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Airlines Benchmarking Analysis based on Financial Performance-Emirates, Southwest Airlines, Singapore Airlines and Lufthansa

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Abstract: *This report mainly focuses on financial performance of airlines before and after COVID-19 pandemic, giving analysis of essential indicators based on comparison between selected airlines and industry average performance. The impact of COVID-19 pandemic since 2020 is mentioned in each part. Firstly, it provides an overview of four selected airlines, Emirates, Southwest Airlines, Singapore Airlines and Lufthansa. Then the geographic analysis of airlines is given. Following this, this report compares the performance of the airlines on main financial indicators in recent years respectively, including unit cost, yield, load factor, break-even load factor, employee productivity and aircraft productivity. In the next section, some other indicators such as EBIT margin, Debt/equity ratio and Current ratio are listed. Finally, limitations of the report are discussed in the conclusion part.*

Keywords: *benchmarking analysis, airlines, financial performance, COVID-19 pandemic*

1. Introduction

Air transportation is an indispensable part in current transportation system and the market is growing rapidly. It is estimated that compound annual growth rate of air traffic would stay at around 4% in the following decades [1]. This means the entire market could be doubled in the next 15 to 20 years. However, global aviation industry is relatively vulnerable to catastrophes such as financial crisis and terrorist attacks [2][3]. The COVID-19 pandemic which resulted in global border closures and suspensions of flights also slows down the market expansion since 2020 [4]. But in long-term perspective, global air network would be more sophisticated and mature, bringing significant changes to global economy and societies. In order to seize the opportunities in facing COVID-19 challenges and to handle air traffic appropriately both for passengers and cargo in the future, airlines should be well-prepared and focus on critical aspects to keep competitive in the market.

Four outstanding and reputable airlines, Emirates, Southwest Airlines, Singapore Airlines and Lufthansa, are selected to be analysed on the basis of respective economic, financial and operational performance in recent years. Emirates is the primary object in the analysis while other airlines are mainly used in comparison. Regional differences in terms of geography and regulation environment are considered in the analysis.

In this report, all figures in the tables are extracted from recent annual reports of the four airlines, unless otherwise stated.

2. The profile of the four airlines

2.1 Emirates

Emirates, aiming to be the best air service provider in the Middle East, is one of the largest airlines in this area. It was founded in 1985 and owned by Dubai government. According to the annual report of the airline, the company locates its hub at Dubai International Airport, serving 156 airports in 84 countries. Emirates operates a fleet consists of Airbus and Boeing aircrafts and it is also the largest operator of both Airbus A380 and Boeing 777 worldwide. The average fleet age of the airline is 6.1 years which is relatively young, ensuring updated aeronautic technology is used. Average aircraft capacity of Emirates is relatively large due to the aircraft type. Wide-body aircrafts such as A380 are

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the first choice in the past procurement orders of the airline. In order to improve flexibility of the fleet, Emirates plans to convert some A380 orders to smaller aircrafts. This change could better match a more flexible strategy of the airline.

2.2 Southwest Airlines

Southwest Airlines is the largest low-cost airline worldwide, operating mainly in America. The company was established in 1967 and its headquarters is located in Dallas. The company claims that it has one of the strongest route networks in the U.S., which accounts for around 95% of ASMs of the airline. Although majority of the business remains in the United States, the airline plans to enhance its international connection and it has continuous growth since 2013. Southwest Airlines operates only Boeing aircrafts including 737-700, 737-800 and 737 MAX 8. Fewer aircraft types in operation could contribute to saving overall maintenance costs. The average age of aircrafts is around 11 years. It is worth to mention that the company has a continuous profit record since 1972. But it was broken in 2020 due to the COVID-19 pandemic.

2.3 Singapore Airlines

Singapore Airlines was established in 1947 and its hub was set at Singapore Changi Airport. SilkAir which focuses on regional flights and Scoot which mainly targets at low-cost carrier market are both parts of Singapore Airlines. According to the annual report of the airline, the company serves 138 destinations totally, mainly in Asia and Europe. The average fleet age of the airline is 6 years implies its commitment to modern aircrafts and several different types of aircrafts operated by Singapore Airlines enable the company significant flexibility. In the future, Singapore Airlines aims to build new hubs in India and Thailand, expanding connectivity to further regions.

2.4 Lufthansa

Lufthansa was founded in 1955 and it is the largest German airline. The primary hub of the airline is at Frankfurt Airport while secondary hub is at Munich Airport. Network Airlines and Eurowings are two main entities in the group to provide air service. According to the annual report of Lufthansa, the former airlines mainly focus on improving service quality and cost-effectiveness while the latter one which concentrates on domestic market would be the primary driver of growth. Digitalization strategy implemented by Eurowings may help the company to reinforce its competitiveness. The average age of the fleet is relatively higher in Lufthansa, nearly 12 years. Thus, the airline needs to invest more to modernize aircrafts for the sake of service quality improvement and safety consideration.

3. Operational and financial performance analysis

3.1 Geographic analysis

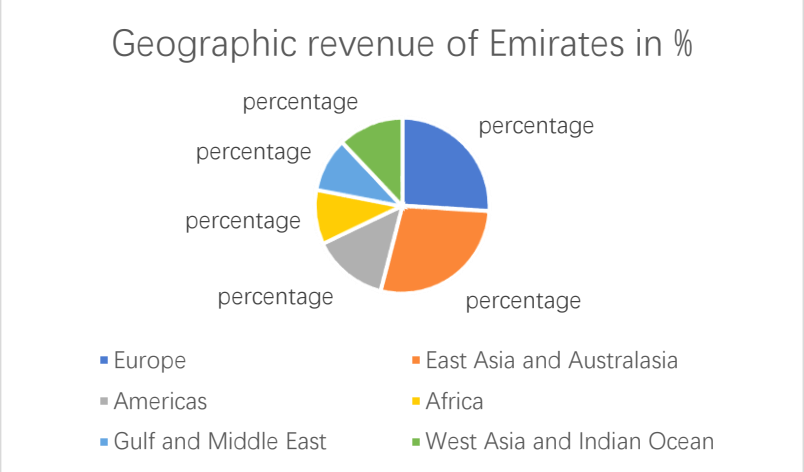

Figure 1: Geographic revenue of Emirates, Source: The Emirates Group Annual Report 2020-21

Because the impact of COVID-19 pandemic is worldwide, geographic characteristics are slightly

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changed. As shown in the pie chart, Europe and East Asia still account for more than half of the revenue of Emirates while Americas only contributes 15% to the total revenue. Thus, Lufthansa and Singapore Airlines could be one of the main regional competitors to Emirates in Europe and East Asia respectively. Southwest Airlines is low-cost airline and it has fewer competition with Emirates because of less overlapped flight route and differentiated customers. However, the comparison between Emirates and Southwest Airlines can still show the strengths and weaknesses of different operation method in certain areas.

On the other hand, the hub of Emirates in Middle East could serve as a bridge between East Asia and Europe. Economic connection between two regions would have stronger influence on Emirates than other airlines. Similar to this regional effect, economic growth rate in Europe would influence Lufthansa more significantly while Singapore Airlines might have more concern on internal economic relationship in Association of Southeast Asian Nations. In addition, currency volatility could impair financial performance of airlines while environmental costs in Europe might be higher compared to the costs in Asia countries due to more strict and higher standard regulations. Labour costs is another critical aspect and it could have great variation in different areas because of different average wage standards.

3.2 Unit cost and yield

Table 1: Total costs of 4 airlines from 2017 to 2021

Total costs /billion $	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	13.9	12.9	4.7	23.7
2020/2019	24.7	19.5	11.8	42.2
2019/2018	26.4	18.8	11.1	40.3
2018/2017	24.0	17.7	10.4	40.2

Table 2: Available seat kilometers of 4 airlines from 2017 to 2021

ASKs /billion	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	64.1	166.5	21.7	109.8
2020/2019	367.2	253.1	171.2	358.8
2019/2018	390.8	257.2	169.6	349.5
2018/2017	377.1	247.5	159.4	322.9

Table 3: Unit cost of 4 airlines from 2017 to 2021

Unit cost / $ cents per ASK	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	21.68	7.75	21.66	21.58
2020/2019	6.73	7.70	6.89	11.76
2019/2018	6.76	7.31	6.54	11.53
2018/2017	6.36	7.15	6.52	12.45

$$Unit\ cost = \frac{total\ costs}{Available\ Seat\ Kilometres} \quad (1)$$

Unit cost is the average spend on one passenger per kilometre in operating process and related activities to provide services to customers. Lower unit cost at same service level could help airlines to gain competitive advantages in the markets.

Unit cost of Emirates had a slightly increase in 2018 due to sharp fuel price increase, similar trend to Southwest Airlines and Singapore Airlines. Fuel forms 32% of Emirates operating costs, and remains the biggest expense item. However, Lufthansa performed differently, making a reduction in average unit cost. The airline claims that cost reduction and profit increase at Network Airlines compensate the fuel price increase. But in horizontal comparison, unit cost of Emirates is at same level as Singapore Airlines, much lower than Lufthansa. This is mainly because staff costs of Lufthansa are much higher, representing over 20% of total costs. Employee cost of Emirates only accounts for around 13% of total costs. In 2020 and 2021, all airlines except Southwest Airlines confronted a sharp increase of unit cost due to flight cancellation caused by government restriction on travel to prevent virus spread.

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Southwest Airlines kept unit cost at a much lower level in comparison to other airlines because of less passenger transportation capacity reduction which results from fewer restrictions in domestic market of America.

Table 4: Revenue of 4 airlines from 2017 to 2021

Revenue /billion $	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	8.2	9.0	2.8	15.5
2020/2019	24.8	22.4	11.9	41.4
2019/2018	26.2	22.0	11.9	40.8
2018/2017	24.8	21.1	11.5	40.5

Table 5: Revenue passenger kilometres of 4 airlines from 2017 to 2021

RPKs /billion	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	28.4	87.3	2.9	69.5
2020/2019	288.1	211.4	141.0	296.2
2019/2018	300.0	214.6	140.8	284.6
2018/2017	292.2	207.8	129.8	261.1

Table 6: Yield of 4 airlines from 2017 to 2021

Yield / $ cents per RPK	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	28.87	10.31	96.55	22.30
2020/2019	8.61	10.60	8.44	13.98
2019/2018	8.73	10.25	8.45	14.34
2018/2017	8.49	10.15	8.86	15.51

$$Yield = \frac{Revenue}{Revenue\ Passenger\ Kilometres} \quad (2)$$

Yield represents the average revenue earned per passenger-kilometre. It is the corresponding indicator to the unit cost, reflecting the average ticket price of airlines directly. Higher yield means higher revenue at same operating capacity.

Yield of four airlines is relatively stable before the pandemic. Normally, macroeconomy might be the main cause of the yield changes, higher yield means higher profitability. But global travel restrictions lead to a significant drop in passenger capacity of airlines which means a considerable drop in RPKs as well. So, the yield increase in 2020 and 2021 cannot represent a positive financial performance. Actually, it reflects a sharp increase of ticket price and lower passenger load factor which is shown in the following part. In addition, political issues such as the U.K. leaving the EU also loom further development and profitability of the industry in Europe. The threat of trade wars and protectionist activity in some areas could have significant negative impact on aviation industry as well [5]. Overall, yield level of four airlines is consistent with the unit cost level respectively.

3.3 Load factor and breakeven load factor

Load factor is a measure of capacity utilization and the indicator can be used for both passenger and cargo transportation. Southwest Airlines, a low-cost carrier, only focuses on passenger transportation. Thus, cargo load factor of the airline is not published and listed in the table. Other related data is shown in the tables below.

Table 7: Passenger load factor of 4 airlines from 2017 to 2021

Passenger Load factor	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	44.3%	52.4%	13.4%	63.3%
2020/2019	78.5%	83.5%	82.4%	82.6%
2019/2018	76.8%	83.4%	83.0%	81.4%
2018/2017	77.5%	84.0%	81.4%	80.9%

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$$Passenger\ load\ factor = \frac{Revenue\ Passenger\ Kilometres}{Available\ Seat\ Kilometres} \quad (3)$$

According to the computation result, passenger load factor of Emirates is relatively lower than other airlines in pre-crisis period. The aviation industry passenger load factor is around 81%, which means Emirates performed under average level [5]. This may result from the lack of flexibility of Emirates fleet. The average aircraft capacity might be larger than the best volume to meet current market demand. Compared to the previous year, the situation of all airlines in 2020 became worse, turning down from 82.4% to 13.4% for Singapore Airlines. Although there was a huge decline on average, Southwest Airlines still has a relatively higher load factor among four airlines, fitting the low-cost strategy of the company.

Table 8: Passenger break-even load factor of 4 airlines from 2017 to 2021

Passenger Break-even Load Factor	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	75.1%	75.2%	22.4%	96.8%
2020/2019	78.1%	72.7%	81.7%	84.1%
2019/2018	77.4%	71.3%	77.4%	80.4%
2018/2017	75.0%	70.4%	73.6%	80.3%

$$Break-even\ load\ factor = \frac{Total\ costs}{Revenue} \times Load\ factor \quad (4)$$

Break-even load factor is the load factor required to cover operating costs. It can be influenced by profitability of the airline. Break-even load factors of four airlines remain stable before the outbreak of COVID-19. Southwest Airlines has the lowest break-even load factor, representing outstanding profitability and cost control of the company. Abnormal break-even load factor of Singapore Airlines results from its unusual load factor during the pandemic and higher ticket price.

Table 9: Revenue tonne kilometres of 4 airlines from 2017 to 2021

RTKs /billion	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	12.5	/	4.1	7.4
2020/2019	39.5	/	6.4	10.7
2019/2018	42.3	/	7.0	10.9
2018/2017	41.3	/	7.3	10.8

Table 10: Available tonne kilometres of 4 airlines from 2017 to 2021

ATKs /billion	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	24.8	/	4.8	10.6
2020/2019	58.6	/	10.8	17.4
2019/2018	63.3	/	11.2	16.4
2018/2017	61.4	/	11.1	15.8

Table 11: Cargo load factor of 4 airlines from 2017 to 2021

Cargo Load factor	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	50.4%	/	85.8%	69.8%
2020/2019	67.4%	/	59.3%	61.5%
2019/2018	66.8%	/	62.5%	66.5%
2018/2017	67.2%	/	65.3%	68.4%

$$Cargo\ load\ factor = \frac{Revenue\ Tonne\ Kilometres}{Available\ Tonne\ Kilometres} \quad (5)$$

Cargo load factors in three airlines are similar, all at around 65% before 2020. This level is much lower than Passenger load factor of the airlines. However, cargo load factor of the four airlines is better than industry average performance which is under 50% [5]. It is reported that nearly a half of air freight is moved by passenger aircrafts [6]. Although customer satisfaction for delivery has been more time-sensitive, which has driven demand growth in air freight volume [7], the utilization of air cargo capacity is far under economic standard. Although airlines such as Singapore airlines have changed its

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focus to air cargo to compensate loss in passenger transportation during COVID-19 pandemic, more innovative methods and more efficient cooperation on cargo transportation should be implemented to improve cargo load factor through the entire industry in the long-term.

3.4 Employee productivity and aircraft productivity

Employee productivity is a measure of output of labour. It can be represented by available capacity or average revenue per employee. In this report, average revenue per employee is used in comparison.

Table 12: Employee numbers of 4 airlines from 2017 to 2021

Employee numbers	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	40801	56500	25547	125207
2020/2019	60033	60800	27619	137784
2019/2018	60282	58803	26534	134330
2018/2017	62356	56110	25901	128856

Table 13: Employee productivity of 4 airlines from 2017 to 2021

Revenue per employee / $	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	200975	159292	109602	123795
2020/2019	413106	368421	430863	300470
2019/2018	434624	374131	448481	303730
2018/2017	397716	376047	443998	314304

$$Employee\ productivity = \frac{Revenue}{Employee\ numbers} \tag{6}$$

Only Emirates reduced the employee numbers in 2018 among four airlines. The 3% reduction over employee leads to a considerable increase in productivity at around 11% while Southwest Airlines and Lufthansa perform negatively on this indicator. This is mainly because Emirates has applied more smart methods and process in working environment, contributing to significant decline in workforce requirement. In 2020, Emirates slimmed down at around 33% in order to save considerable labour costs. This action also helps the company to keep higher employee productivity. In addition, reduced recruitment and natural attrition are also reasons for the changes.

Table 14: Aircraft numbers of 4 airlines from 2017 to 2021

Aircraft numbers	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	259	718	168	757
2020/2019	270	747	196	763
2019/2018	270	750	195	763
2018/2017	268	706	179	728

Table 15: Aircraft productivity of 4 airlines from 2017 to 2021

Aircraft productivity / million ASKs	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	247	232	129	145
2020/2019	1360	339	873	470
2019/2018	1447	343	870	458
2018/2017	1407	351	891	444

$$Aircraft\ productivity = \frac{Available\ seat\ kilometers}{Aircraft\ numbers} \tag{7}$$

It can be seen in the table that aircraft productivity of Emirates is much higher than others before the crisis. This is mainly because that aircraft capacity in the fleet of Emirates, which is formed by Airbus A380 and Boeing 777, is considerably larger than single channel aircraft such as Boeing 737. The latter aircraft type is more prevalent in other airlines. Singapore Airlines also operates some larger

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capacity aircrafts while low-cost carrier prefer flexibility provided by smaller aircrafts. Aircraft capacity can be the primary reason for the productivity difference.

3.5 Employee productivity and aircraft productivity

EBIT margin, debt/equity ratio and current ratio of four airlines are calculated and listed below. EBIT margin is the margin of earning before taking out interest and tax expense. It directly represents the profitability of a company. Debt/equity ratio indicates how much debt a company is using to finance its assets relative to the value of shareholders' equity. It is reported that general acceptable Debt/equity ratio is around 1 while slightly over 2 is reasonable in aviation industry [8]. Current ratio is for measuring company's ability to pay for its short-term debt and other payables. Healthy current ratio varies from industry to industry and it is usually lower in aviation industry because of the industry's heavy indebted nature [9].

Almost all four airlines earn less and less in the past 4 years. This situation may be partly caused by continuous increase of jet fuel price and the market shrinking results from the travel restrictions since 2020. Emirates has the positive EBIT margin among four airlines during the pandemic and this is relevant to successful cost control of the company. Southwest Airlines and Singapore Airlines have less debt in comparison to Emirates and Lufthansa before 2020 while debt/equity ratio of Emirates is acceptable nonetheless. However, only Singapore Airlines still kept it in healthy range after the crisis. On the other hand, four airlines have acceptable current ratio in 2021, ensuring daily operation during the crisis. Current ratio of Emirates and Lufthansa is still under 1 due to industry nature.

Table 16: EBIT of 4 airlines from 2017 to 2021

EBIT / million $	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	1265	-3816	-1870	-8364
2020/2019	7039	2957	44	2112
2019/2018	6614	3206	779	3271
2018/2017	6799	3407	1130	3627

Table 17: EBIT margin of 4 airlines from 2017 to 2021

EBIT margin	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	15.4%	-42.4%	-66.8%	-54.0%
2020/2019	28.4%	13.2%	0.4%	5.1%
2019/2018	25.2%	14.6%	6.5%	8.0%
2018/2017	27.4%	16.1%	9.8%	9.0%

$$EBIT\ margin = \frac{EBIT}{Revenue} \tag{8}$$

Table 18: Total liabilities of 4 airlines from 2017 to 2021

Total liabilities / million	Emirates / AED	Southwest Airlines / $	Singapore Airlines / SGD	Lufthansa / €
2021/2020	131630	25712	21303	38102
2020/2019	148475	16063	23980	32421
2019/2018	89655	16390	16822	28640
2018/2017	90541	15469	12664	26668

Table 19: Total equity of 4 airlines from 2017 to 2021

Total equity / million	Emirates / AED	Southwest Airlines / $	Singapore Airlines / SGD	Lufthansa / €
2021/2020	20147	8876	16278	1382
2020/2019	23587	9832	9733	10238
2019/2018	37743	9853	13683	9573
2018/2017	37046	9641	13228	9110

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Table 20: Debt/equity ratio of 4 airlines from 2017 to 2021

Debt/equity ratio	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	653.3%	289.7%	130.9%	2757.0%
2020/2019	629.5%	163.4%	246.4%	316.7%
2019/2018	237.5%	166.3%	122.9%	299.2%
2018/2017	244.4%	160.5%	95.7%	292.7%

$$Debt/equity\ ratio = \frac{Total\ liabilities}{Total\ equity} \quad (9)$$

Table 21: Current assets of 4 airlines from 2017 to 2021

Current assets / billion	Emirates / AED	Southwest Airlines / $	Singapore Airlines / SGD	Lufthansa / €
2021/2020	22891	15173	9672	10040
2020/2019	27705	5974	4843	11285
2019/2018	30915	5028	5500	10654
2018/2017	34170	4815	4967	11029

Table 22: Current liabilities of 4 airlines from 2017 to 2021

Current liabilities / million	Emirates / AED	Southwest Airlines / $	Singapore Airlines / SGD	Lufthansa / €
2021/2020	35705	7506	5713	14659
2020/2019	48892	8952	11002	15986
2019/2018	37465	7905	7378	16215
2018/2017	41629	6863	6566	12638

Table 23: Current ratio of 4 airlines from 2017 to 2021

Current ratio	Emirates	Southwest Airlines	Singapore Airlines	Lufthansa
2021/2020	64.1%	202.1%	169.3%	68.5%
2020/2019	56.7%	66.7%	44.0%	70.6%
2019/2018	82.5%	63.6%	74.5%	65.7%
2018/2017	82.1%	70.2%	75.6%	87.3%

$$Current\ ratio = \frac{Current\ assets}{Current\ liabilities} \quad (10)$$

4. Conclusion

COVID-19 pandemic, regional trade conflicts and relatively lower global economy growth rate may bring some difficulties to aviation industry in recent years. However, from the perspective of macroeconomy, the industry would have strong growth in the long run. Governments also have strong willingness to support airlines in order to develop economy and protect jobs [10]. Regional and domestic markets may recover earlier than international markets [11].

Overall, Emirates is competitive in global aviation market and it is one of the largest airlines in terms of ASKs. Unit cost and yield of the airline is relatively normal while employee productivity of Emirates is outstanding due to applying smarter way of working to reduce demand for labour. However, larger average capacity of aircrafts in the fleet of Emirates hampers the company to obtain flexibility compared to competitors. This may also contribute to lower load factor of Emirates. The airline has realised the situation and is trying to make some changes in future aircraft modernization. As for EBIT margin, there is room for Emirates to gain more profit. Debt ratio of Emirates is at a risky level after 2020 and current ratio is rather healthy. Generally, all airlines have to counter COVID-19 challenge and benefit from further globalization in the long-term perspective. Emirates should seize opportunities to reinforce its current market position in Europe and East Asia, building connection to more regions and to enhance its profitability.

Dnata, which provides ground service for Emirates, is excluded from the financial data of Emirates

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while all subsidiaries of other airlines are considered in the analytical part of the report. This is because financial data of Dnata are listed separately and the company owns no aircrafts. The structures of other airlines are more complicated, thus airlines such as Lufthansa are considered as group. But it could result in inconsistency and errors when doing financial comparison between airlines. This could be the main limitation of this report.

References

[1] ICAO (2018).Long-Term Traffic Forecasts - Passenger and Cargo, https://www.icao.int/sustainability/Pages/eap-fp-forecast-scheduled-passenger-traffic.aspx

[2] Sadi, M.A. & Henderson, J. C (2000).The Asian economic crisis and the aviation industry: impacts and response strategies. Transport Review, vol.20, no.3, p.347-367.

[3] Chung, L. H (2015). Impact of pandemic control over airport economics: Reconciling public health with airport business through a streamlined approach in pandemic control. Journal of Air Transport Management, vol.44, p. 42-53.

[4] Dube, K., Nhamo, G. & Chikodzi, D (2021). COVID-19 pandemic and prospects for recovery of the global aviation industry. Journal of Air Transport Management, vol.92, no.1, p.102022.

[5] IATA (2019), Annual Review 2019, viewed 2 June 2019, https://www.iata.org/publications/pages/annual-review.aspx

[6] Morrell, P.S. & Klein, T (2018), Moving Boxes by Air: The Economics of International Air Cargo, 2nd edition, Routledge, London.

[7] So, K. C (2000). Price and Time Competition for Service Delivery. Manufacturing & Service Operations Management, vol. 2, no. 4, p.392–409.

[8] Dizkirici, A.S., Topal, B. & Yaghi, H (2016), Analysing the Relationship between Profitability and Traditional Ratios: Major Airline Companies Sample, Journal of Accounting. Finance and Auditing Studies, vol.2, no.2, p.96-114

[9] Morrell, P. S (2012). Airline Finance, 3nd edition, Air Transport Economics and Planning, UK.

[10] Abate, M., Christidis, P. & Purwanto, A.J. (2020). Government support to airlines in the aftermath of the COVID-19 pandemic. Journal of Air Transport Management, vol.89, p.101931.

[11] Warnock-smith, D., Graham, A., O'Connell, J.F. & Efthymiou, M (2021). Impact of COVID-19 on air transport passenger markets: Examining evidence from the Chinese market. Journal of Air Transport Management, vol.94, p.102085