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Aviation Data Symposium 2018
Aviation Industry Data Management

Scope of IATA role: Advocacy, Standards, Platforms

In Scope

- Support industry strategic priority
- Adopt global standards
- Support industry operations

Explore

- Not being done effectively
- Impacts competition, choice, control
SAFE
SECURE
PROFITABLE
BENEFIT OUR CUSTOMERS
HOW TO UNLOCK THE VALUE OF BIG DATA?
Economic performance of the airline industry: mid-2018 update

Brian Pearce,
Chief Economist,
IATA
www.iata.org/economics
Record city-pair connections bring choice and economic benefits

Source: IATA Economics using data from ICAO, IATA Statistics, SRS Analyzer and our own forecasts
Airlines are also creating value for investors

Source: IATA Economics using data from The Airline Analyst

Return on invested capital

<table>
<thead>
<tr>
<th>N America</th>
<th>Europe</th>
<th>Industry average</th>
<th>L America</th>
<th>Asia-Pacific</th>
<th>Middle East</th>
</tr>
</thead>
</table>

Cost of capital (WACC)

Source: IATA Economics using data from The Airline Analyst
Strong free cash flows allow debt to be repaid

Source: IATA Economics using data from The Airline Analyst

Free cash flow

North America | Europe | Asia Pacific | Latin America

Source: IATA Economics using data from The Airline Analyst
Though airline balance sheets have not yet improved in all regions.

Source: IATA Economics using data from The Airline Analyst
Air travel continues to grow above-trend in early 2018

Source: IATA Economics using data from IATA Statistics, Markit
Cargo slowing as inventory re-stocking cycle ends

Source: IATA Economics using data from IATA Statistics, Markit.
Airlines’ operating margin was stable in the first quarter of 2018

Worldwide average airline operating margin

Adjusted to remove seasonality
Unadjusted data

Source: IATA Economics using data from The Airline Analyst, airline releases. Note: This data is from airlines report quarterly only.
But the industry now faces severe late-cycle cost pressures

Source: IATA Economics using data from The Airline Analyst
As spare capacity disappears

OECD unemployment and capacity shortage in the economy

% of labour force

% gap between GDP and full capacity

Unemployment (right scale)
Capacity shortage in the economy (left scale)

Source: IATA Economics using data from Datastream
Fuel, labour and infrastructure are the main source of cost pressure

Unit cost changes between 2016 Q1 and 2017 Q4

% contribution to increase in CASK

Fuel: 51%
Labour: 30%
Infrastructure: 11%
Other: 8%

Source: IATA Economics using data from The Airline Analyst
But cost of air transport expected to stabilize in inflation-adjusted terms

Yields including ancillaries and cargo revenues, nominal and inflation-adjusted

Source: IATA Economics using data from ICAO, PaxIS, CargoIS and our own forecasts
Strong economic growth supports strong travel growth in 2018

Source: IATA Economics using data from ICAO, IATA Statistics, IMF and our own forecasts
Airlines financial performance due to more than cycle

Source: IATA Economics using data from ICAO, IATA Statistics, IMF and our own forecasts

Global GDP growth and average airline operating margin

GDP % change year ago, Margin % revenue

GDP growth
Operating margin

Source: IATA Economics using data from ICAO, IATA Statistics, IMF and our own forecasts
Asset utilization has improved

Load factor (passenger + cargo) versus breakeven

Passenger + cargo load factor

Breakeven load factor

Source: IATA Economics using data from ICAO, IATA Statistics and our own forecasts
Ancillaries are partly offsetting commoditized base fares

Source: IATA Economics using data from ICAO, IATA Statistics, IdeaWorks and our own forecasts
Airlines’ return on capital still creating value for 4\textsuperscript{th} successive year

Return on capital invested in airlines and their cost of capital

Source: IATA Economics using data from McKinsey, The Airline Analyst and our own forecasts
Airline profitability under pressure in 2018 but still high

Source: IATA Economics using data from ICAO, IATA Statistics, The Airline Analyst and our own forecasts
But profitability remains very uneven across regions

Operating margin by airline region of registration

- N America
- Europe
- Asia Pacific
- Middle East
- L America
- Africa

Source: IATA Economics using data from ICAO, The Airline Analyst, and our own forecasts
Germany to win world cup – says our model based on air connectivity

Source: IATA Economics
LOOKING FOR INSIGHTS INTO AIR TRANSPORT MARKETS AND ISSUES?

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Data Driven Innovation in a Digital Economy - Are We Moving in the Right Direction, and Fast Enough?

19.06.2018, IATA Aviation Data Symposium
Christian Langer, VP Digital Strategy, Lufthansa Group
The end of planning as we know it...

The radical impact of digitalization

- PROCESS DISRUPTION
- CUSTOMER INTERACTION
- DEMAND
- BUSINESS MODELS
How we set ourselves up to exploit our digital twins?

**Build**
- model
- simulate
- design
- Digital Twin
- Digital Shadow
- ops
- master

**Manage**
- LEAN ADMINISTRATION
  - Definition of Digital Twins and Twin-Owners
  - PASSENGER
  - ASSETS
  - FLIGHT
  - DAR
  - ...

**Enable**
- INTERNAL EXPLOITATION
  - straightforward access to digital twins for all use cases within Lufthansa Group via the Twin-Owners

- EXTERNAL EXPLOITATION
  - the Lufthansa Group Data Provision Council authorizes the release of data for to external business partners
How we enable developers?

Over 140 weekly external developers, feeds all Lufthansa Crew Apps and various other internal solutions!
Enable your organization to leverage the full potential of data analytics

“Boardroom App”
- Access to all top KPIs, quickly & reliably
- One portal, trusted source and one-stop-shop for any data related question

Lufthansa Group Self-Service BI Platform
- Create „working environment“
- SCRUM teams
- Review instead of define

Lufthansa Group Data Analytics Infrastructure
- Centralized data storage
- Data quality assurance
- Methodological linkage
How we automate processes?

- Creates work order within M&E system
- Assigns component repair to shop
- Recommends maintenance based on predictive and preventive algorithms and orders replacement

Data Driven Innovation in a Digital Economy
19.06.2018
Page 6
What is the prerequisite of an open ecosystem?
Thank you very much for your attention
IATA Aviation Data Symposium

Digital Customer Experience

Jeffrey Goh
19JUN18
Customer Experience: The New Imperative

It's the economy, stupid!
Number of mobile phone users worldwide from 2013 to 2019

In billions

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of users (in billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
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</tr>
<tr>
<td>2014</td>
<td>4.23</td>
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<tr>
<td>2015</td>
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<td>2017</td>
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<td>2018</td>
<td>4.93</td>
</tr>
<tr>
<td>2019</td>
<td>5.07</td>
</tr>
</tbody>
</table>

Source: www.statista.com
Number of mobile phone users in China from 2013 to 2019

In millions

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of mobile phone users in millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>959.3</td>
</tr>
<tr>
<td>2014</td>
<td>1003.2</td>
</tr>
<tr>
<td>2015</td>
<td>1033.6</td>
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<tr>
<td>2016</td>
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<td>2017</td>
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<tr>
<td>2018</td>
<td>1080.5</td>
</tr>
<tr>
<td>2019</td>
<td>1086.8</td>
</tr>
</tbody>
</table>

Source: www.statista.com
Changing Customer Expectations

Customer needs and preferences are evolving

- Mobile first and connectivity
- Sophistication of knowledge in the masses
- Personalization and “mass customization” expected
- Pricing and product transparency
GO-JEK
A meteoric rise
The Digital Services Platform

Customer Facing Frontend Channels

Airline X

Airline Y

Airline Z

Digital Services Platform

Single platform to access digital information of carriers and ecosystem

Evolving Ecosystem

Airlines

Product Vendors

External Services
Changing Customer Expectations

- Mobile first and connectivity
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Changing Customer Expectations

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Dr John Carney
Chief Data Scientist, OpenJaw

Big Data and the Rise of Customer Centricity in Airlines

IATA Data Symposium, Berlin, June 2018
“Without Big Data you are blind and deaf in the middle of a freeway...”

Geoffrey Moore, Author
The Future

By 2050, we will have 45 Zettabytes of data globally stored across 100 billion connected devices.
How big is ‘big’?
45 Zettabytes?
Why now?
Connections + The Cloud + Machine Learning
The most valuable data you have right now in your airline is customer data
The most valuable brands in the World today are also the most customer centric.
Customer centricity and personalization will push a revenue shift of $800 billion to the 15% of companies globally that ‘get it’ *

* Source: Boston Consulting Group.
Customer centricity delivers...

- **Increased conversion rates**
  - Retarget customers who start and then abandoned booking
  - Offer customised, discounted bundles
  - Customise marketing emails, e.g. for destinations and promotions

- **More effective marketing**
  - Customise digital marketing (search, social display)
  - Customise landing page and search results by customer preference
  - Customise product assortment by customer preference

- **Increased revenue per trip**
  - Tailor post-purchase offers (ancillaries, upgrades etc.)
  - Customise buy-on-board or duty free offers
  - Target post-sale upsell messages

- **Improved repurchase rates**
  - Custom messages based on past purchase history
  - Follow up on disappointing service (apology/compensation)
  - Proactively address service issues such as lost bags

- **Increase satisfaction, loyalty & advocacy**
  - Personalise experience at airport with retail offers or meals
  - Assign 'ambassadors' to high-value customers
  - Target 'surprise and delight' offers, such as luxury car transfer
Feel very satisfied with the level of personalization they experience*

But ... the travel industry is starting to fall behind the expectations of consumers regarding personalization

*Source: 2017 Bond Loyalty Report
Why?
Expectations are higher ...
Building a customer centric capability at your airline has never been so important...
But delivering customer centricity is not easy ... you need

- Big Data
  - Online Intent
  - Psychographics
  - Super PNR’s
  - PSS PNR’s
  - Loyalty Profiles

- Identity Resolution

- Data Science

- Data Distribution
Combined, you get...

Big Data

Identity Resolution

Data Science

Data Distribution

= ANALYTICS you can monetize
The key to unlocking customer centricity

Data
Information
Optimization
Monetization Opportunity

What happened?
Predictive Analytics
Descriptive Analytics

What will happen?
Prescriptive Analytics

How can we make it happen?

Original Source: Gartner Analytics Framework
Descriptive analytics refers to any data analysis that focuses on past behaviours or historical patterns. It is effectively Hindsight.
Descriptive analytics: Use case

Use Case
Segment customers by Trip Profile*:

- Business trip
- Weekend break
- School holiday
- Annual holiday

* In this example, from OpenJaw t-Data, machine learning is used: a variant of K-Means Clustering
Predictive analytics refers to any data analysis that uses mathematical models to predict future patterns or behaviours.

It is effectively foresight.
Predictive analytics: Use case

Use Case
Segment customers by Propensity to purchase*:

- City Centre Destination
- Beach Destination
- Countryside Destination
- Hotel Value

* In this example, from OpenJaw t-Data, machine learning is used: a variant of Logistic Regression
Prescriptive analytics uses the insights provided by descriptive and predictive analytics to identify the next best action to convert these insights into concrete, profitable business outcomes.

How can we make it happen?

Prescriptive Analytics

Diagram:
- X-axis: Difficulty
- Y-axis: Monetization Opportunity
- Points:
  - Data
  - Information
  - Optimization

Legend:
- Data
- Information
- Optimization
- Prescriptive Analytics
Make your Chat Bot customer centric with Big Data analytics to deliver relevant, context-aware offers and conversations.
The roadmap to deliver customer centricity at your airline

Step 1: Big Data Lake Capability
Step 2: Descriptive Analytics Capability
Step 3: Predictive Analytics Capability
Step 4: Prescriptive Analytics Capability

Collect and integrate all of your customer data. Convert it to information with analytics. Embed in your business processes to transform how you interact with customers.
Learn more about how we do Big Data at OpenJaw: www.openjawtech.com

Or contact me directly: john.carney@openjawtech.com
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15 Hours of Networking
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