study uses MES criteria (*minimum efficiency scale*) which is one of the criteria in analyzing the market structure.

Until the end of 2021, there are 23 airlines that are still operating in Indonesia (Rifka, 2021). Based on data *annual report* INACA (2022), in 2020 there are 12 national airlines operating. This is due to the impact of the Covid-19 pandemic. The four largest airlines in 2020 have controlled 81.1%*market share*, namely Lion Air, Batik Air, City Link, and Garuda Indonesia. The five airlines will be used as research objects because, according to the authors, they have represented the national aviation industry.

2. THEORETICAL FRAMEWORK

The market structure according to Hasibuan (1993) in Pidada (2017) states that market structure consists of perfect competition, monopolistic competition, oligopoly, and monopoly markets. The division of the types above is seen from the number of sellers (goods/service providers) and the number of buyers.

Market structure refers to factors such as the number of firms competing in the market, the relative size of firms (concentration), technological and cost conditions, demand conditions, and the ease with which firms can enter or leave the industry (Baye & Prince, 2022). Another opinion comes from Teguh (2013) who said the market structure shows the characteristics of the market, such as elements of the number of buyers and sellers, the state of the product, the state of knowledge of sellers and buyers, and the state of market barriers.

The concentration ratio measures how much total output in an industry is produced by the largest firms in that industry. The most common concentration ratio is the four-firm concentration ratio (CR4) (Baye & Prince, 2022). Even so, there are no specific provisions regarding how many of the largest companies must be included in the CR calculation. Gwin in Arsyad & Kusuma (2014) describes the general classification of CR4 achievement that relates CR4 to market structure characteristics as shown in Table 1.

Table 1. Characteristics CR4

Nilai CR4	Category	Interpretation Related to Market Structure
CR4 = 0	Minimum	Perfect competition
0 < CR4<40	Low	Effective or monopolistic competition
40<CR4<60	Intermediate and below	Monopolistic competition or loose oligopoly
60<CR4<90	Middle to above	Strict oligopoly or dominant firm with competitive fringe
CR4>90	Height	Dominant firm with competitive fringe or effective monopoly (*near monopoly*)
CR4=100	Maximum	Perfect monopoly

Source: Gwin in Arsyad & Kusuma (2014)

The market structure of an industry can also be analyzed using the Herfindal Hirschman index which is the sum of the squared market share of each company in an industry. This index has a value between more than 0 to 1. If the IHH is close to 0, it means that the industry structure in question tends to be a perfect competition market, while if the index value is close to 1 it means it tends to be monopoly (Pidada, 2012).

In addition to using market share size, industry structure can also be identified through barriers to market entry. Perloff in Arsyad & Kusuma (2014) defines barriers to market entry as anything that prevents a company from establishing new companies in a market.

The analytical tool used to measure *economies of scale* which is a barrier to market entry is the minimum production scale ratio to achieve company efficiency (MES/*Minimum Efficiency Scale*) to industry sales which is a percentage of the ratio between the output of the largest company and the total output.

Behavior (*conduct*) refers to the company's behavior in determining prices, production levels, products, advertising, and how to deal with competing companies. The main focus of corporate behavior is how the company reacts to market structure conditions and interactions with its competitors. According to Kuncoro (2008), market behavior is defined as a pattern of responses made by the company to achieve its goals within the scope of industrial competition. Reactions between one company against another company are implemented in the form of fixing the selling price, as well as product promotion (*advertising*). The company's behavior which is reflected in the determination and implementation of competitive strategies to continue to exist in a market as previously described is expected to improve the performance of the company. In other words, company behavior will affect company performance; and in a broader scope, industrial behavior will affect industrial performance.

According to Porter (1994) the aspect of industrial behavior is the second basic determinant of a company's ability to earn profits to create a company's relative position in its industry. The first determinant is my market attraction, in this case, the type of market entered.

Jaya (2008) outlines several goals of performance, namely efficiency in allocating resources (covering internal efficiency and efficient allocation), technological progress, balance in distribution, and other dimensions (covering individual freedom in choosing, security from threatening dangers, and existing cultural diversity). Performance is the result of work that is influenced by the structure and behavior of the industry where the results are usually seen from the amount of market control or the amount of profit of a company in an industry.

3. RESEARCH METHOD

This research is a descriptive study that seeks to explain in detail the existing problems. This research will begin with the identification of problems. Identification of the problem has been formulated above. The next stage is the data collection stage. At this stage, the necessary data collection is carried out in the implementation of the research carried out. Data collection is a step taken to obtain a reflection of the real system conditions that are the object of research. The data used is secondary data from the Central Bureau of Statistics (https://www.bps.go.id), INACA (https://inaca.or.id), and other sources.

After the data is obtained, the next step is to perform data processing and analysis. The SCP method was used in this study. SCP is done in several steps. The first is the concentration ratio calculation to determine the market share of each company. The second stage is the measurement of entry barriers carried out by calculating through *Minimum Efficiency of Scale* (WE).

The third stage is the stage of measuring the behavior of the aviation industry using descriptive and timely measurements. After that, the performance assessment of the airline is measured by measuring the level of efficiency of the airline, in this case there is *load factor*. In addition, performance will also be measured from the side *growth*. After processing the data using the SCP method, the next stage is the discussion and drawing conclusions. The final stage is problem analysis and interpretation of the results of data processing on the structure, behavior, and performance of the aviation industry.

To test the market structure, the Industrial Concentration Ratio Test (CR), Herfindal Hirschman Test (IHH), and MES will be used, as researched by Santorizki (2010). CR4 market concentration test is calculated by the formula Arthatiani et al. (2020) and Baye & Prince (2022):

$$CR_1 = Si_1 + Si_2 + Si_3 + Si_4$$

Information:
CR4 = Concentration ratio of the 4 largest companies
And = Company's market share

Then HHI is calculated by the formula Santorizki (2010) and Baye & Prince (2022):

$$HHI = Si_n{}^2$$

Information:
HHI = *Herfindahl-Hirschman Index*
And = Company's market share
N = Total number of all companies

Meanwhile, MES is calculated using the formula Arthatiani et al. (2020):

$$WE = \frac{Qr}{Qt}\ x100\%.$$

Information:
WE = *Minimum Efficiency Scale*
Qr = The largest company's total output
Qt = Total output in the industry

For performance calculation, size will be used *load factor*, timeliness level, and *growth*. *Load factor* and the level of timeliness will use data from the INACA annual report. *Load factor* is the airline's occupancy rate. *Growth* will use the formula from Yuliawati (2017), namely the growth of output produced.

The population used in this study are all commercial airlines operating in Indonesia in 2016-2020. Samples were selected using *purposive sampling* by selecting 4 airlines with *market share* biggest in 2020.

4. RESEARCH RESULT

Market Structure

The concentration ratio is used to measure the market share of the largest company to total industry sales. The concentration ratio is the percentage of a market share (*market share*) owned by the company. This figure (ratio) is used to measure the market share of the largest (S)n company to total industry sales. Based on the analysis of the structure in the industrial economy, the industrial structure is said to be in the form of an oligopoly if the four largest companies control at least 40 percent of the sales market share of the industry concerned (Kuncoro, 2008).

Table 2. CR4 Market Concentration

Year	CR4
2016	77,68%
2017	77,00%
2018	77,60%
2019	77,60%
2020	81,10%

Source: Processed from the 2016-2020 INACA Annual Report

Based on Table 2, the concentration of the CR4 market for the national aviation industry from 2016 to 2020 is between 60% and 90%, which means that the market structure of the national aviation industry is a tight oligopoly or dominant company with *competitive fringe*. Market concentration in 2016 to 2019 is at 77% and in 2020 it shows 81%. This shows that the 4 airlines above have controlled 80% of the national market. The high concentration figure shows that the market structure of the national aviation industry is a tight oligopoly.

Then, when viewed on a consolidated basis, the Indonesian aviation industry is only controlled by 2 airline groups. First, Lion Group, which owns Lion Air and Batik Air. Second, the Garuda Group which consists of Garuda Indonesia and City Link. With only 2 groups of companies controlling the commercial aviation industry, the structure of the aviation market tends towards a dominant oligopoly.

Table 3. Calculation of HHI

Year	HHI
2016	0,1919509
2017	0,1825
2018	0,17712
2019	0,167442
2020	0,195815

Source: Processed from the 2016-2020 INACA Annual Report

Then, when viewed from the HHI, the calculation results as in Table 3 show a number below 0.2 or not close to 1. This figure indicates that there is market competition among airlines in Indonesia.
To ensure that the market structure of the national aviation industry is in the form of an oligopoly, there must be large barriers to enter the market. One of the characteristics of an oligopoly market is that there are large barriers to entry and are only controlled by a few large companies.

MES is a proxy for barriers to market entry, the more an industry can produce output in large quantities and with clear market control, it will make new players reluctant to enter the industry, because it will be difficult for new players to face competition with other players. who have been in the business for a long time.

According to Comanor and Wilson (1967) in Yuliawati (2017) and Fitriyani (2015), MES greater than 10 percent high barriers to entry in an industry. Based on Table 4, in 2016 the MES level was 34.6%. This value indicates that the barrier to entry in 2016 is high. So that new players who will be involved in the airline business will experience difficulties.

From 2017 to 2019, MES has decreased to 34.2%; 32.8%; and 29.9%. This indicates that the barrier to market entry is lower than in 2016 although it is still above 10% which makes it difficult for new

players to enter the airline business. In 2020, the MES value rose again to 35.4%.

If you look at the concentration level values from 2016 to 2019, it appears that the concentration level has decreased. This indicates that the lower the MES value, the easier the barrier to entry in this business will be. However, in 2020, the level of concentration has increased quite a lot, indicating that it is increasingly difficult to enter the aviation industry. Especially during a pandemic where the economy is still unstable which causes the aviation industry to experience a decline in performance. The increase in MES has made it more difficult for the airline business to be entered by new business players. So that if there are new business players who enter, they must try more so they can compete with other airlines.

Table 4. MES values

Tahun	Ouput Perusahaan Terbesar	Output Total	MES
2016	30.925.106	89.385.365	34,6%
2017	33.131.053	96.890.664	34,2%
2018	33.456.657	101.961.268	32,8%
2019	23.737.227	79.466.559	29,9%
2020	12.516.590	35.393.966	35,4%

Source: Processed from the 2016-2020 INACA Annual Report

Behavior

The behavior carried out by airlines aims to attract consumers to use their services. The company's behavior is aimed at gaining the company's advantage. Some behavior that is usually done is by using promotional strategies such as from a marketing perspective by applying promo tickets and the ease of getting tickets. The level of promotion is carried out by airlines for the image of their company so that they can attract consumers to use their services.

Currently, the company works with many travel agents, including ticket applications such as Traveloka, booking.com, and others, to make it easier for customers to get tickets. In addition, the airline also provides a website for booking tickets directly.

Promo tickets are also a weapon carried out by travel agents and companies while still following the regulations that apply to upper limit rates and lower limit rates. The existence of these regulations to avoid tariff wars from airlines. Another service provided by the airline is to make it easier *check-in online* to attract customers.

The next behavior is related to the services provided by airlines. In general, there are three services during flights, namely *Full Service, Medium Service,* and *Minimum Service (No Frills/Low-Cost Carrier)*. Determining the type of service is one of the airline's business strategies to get consumers. This type of service also gives airlines flexibility in determining fares.

The types of services provided by the 4 airlines observed have different services. Garuda

Indonesia and Batik Air determine the type of service by *Full Service.* Garuda and Batik offer *service* the best for its service users and its advantages over other airlines. Meanwhile, City Link and Lion Air determine the type of service as LCC. On the type of service *Low-Cost Carrier* this, the airline does not give priority to *service,* but the ticket price offered is much cheaper than users of other types of services. The price and availability of many aircraft is one of the reasons that has allowed Lion Air to outperform other airlines and dominate the market for the last 5 years.

Garuda Indonesia and Batik Air target different passengers than Lion Air and City Link. Garuda and Batik segmentation targets *high customer* which prioritizes comfort, while Lion Air and City Link are targeting *low customers* where price is a consideration.

The behavior of commercial airlines can also be seen in timeliness. Airlines tend to try to be timely to be the choice of their customers. This is because passengers who really consider the schedule will choose airlines that rarely experience delays. For airlines, untimely delays will have cost consequences according to existing regulations. Based on table 5, it can be seen that Lion Air gets the smallest score among the three other airlines. The punctuality rate is below 80% which indicates that Lion Air is the airline that is most often not on time. Garuda is the airline with the highest level of punctuality followed by City Link and Batik Air.

Table 5. Timeliness Level

Maskapai	Tahun	On Time Performance
Lion Air	2015	71,45%
	2016	78,88%
	2017	71,32%
	2018	67,14%
	2019	77,90%
	2020	74,70%
Batik Air	2015	92,12%
	2016	93,73%
	2017	88,66%
	2018	88,78%
	2019	88,70%
	2020	87,30%
City Link	2015	81,78%
	2016	84,79%
	2017	88,33%
	2018	86,19%
	2019	92,40%
	2020	90,70%
Garuda	2015	87,62%
	2016	89,64%
	2017	88,53%
	2018	88,80%
	2019	91,40%
	2020	94,10%

Sumber: Annual Report INACA, 2015-2020

By looking at market control from year to year, several airlines are trying to widen their market share. The airline that has seen a very significant change from 2016-2019 is Garuda Indonesia. Garuda Indonesia tends to experience a decline in market share. This was influenced by one of the factors related to the pandemic which caused Garuda to experience financial problems in 2020. Unlike Garuda, City Link and Batik Air experienced an increase in market share. LCC is currently the prima donna considering the unstable economic conditions.

Performance

The performance of the aviation industry can be seen from the growth in service users. Based on Table 6, the growth of aviation services grew from 2016 to 2018. In 2019, the growth of aviation service users has decreased significantly and in 2020 it has fallen by more than half, one of the causes of which is the co-19 pandemic.

Table 6. National Passenger Growth

Tahun	Penumpang Nasional	Kenaikan
2016	89.385.365	16,60%
2017	96.890.664	8,40%
2018	101.961.268	5,20%
2019	79.466.559	-22,10%
2020	35.393.966	-55,50%

Source: Processed from the INACA Annual Report

Based on Table 7, Lion Air, Batik Air, and City Link experienced passenger growth from 2016 to 2018. Similar to national growth, in 2019 and 2020, the number of passengers has decreased. In contrast to Garuda Indonesia, which tends to experience a decrease in the number of passengers. From 2017, the number of Garuda passengers has decreased.

Table 7. Airline Passenger Growth

Maskapai	Tahun	Growth
Lion Air	2016	16,7%
	2017	7,1%
	2018	1,0%
	2019	-29,1%
	2020	-47,3%
Batik Air	2016	62,8%
	2017	34,8%
	2018	17,3%
	2019	-11,0%
	2020	-41,8%
City Link	2016	17,9%
	2017	10,6%
	2018	19,0%
	2019	-18,5%
	2020	-54,3%
Garuda	2016	0,04%
	2017	-1,86%
	2018	-1,96%
	2019	-19,12%
	2020	-70,28%

Source: Processed from the INACA Annual Report

When the performance of the airline is seen from *load factor* as in table 8, in 2019 and 2020, Lion Air and Batik Air have numbers *load factor* above 50% which means the level of seat occupancy is above half that provided. Garuda and City Link showed different things in 2019 *load factor* its above 60%, but in 2020 *load factor* it dropped quite drastically at around 40%.

Table 8. *Load Factor*

Airline Name	Year	*Load Factor*
Lion Air	2019	53,60%
	2020	50,90%
Water batik	2019	57%
	2020	53,10%
City Link	2019	61%
	2020	40,90%
Garuda	2019	71,20%
	2020	43,60%

Sumber: Annual Report INACA, 2019-2020

5. CONCLUSION

Based on the discussion above, it can be concluded that the market structure of the national aviation industry is a strict oligopoly or a dominant company with *competitive fringe*. This can be seen from the CR4 which is between 70% and 90%. In addition, market competition among markets *oligopoly* This is also large in terms of the HHI which is far from a value of 1. In terms of barriers to market entry, it can also be seen from the MES which is above 10% for 2016 to 2019, but in 2020, the MES value is below 10% which means there is leeway for companies to enter the aviation industry.

Related to company behavior, the marketing strategy and services provided are one of the top strategies by airlines to attract consumers. In addition, working with other parties is one of the benefits that can be obtained by airlines. Subsequent behavior can also be seen from the timeliness of departure and arrival. Lion Air is the airline that is often not on time with Garuda being the airline that is the most punctual.

The performance of the aviation industry in 2016-2018 tends to increase. However, in 2019 and 2020 it tends to decrease. This can also be seen from the growth in passengers for each airline. From the side*load factor*, Garuda and City Link experienced a significant decline from 2019 to 2020.

6. IMPLICATIONS AND LIMITATIONS

This research has many limitations, one of which is related to measurement indicators and data that can be used. Future research is expected to be able to use other indicators and update the data used in analyzing market structure, market behavior, and the performance of the commercial aviation industry. In addition, further research can use a statistical approach to see the effect of market structure and behavior on company performance.

This paper is expected to provide understanding to related parties to make policies that are more beneficial to industry and society. The decline in performance in 2019-2020 was due to the co-19 pandemic. Because the Covid-19 pandemic is over, the recovery policy must be able to move the world of commercial aviation. The government should be able to establish policies that encourage the growth of the commercial air transportation industry, such as opening tourist destinations that were previously closed and providing convenience for people using air transportation.

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