Report of the 2019 ATRS Airport Benchmarking

ATRS Global Airport Performance Benchmarking Task Force:
Founding Chairman – Tae Oum; Coordinator - Chunyan Yu
Asia Pacific: Peter Forsyth, Xiaowen Fu, Shinyan Hanaoka, Yeong-Heok Lee
Japhet Law, Yuichiro Yoshida
Europe: Nicole Adler, Jaap de Wit, Hans-Martin Niemeier, Eric Pels
North America: Bijan Vasigh, Jia Yan, Chunyan Yu
Middle East: Paul Hooper

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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

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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
- …

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Airport Operator	Number of Airports Manages	Number of Airports Invests	Other Facts
VINCI SA			
Group ADP	25 (AMM, CDG)	20 (AMM, OHD)	Groupe ADP owns 46.1% of TAV Airports Holding.
TAV Airports	15 (ADB, NBE)		
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			
GIP	2 (LGW, EDI)	2 (LGW, EDI)	
Grupo Ferrovial	5 (DEN, LHR)		
Changi Airport Group	5 (SIN, VVO)	5 (SIN, VVO)	In 2018, Changi loses 20-year contract to operate Saudi Airport.

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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

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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

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Selected Key Performance Indicators

Share of Non-Aeronautical Revenue

	Asia	*Australia/New Zealand*	*Europe*	*North America*
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

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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

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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

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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

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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.

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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).

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Methodology - VFP

Multilateral Index Procedure

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

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

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

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Methodology - VFP

Inputs	Outputs
• Labour • Other non-capital (soft-cost) input	• Aircraft movement • Passenger • Non-aeronautical revenue • (Cargo)

Gross Variable Factor Productivity or Observed Productivity

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Observed Productivity ≠ 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

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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

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The Airport Efficiency Excellence Awards

2019 Top Efficiency Award Winners

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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

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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

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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

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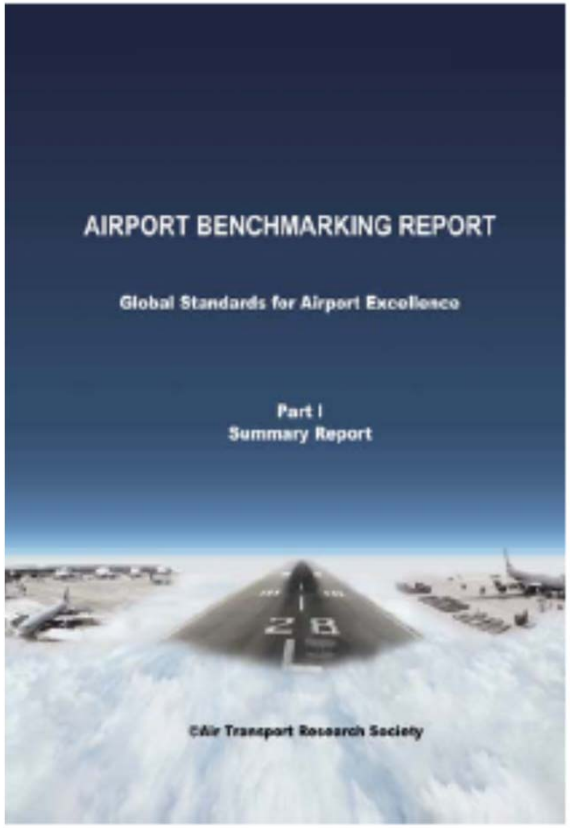
ATRS Airport Benchmarking Report and Database



- 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**

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Thank You!
Dank Je wel !

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