Plenary Session II: “Airport Keynote & 2013 ATRS Global Airport Performance Benchmarking Report Session”

**Moderator:** Mr. Mario Diaz, **Head**, Houston Airports System, TX, USA

**Prof. Tae Hoon Oum,** University of British Columbia, Canada

“Key Results of the 2014 ATRS Global Airport Performance Benchmarking Project” – 30 min.

**Panelists:** 50-60 min
Panelists:

• **Balram Bheodari**, Deputy GM, Hartsfield-Jackson Atlanta International Airport, Atlanta, GA, USA

• **Mr. Kristian Durhuus**, VP Operations, Copenhagen Airport, Demark

• **Mrs. Ioanna Papadopoulou**, Director, Commercial & Marketing on behalf of **(Dr. Yannis Paraschis, President & CEO, Athens International Airport, Greece)**

• **Mr. Bjorn Oli Hauksson**, Managing Director, Keflavik International Airport, Iceland
• Mr. Soon-Chun Park, Head Executive, Busan Regional Headquarters, Korea Airport Corp, Korea (on behalf of Mr. Seok-ki Kim, CEO, KAC)

• Ms. Marion Charlton, GM-Terminal and Commercial, Gold Coast Airport, Queensland Airports Limited, Australia

• Mr. Arturs Kokars, Director of Aviation Services Dept, Riga International Airport, Latvia

• Mr. Johan Vanneste, CEO, Luxembourg Findel Airport, Luxembourg
2014 ATRS Global Airport Performance Benchmarking Project

Key Findings

ATRS Global Airport Benchmarking Task Force:

Asia Pacific: P. Forsyth, Xiaowen Fu, Yeong-Heok Lee, Yuichiro Yoshida, Japhet Law, Shinya Hanaoka

Europe: Nicole Adler, Jaap de Wit, Hans-Martin Niemeier, Eric Pels

North America: Tae Oum, Bijan Vasigh, Jia Yan, Chunyan Yu

Middle East: Paul Hooper
OUTLINE

Objective of the ATRS Benchmarking Study

Airports Included and ATRS Database

Some Characteristics of Sample Airports

Methodology

Key Results on Efficiency and Costs

User Charge Comparisons
OBJECTIVE OF THE BENCHMARKING STUDY

- To provide a comprehensive, unbiased comparison of airport performance focusing on:
  - Productivity and Operating/Mgt Efficiency
  - Unit Cost Competitiveness
  - Airport User Charges

- Our study does not treat service quality differentials across airports because of our research time & resource constraints.
Airport Database

2014 ATRS Global Airport Performance Benchmarking Project
200 MAJOR AIRPORTS AROUND THE WORLD

N. America, 78

Europe, 69

Asia Pacific, 53

United States (66)

Canada (12)

Oceania Countries (16)

Asia (37)

2 new airports

2 new airports

1 new airport

Objective  Data  Airport Characteristics  Methodology  Efficiency & Cost  User Charge
26 AIRPORT GROUPS

- Asia Pacific (9)
- Europe (17)
The ATRS Database contains historic information (since FY 2002) including financial data, traffic and capacity data for the major airports and airport groups in the following geographic regions:

- Asia Pacific including Oceania; Europe; North America
- Limited data on S. America and Africa

The data in each continent is segregated into:

- Traffic statistics and composition
- Airport characteristics (runways, terminals, ownership form, etc)
- Aeronautical Activities and Revenue
- Non-Aeronautical Activities and Revenue
- Labor input and other Operating Expenses
- Financial info obtained from Balance Sheets

Visit [http://www.atrsworld.org/Database.html](http://www.atrsworld.org/Database.html) for more details and to purchase.
PASSENGERS TRAFFIC, FY2012 (IN ’000 PASSENGERS)
Passenger Traffic ('000) - Top 10 Airports:
PASSENGERS PER AIRCRAFT MOVEMENTS, FY 2012

Objective
Data
Airport Characteristics
Methodology
Efficiency & Cost
User Charge

Asia Pacific
Europe
North America

0
20
40
60
80
100
120
140
160
180
200

HND
DXB
HKG
CMB
BKK
SIN
NRT
CGK
HKT
TPE
ICN
CJU
PEK
OOL
GMP
KUL
MEL
CEI
SHA
HDY
MNL
PER
CAN
PUS
PVG
BOM
SYD
SZX
HAK
DEL
CNX
BNE
XMN
NGO
MAA
NAN
SUB
MFM
KIX
PEN
ADL
ZQN
PNH
AKL
CNS
REP
DRW
CHC
NTL
TSV
WLG
GUM
DUD
LHR
LGW
ALC
TLV
PMI
MLA
IST
CDG
AGP
DUB
STN
BCN
MAD
AMS
BGY
SAW
ORY
FCO
MAN
FRA
TXL
LIS
OPO
VCE
MXP
LTN
MUC
BHX
GLA
LPA
BRS
SZG
BUD
STR
CPH
OSL
DUS
NAP
ARN
ZRH
VIE
HAM
LIN
KEF
CIA
LED
BLQ
EDI
HEL
KBP
BRU
ATH
GVA
PRG
WAW
SOF
BEG
CGN
LYS
RIX
NCE
TRN
HAJ
BSL
BTS
ZAG
LJU
TLL
LUX
JFK
MCO
LAX
SEA
SFO
RSW
FLL
MIA
TPA
ATL
SAN
SNA
PHX
MDW
DFW
BWI
SMF
DEN
MSY
HNL
EWR
LAS
BOS
YYZ
AUS
SJC
MSP
IAH
CLT
PDX
MCI
ORD
JAX
DTW
IAD
PBI
HOU
OAK
SLC
LGA
PVD
SAT
PHL
STL
DCA
RNO
BNA
PIT
DAL
BDL
MKE
TUS
BUR
RDU
YUL
ONT
YVR
YYC
CMH
OKC
ABQ
YHZ
IND
CLE
ALB
TUL
YEG
RIC
CVG
YYT
YOW
YQR
YWG
MEM
AIR CARGO TRAFFIC, FY 2012
(’000 METRIC TONS)

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Asia Pacific
Europe
North America
Non-Aeronautical Revenue Share (2012) – Asia Pacific

Asia: 1st Gimpo (KAC), 1st Hong Kong, 3rd Busan-Gimhae (KAC)
Oceania: 1st Gold Coast, 1st Townsville, 3rd Christchurch
Non-Aeronautical Revenue Share (2012) – Europe

Europe: 1\textsuperscript{st} Keflavik, 2\textsuperscript{nd} Frankfurt, 3\textsuperscript{rd} EuroAirport Basel-Mulhouse-Freiburg
Non-Aeronautical Revenue Share (2012) – N. America

Europe: 1\textsuperscript{st} Nashville  2\textsuperscript{nd} Oklahoma City, 3\textsuperscript{rd} Jacksonville
AIRPORT PRODUCTIVITY INDEX

Outputs
- Aircraft movement
- Passenger
- {Cargo tonnes}
- Non-aeronautical revenue output

Inputs
- Labour
- Other non-capital (soft-cost) input
- [Runways, terminal size, # of gates]
METHODOLOGY: EFFICIENCY MEASUREMENT

- **Variable Factor Productivity (VFP) Index**
  - Impossible - Total Factor Productivity (TFP) because of capital input cost accounting problem (comparable across different countries)

- **Unit Operating Cost Competitiveness Index**: Combines VFP and Input Price Index
MULTILATERAL AGGREGATION METHOD

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

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

\[
ln \frac{X_i}{X_j} = \sum \frac{W_{ki} + \bar{W}_k}{2} \quad ln \frac{X_{ki}}{\bar{X}_k} - \sum \frac{W_{kj} + \bar{W}_k}{2} \quad ln \frac{X_{kj}}{\bar{X}_k}
\]
GROSS VARIABLE FACTOR PRODUCTIVITY (VFP)
ASIAN AIRPORTS
(HKG=1.0), FY 2012
POTENTIAL REASONS FOR THE MEASURED PRODUCTIVITY (GROSS VFP) DIFFERENTIALS

Factors Beyond Managerial Control:

- Airport size (Scale of aggregate output)
- Average aircraft size using the airport
- Share of international traffic
- Share of air cargo traffic
- Extent of capacity shortage - congestion delay
- Connecting/transfer ratio

We compute residual (Net) Variable Factor Productivity (RVFP) after removing effects of these Factors
GROSS VARIABLE FACTOR PRODUCTIVITY VS RESIDUAL VFP: ASIA (HKG=1.0), FY 2012
Key Results on Efficiency & Cost

2014 ATRS Global Airport Performance Benchmarking Project
RESIDUAL (NET) VARIABLE FACTOR PRODUCTIVITY (VFP): ASIA (HKG=1.0), FY 2012

Busan Gimhae, Jeju, Hong Kong

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Airport Groups

Busan Gimhae, Jeju, Hong Kong
GROSS VARIABLE FACTOR PRODUCTIVITY VS RESIDUAL VFP: Europe Large Airports (CPH=1.0), FY 2012
RESIDUAL (NET) VARIABLE FACTOR PRODUCTIVITY (VFP):
EUROPE LARGE AIRPORTS (CPH=1.0), FY 2012

Copenhagen Kastrup, Zurich, Oslo
GROSS VARIABLE FACTOR PRODUCTIVITY VS RESIDUAL VFP: Europe Small & Medium Airport (CPH=1.0), FY 2012
RESIDUAL (NET) VARIABLE FACTOR PRODUCTIVITY (VFP): EUROPE SMALL & MEDIUM AIRPORTS (CPH=1.0), FY 2012

Athens, Geneva, Basel
GROSS VARIABLE FACTOR PRODUCTIVITY VS RESIDUAL VFP: N. American Large Airports (YVR=1.0), FY 2012
RESIDUAL (NET) VARIABLE FACTOR PRODUCTIVITY (VFP): NORTH AMERICA LARGE AIRPORTS (YVR=1.0), FY 2012

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Atlanta, Charlotte, Minneapolis St. Paul
GROSS VARIABLE FACTOR PRODUCTIVITY VS RESIDUAL VFP: N. American Small & Medium Airport (YVR=1.0), FY 2012
RESIDUAL (NET) VARIABLE FACTOR PRODUCTIVITY (VFP): N. AMERICA SMALL & MEDIUM AIRPORTS (YVR=1.0), FY 2012

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Oklahoma City, Calgary, Raleigh-Durham
GROSS VARIABLE FACTOR PRODUCTIVITY VS RESIDUAL VFP: Oceanian Airports (SYD=1.0), FY 2012

Graph showing the comparison of Gross VFP and Residual VFP for various airports and airport groups.
RESIDUAL (NET) VARIABLE FACTOR PRODUCTIVITY (VFP): OCEANIA (SYD=1.0), FY 2012

Sydney, Dunedin, Melbourne

Objective | Data | Airport Characteristics | Methodology | Efficiency & Cost | User Charge
---|---|---|---|---|---

TOP EFFICIENCY PERFORMERS (2014)
(based on Net VFP index=operating/management efficiency)

Asia Pacific:
• **Asian Airports:**
  • Busan Gimhae, Jeju, Hong Kong

• **Oceania Airports:**
  • Sydney, Dunedin, Melbourne

Europe:
• **Large Airports (> 15 million pax):**
  • Copenhagen Kastrup, Zurich, Oslo

• **Small/Medium Airports (< 15 millions Pax):**
  • Athens, Geneva, Basel
TOP EFFICIENCY PERFORMERS (2014)
(based on Net VFP index=operating/management efficiency)

North America:

• **Large Airports (> 15 million pax):**
  • Atlanta, Charlotte, Minneapolis St Paul

• **Small/Medium Airports (< 15 millions Pax):**
  • Oklahoma City, Calgary, Raleigh-Durham
PAST AIRPORT EFFICIENCY EXCELLENCE
TOP PERFORMERS, 2009 - 2013

North America

2009
Hartsfield-Jackson Atlanta International Airport

2010
Hartsfield-Jackson Atlanta International Airport

2011
Hartsfield-Jackson Atlanta International Airport

2012
Hartsfield-Jackson Atlanta International Airport

2013
Hartsfield-Jackson Atlanta International Airport

Minneapolis St. Paul International Airport

Oklahoma City Will Rogers World Airport

Europe

2009
Copenhagen Kastrup International Airport

2010
Large Airport Category: Oslo International Airport

Small/Medium Airport Category: Genève Cointrin International Airport

2011
Large Airport Category: Oslo International Airport

Copenhagen Kastrup International Airport

Small/Medium Airport Category: Genève Aéroport

2012
Large Airport Category: Copenhagen Kastrup International Airport

Small/Medium Airport Category: Genève Aéroport

2013
Large Airport Category: Copenhagen Kastrup International Airport

Small/Medium Airport Category: Genève Aéroport

Asia-Pacific

2009
Hong Kong International Airport

2010
Large Airport Category: Hong Kong International Airport

Small/Medium Airport Category: Seoul Gimpo International Airport

2011
Asian Airport Excellence Award: Seoul Gimpo International Airport

Oceania Excellence Award: Sydney Airport

2012
Asian Airport Excellence Award: Seoul Gimpo International Airport

Oceania Excellence Award: Sydney Airport

2013
Asian Airport Excellence Award: Seoul Gimpo International Airport

Oceania Excellence Award: Sydney Airport

Objective | Data | Airport Characteristics | Methodology | Efficiency & Cost | User Charge
COST COMPETITIVENESS = NET VFP AND INPUT PRICE EFFECT

ASIA (HKG=0.0) – THE HIGHER THE BETTER

Haikou, Busan Gimhae, Jakarta
COST COMPETITIVENESS = NET VFP AND INPUT PRICE EFFECT
EUROPE - LARGE AIRPORTS (CPH=0.0)

Copenhagen, Lisbon, Istanbul Ataturk
COST COMPETITIVENESS = NET VFP AND INPUT PRICE EFFECT
EUROPE - SMALL & MEDIUM AIRPORTS (CPH=0.0)

Riga (Latvia), Tallinn (Estonia), Ljubljana (Slovenia)
COST COMPETITIVENESS = NET VFP AND INPUT PRICE EFFECT
N. AMERICA - LARGE AIRPORTS (YVR=0.0)

Charlotte, Atlanta, Tampa
COST COMPETITIVENESS: = NET VFP AND INPUT PRICE EFFECT
N. AMERICA - SMALL & MEDIUM AIRPORTS (YVR=0.0)

Oklahoma City, Raleigh-Durham, Richmond (Virginia)
User Charge Comparison

2014 ATRS Global Airport Performance Benchmarking Project
LANDING CHARGES
FOR AIRBUS 320, 2013 (IN US$)

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ASIA PACIFIC: COMBINED LANDING AND PASSENGER CHARGES FOR AIRBUS 320, 2013 (IN US$)

Lowest charges: **Taipei Taoyuan**, New Delhi
Highest charges: **Osaka Kansai**, Nagoya
EUROPE: COMBINED LANDING AND PASSENGER CHARGES FOR AIRBUS 320, 2013 (IN US$)

Lowest charges: Luxembourg, Riga (Latvia)
Highest charges: London Heathrow, London Gatwick- Peak
NORTH AMERICA: COST PER ENPLANED PASSENGER, 2012 (IN US$)

Canada:
Lowest CPE: Victoria, Regina
Highest CPE: Toronto, Montreal

United States:
Lowest CPE: Charlotte, California Bob Hope (Burbank, CA)
Highest CPE: New York JFK, Washington Dulles

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The ATRS Global Airport Performance Benchmarking Report: 3 volumes, over 700 pages of valuable data and analysis

Can be purchased by visiting www.atrsworld.org

Report sale finances our annual benchmarking research project
ACKNOWLEDGEMENT OF APPRECIATION

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- Hartsfield-Jackson Atlanta International Airport

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- Korea Airports Corporation
- Kazan international airport, Russia
- Istanbul Sabiha Gockcen Int’l
- YVR International Airport
Thank You

See you at 2015 ATRS World Conference in Singapore!