

Report of the 2019 ATRS Airport Benchmarking

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ATRS Airport Benchmarking Project



- ❑ To provide a comprehensive, unbiased comparison of airport performance focusing on
 - **Productivity, Efficiency, Cost Competitiveness**
 - **Financial Results**
 - **Comparison of Airport Charges**

- ❑ The 2019 Report - the 18th edition of ATRS Global Airport Benchmarking Report

Top 20 airports in the world –what do you notice ?



	Airport	Total Passengers 2000		Airport	Total Passengers 2017
1	ATLANTA (ATL)	80 162 407	1	ATLANTA GA, US (ATL)	103 902 992
2	CHICAGO (ORD)	72 144 244	2	BEIJING, CN (PEK)	95 786 442
3	LOS ANGELES (LAX)	66 424 767	3	DUBAI, AE (DXB)	88 242 099
4	LONDON (LHR)	64 606 826	4	TOKYO, JP (HND)	85 408 975
5	DALLAS/FT WORTH (DFW)	60 687 122	5	LOS ANGELES CA, US (LAX)	84 557 968
6	TOKY (HND)	56 402 206	6	CHICAGO IL, US (ORD)	79 828 183
7	FRANKFURT/MAIN (FRA)	49 360 630	7	LONDON, GB (LHR)	78 014 598
8	PARIS (CDG)	48 246 137	8	HONG KONG, HK (HKG)	72 664 075
9	SAN FRANCISCO (SFO)	41 040 995	9	SHANGHAI, CN (PVG)	70 001 237
10	AMSTERDAM (AMS)	39 606 925	10	PARIS, FR (CDG)	69 471 442
11	DENVER (DEN)	38 751 687	11	AMSTERDAM, NL (AMS)	68 515 425
12	LAS VEGAS (LAS)	36 865 866	12	DALLAS/FORT WORTH, US (DFW)	67 092 194
13	MINNEAPOLIS/ST PAUL (MSP)	36 751 632	13	GUANGZHOU, CN (CAN)	65 887 473
14	SEOUL (SEL)	36 727 124	14	FRANKFURT, DE (FRA)	64 500 386
15	PHOENIX (PHX)	36 040 469	15	ISTANBUL, TR (IST)	64 119 374
16	DETROIT (DTW)	35 535 080	16	NEW DELHI, IN (DEL)	63 451 503
17	HOUSTON (IAH)	35 251 372	17	JAKARTA, ID (CGK)	63 015 620
18	NEWARK (EWR)	34 188 468	18	SINGAPORE, SG (SIN)	62 220 000
19	MIAMI (MIA)	33 621 273	19	INCHEON, KR (ICN)	62 157 834
20	MADRID (MAD)	32 893 190	20	DENVER CO, US (DEN)	61 379 396

Source: ACI World

Significant Changes in the Airport Industry



- Geographically more diversified
- Commercialization and Privatization
- Global Airport Operators
- Significant Presence of Low Cost Carriers
- ...

Airport Operator	Number of Airports Manages	Number of Airports Invests	Other Facts
VINCI SA	46 (LGW, ACY)	23 (BFS, LGW)	On 27 December 2018, VINCI Airports signed an agreement to purchase a 50.01% stake from the current shareholders of London Gatwick.
Group ADP	25 (AMM, CDG)	20 (AMM, OHD)	Groupe ADP owns 46.1% of TAV Airports Holding.
TAV Airports	15 (ADB, NBE)	12 (AYT, ISL)	The airports operated by TAV airports in Turkey accounted for 62% of total passenger traffic and 62 of total commercial flights at Turkish airports in 2018.
Fraport AG	26 (FRA, LED)	25 (FRA, LJU)	In FY 2018, Fraport Group generated €3.48 billion in sales, and €506 million in profit.

Airport Operator	Number of Airports Manages	Number of Airports Invests	Other Fact
SAVE Group	6 (VCE, TSF)	3 (BRU, CRL)	In 2017, SAVE Group had a total 1064 employees and reported consolidated revenues of 199.1 million euros.
GIP	2 (LGW, EDI)	2 (LGW, EDI)	GIP acquired LGW from BAA for £1.5 billion in 2009. In 2012, GIP made the acquisition of EDI for £807 million.
Grupo Ferrovial	5 (DEN, LHR)	5 (DEN, LHR)	Since 1998, Ferrovial invested, developed, and operated total 34 airports around the world.
Changi Airport Group	5 (SIN, VVO)	5 (SIN, VVO)	In 2018, Changi loses 20-year contract to operate Saudi Airport.

Presence of Low Cost Carriers at Airports



Low Cost Carriers' Market Shares (seats)

	Asia Pacific	Europe	North America
Mean	32%	41%	38%
Median	25%	40%	40%
Minimum	1%	0%	0%
Maximum	85%	100%	95%
Count	54	71	81

Conspicuous Carrier Dominance at Airports



Dominant Carriers' Market Shares (seats)

	Asia Pacific	Europe	North America
Mean	37%	43%	48%
Median	33%	40%	45%
Minimum	8%	15%	19%
Maximum	78%	91%	94%
Count	54	71	81

Selected Key Performance Indicators



Share of Non-Aeronautical Revenue

	<i>Asia</i>	<i>Australia/New Zealand</i>	<i>Europe</i>	<i>North America</i>
Mean	50.0%	53.6%	46.2%	51.5%
Median	48.2%	52.8%	44.0%	52.3%
Minimum	20.6%	39.8%	20.0%	16.5%
Maximum	77.3%	68.3%	73.8%	71.0%
Count	26	14	56	81

Selected Key Performance Indicators



Operating Revenue Per Passenger

	Asia	Australia/New Zealand	Europe	North America
Mean	\$19.55	\$19.54	\$22.75	\$13.04
Median	\$12.91	\$18.75	\$20.46	\$12.47
Minimum	\$3.17	\$10.17	\$11.01	\$4.94
Maximum	\$63.88	\$31.97	\$48.58	\$25.91
Count	29	14	58	81

Selected Key Performance Indicators



Operating Revenue Per Aircraft Movement

	Asia	Australia/New Zealand	Europe	North America
Mean	\$2,638	\$1,994	\$2,654	\$1,017
Median	\$1,898	\$1,897	\$2,239	\$922
Minimum	\$369	\$766	\$955	\$238
Maximum	\$9,937	\$3,550	\$7,678	\$2,903
Count	43	14	57	81

Selected Key Performance Indicators



Operating Expenses Per Passenger

	Asia	Australia/New Zealand	Europe	North America
Mean	\$9.20	\$7.09	\$13.19	\$8.11
Median	\$5.17	\$6.05	\$11.17	\$8.06
Minimum	\$1.35	\$3.61	\$3.81	\$2.97
Maximum	\$40.56	\$13.42	\$30.73	\$14.56
Count	29	13	57	81

Note: operating expense does not include depreciation and amortization

The Airport Efficiency Excellence Awards



- Award Winning Airports are decided by rankings in terms of residual **Variable Factor Productivity** (VFP) Index in their respective region and size categories.

Methodology - VFP



Variable Factor Productivity (VFP) Index

- VFP is essentially the ratio of **total (aggregate) output index** divided by **total (aggregate) variable input index**, namely labor and soft cost input (total non-labor variable inputs).
- Choice of Methodologies for Computing TFP/VFP → results likely differ
- ATRS Benchmarking Study computes VFP using the **multilateral index** procedure proposed by Caves, Christensen and Diewert (1982).

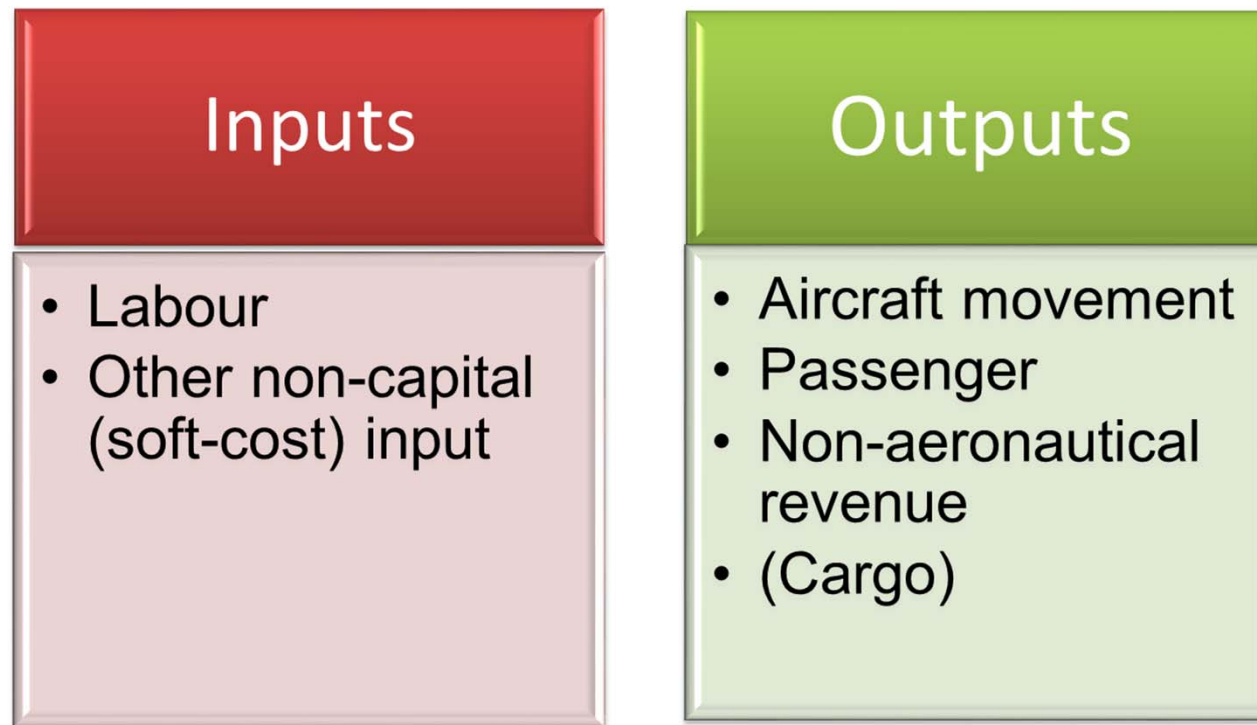
Multilateral Index Procedure

- This multilateral **output (input)** index procedure uses the **revenue (cost)** shares to aggregate **output (inputs)**

$$\ln \frac{Y_i}{Y_j} = \sum \frac{R_{ki} + \bar{R}_k}{2} \ln \frac{Y_{ki}}{\tilde{Y}_k} - \sum \frac{R_{kj} + \bar{R}_k}{2} \ln \frac{Y_{kj}}{\tilde{Y}_k}$$

$$\ln \frac{X_i}{X_j} = \sum \frac{W_{ki} + \bar{W}_k}{2} \ln \frac{X_{ki}}{\tilde{X}_k} - \sum \frac{W_{kj} + \bar{W}_k}{2} \ln \frac{X_{kj}}{\tilde{X}_k}$$

Methodology - VFP



**Gross Variable Factor Productivity
or Observed Productivity**

Observed Productivity \neq Efficiency



- ***Efficiency*** measures how well a firm performs relative to the best practice or the most output obtainable from a given input level with the given production
- The observed productivity does not always reflect the true efficiency level because of factors beyond managerial control

Methodology – Residual VFP



Factors Beyond Managerial Control:

- **Airport size (Scale of aggregate output)**
- **Average aircraft size**
- **Share of international traffic**
- **Share of air cargo traffic**
- **Extent of capacity shortage - congestion delay**
- **etc**

Residual (Net) variable factor productivity (RVFP) is computed after removing effects of these Factors

The Airport Efficiency Excellence Awards



2019 Top Efficiency Award Winners

2019 Top Efficiency Award Winners



Asia Pacific:

- Over 40 million passengers per year: Hong Kong
 - Mr C K Ng
- 20-40 million passengers per year: Jeju International
 - Mr. Su Bong Kim
- 10-20 million passengers per year: Gimhae International
 - Mr. Duck Gyo Chung
- Under 10 million passengers per year: Guam International
- Oceania Airports: Brisbane
- Airport Groups: Korea Airport Corporation
 - Mr. Chang Wan Son

2019 Top Efficiency Award Winners



Europe:

- Over 40 million passengers per year: Amsterdam Schiphol
 - Mr Guillaume Burghouwt
- 25-40 million passengers per year: Copenhagen
 - Mr. Kristian Durhuus
- 15-25 million passengers per year: Athens
 - Mr. Dimitrios Dimitriou
- Under 15 million passengers per year: EuroAirport Basel-Mulhouse-Freiburg
 - Mr. Matthias Suhr
- Airport Groups: Schiphol
 - Mr Guillaume Burghouwt

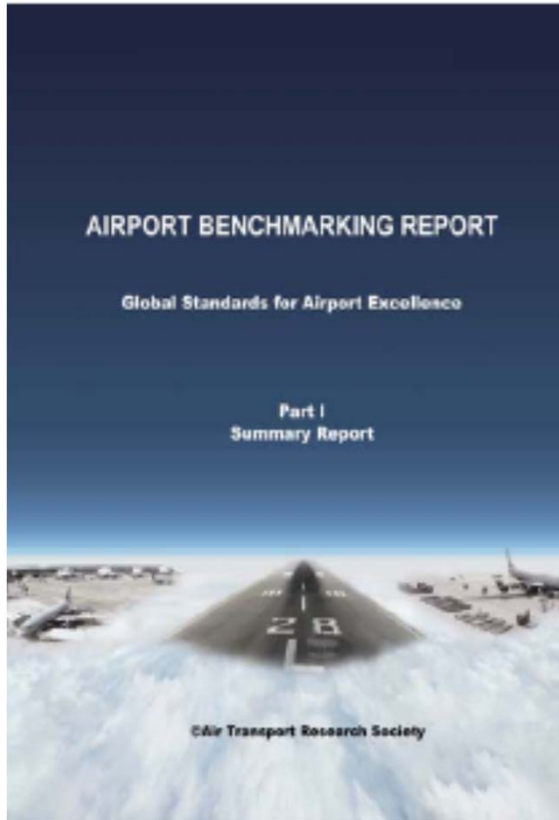
2019 Top Efficiency Award Winners



North America (Canada/US):

- Over 40 million passengers per year: Atlanta
 - Mr. Greg Richardson
- 25-40 million passengers per year: Minneapolis/St Paul,
 - Mr. Mitch Kilian
- 15-25 million passengers per year: Vancouver
- Under 15 million passengers per year: Omaha Eppley Airfield

ATRS Airport Benchmarking Report and Database



- ❑ The ATRS Global Airport Performance Benchmarking Report : 3 volumes, over 600 pages of valuable data and analysis.
- ❑ Details at www.atrsworld.org
- ❑ The project is funded entirely by sales of reports and database



Thank You!
Dank Je wel !