

Travel, Logistics & Transport Infrastructure Practice

Airline data: What next beyond crisis response?

Airlines are using a wealth of new data sources in 2020. Strategy should now replace adrenaline as the fuel for decisions around data adoption and usage.

by Riccardo Boin, Alex Cosmas, Steve Saxon, and Jonathan Steinbach



In 2019, we calculated that analytics represents an up to \$40 billion opportunity for global aviation, in retail alone.¹ The reality for aviation has changed completely since then, but the importance of analytics has not: it has enabled the industry to react and manage networks and commercial functions in a way that is more agile than ever.

At many airlines, commercial functions have embraced new data and ways of operating, and the next challenge is to do so at scale. With COVID-19, the unprecedented extent of network breakdown means historical commercial data have become less relevant. Network teams are looking for pointers on where they should deploy capacity. Marketing teams would likely benefit from new data to steer promotions and improve marketing-spend effectiveness. And sales teams are struggling to get ahead of competitors' sales initiatives.

Forecasting returning traveler demand will be vital to solving some of these issues and getting ahead in the new reality. Decision makers should ask themselves where analytics can add value, what they need from their data platform, and how their standard ways of working will need to change.

Responding to the crisis

As of September 2020, our models indicated the airline industry was operating at only around 55 percent of precrisis capacity and was mostly limited to domestic routes. The industry's total revenue may fall by more than \$400 billion for 2020 as a whole,² and some geographies may not see a return to prepandemic levels of available-seat-kilometers until 2023.³

Revenue managers have been at the center of managing this crisis. Some have proved agile and resourceful in their adoption of new data, and this has also led to new ways of working. Revenue and network managers have worked

closely to understand unconventional demand signals and to make route, capacity, and pricing decisions accordingly. Some airlines have formalized this collaboration into commercial "nerve centers," with the aim of increasing the precision of demand forecasting.

In our experience, the solutions to these and other issues lie in new, unconventional data sources⁴ (exhibit).

At the start of the pandemic, airlines had made varying degrees of progress upgrading their tech stacks and adding analytics capabilities. These tech stacks do not appear to be prepared, however, for the immediate and substantial disruption to commercial functions caused by the current crisis. Countless systems are not yet calibrated either to take advantage of the opportunities offered by analytics or to factor in the ongoing changes in the economic environment:

- ***Models of consumer choice should be updated.*** Customers' priorities and preferences have changed and will likely continue to do so during the coming 24 months. Existing choice models, which are based on past data, are therefore unlikely to accurately forecast demand.
- ***Market share models do not factor in recent developments.*** Most decision-support tools are based on historical data, so they struggle to cope with the current disruption to the industry. One example is quality-of-service analysis, which airlines have used to identify market share on routes.
- ***Historical data used by inventory models are no longer relevant.*** Revenue-management systems generally rely on outdated demand curves to guide inventory changes, but the shape and slope of demand will continue to evolve during the next few years.

¹ Riccardo Boin, Alex Cosmas, and Nina Wittkamp, "Airline retailing: The value at stake," November 26, 2019, McKinsey.com.

² "Industry losses to top \$84 billion in 2020," International Air Transport Association (IATA), June 9, 2020, iata.org.

³ "Recovery delayed as international travel remains locked down," IATA, July 28, 2020, iata.org.

⁴ For more on data sources, see Riccardo Boin, Alex Cosmas, Alex Dichter, and Nina Wittkamp, "A new approach in tracking travel demand," May 29, 2020, McKinsey.com.

Exhibit

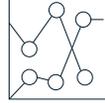
New, unconventional data sources emerge to address airline industry challenges.

Traditional data sources



Travel shopping data

- GDS¹ ticketing (marketing-information-data tapes)
- Airline's direct channel
- Online trends



Market and competitor insights

- Airfare benchmarking
- Effective flight capacity
- Competitive published schedules



Operations data

- Schedule data
- Airport data
- On-time performance data

New data sources



Travel shopping data

- Web and app analytics from competitors
- Flight-search data from metasearch engines and GDS¹
- GDS¹ and direct-channel services
- Accommodation searches on aggregators websites
- Financial analytics (eg, credit card spend)



Macro data

- Travel restrictions
- Web searches
- Consumer-sentiment videos
- Mobility trends from data via maps and satellite imagery

¹Global distribution system.

— *Network teams struggle to cope with rapidly changing schedules.* Late or last-minute changes to published schedules have become much more common in recent months, even compared with previous crisis situations.⁵ These constant updates make it difficult for passengers to compare schedules with competitors.

When will demand rebound?

The key question for many is where and when demand will come back, and airlines are racing to update their forecasting models. Some have already accepted innovative data around demand signals. These have required the construction of a new commercial-operations infrastructure to deal with data upload, data cleaning, and the integration of large, complex, regularly refreshed data sets.

Few airlines have dedicated business-intelligence teams to manage this significant task. Old data are frequently hardwired into legacy systems, and it can be challenging to extract the data that remain relevant and integrate them with new and up-to-date data sources.

What now? Chief commercial officers and chief data officers have a lot on their plates. They are still under considerable pressure to generate revenue and keep costs down, and locating and responding to demand signals is just the first step in transforming commercial functions.

In our experience, however, efforts to understand (and respond to) the likely shape of demand tend to pay off. In a recent case, a new system that improved the targeting and timeliness of offers across specific

⁵ McKinsey analysis of OAG data.

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customer segments increased booking conversion rates by up to one percentage point and reduced marketing costs by 5 to 10 percent.

Questions to ask when scaling data in aviation

At this critical juncture, airlines that are looking to gain an edge on their competitors should ask three questions.

Where can analytics add value?

The key activities for any analytics team have always been to develop use cases, identify their business value, and then phase in development plans. The vital importance of these activities has not changed.

What *has* changed are the most promising target segments and use cases. The crisis has forced many airlines to switch their focus to domestic or regional markets.⁶ Airlines can create value here—but only if they can both understand where demand is returning and respond quickly. This requires them to seek new, targeted data sources: local online travel agencies, for example, may be important to understand aspects of demand that are not properly tracked by global distribution systems.

Given the need to improve cash flow, airlines can apply dynamic pricing to fill seats in the short term. Targeting offers by customer microsegment is a good way to optimize revenue; those who must travel (such as business travelers) will have a lower price elasticity and therefore be prepared to buy at a higher price, while last-minute offers may be

attractive to more opportunistic customers (such as young leisure travelers).

What are my data-platform needs?

Daily flight-search data sets are large—typically around two terabytes. Descriptive dashboards to track demand, such as Air Travel Pulse (developed by the International Air Transport Association),⁷ were assembled relatively quickly during the crisis. But considerable effort is needed to put in place the right data pipelines and automate data cleaning. During the past few months, many companies have understandably emphasized speed to market over scalability.

A possible next step for an airline with a functioning demand dashboard is to develop a comprehensive data-platform strategy, which is likely to include adding a data-integration layer. By combining traditional and new data sources, this layer would make the overall data architecture more flexible and easier to scale up—and it can also automatically push insights to business domains such as marketing and partner relationship management (PRM). Adding this data-integration layer will require considerable effort and investment, and companies are also likely to need a cloud platform, an analytic-data-warehouse layer, and a team that maintains the data platform.

The focus of airline budgets is on new data sources (and we see some airlines budgeting up to 30 percent more for this information and the engineering teams required to use it). Translating real-time travel-restriction announcements into data points that can

⁶ *Air passenger market analysis*, IATA, July 2020, iata.org; McKinsey analysis of OAG data.

⁷ Boin, Cosmas, Dichter, and Wittkamp, "A new approach in tracking travel demand."

be integrated into the demand dashboard will remain crucial, so airlines must also ensure they have a well-resourced data-science team in place to develop and maintain such a model.

Finding the time and resources needed to implement these upgrades will be challenging, particularly during the pandemic. However, scalable impact is unlikely without an integrated, flexible data platform.

Which ways of working can be retained and which need to change?

Transparency—and a clear understanding of the ways in which the new reality is different from the old—will be key to building trust. We have observed four practices that successful teams use to adapt and reshape their ways of working in response to changing circumstances:

- **Break down silos.** Interdepartmental alignment (including among the planning, PRM, and revenue-management teams) has always been key to the development and execution of agile commercial strategies. In our experience, teams that came together in cross-silo “nerve centers” during the crisis were able to transition more smoothly to new commercial strategies. At a minimum, network meetings should be moved from traditional monthly half-day occurrences, to weekly touchpoints during which the teams look at the dashboard together.
- **Let go of the past.** Instead of grafting smaller changes onto legacy processes, teams should accept and adopt new ways of working for each step of key processes. So far, this is not always happening. Some airlines have used new data and approaches, for example, but continue to use legacy commercial reports for final decision

making. Airlines that fully integrate the new approaches can be more agile and more flexible; we have seen low-cost carriers with advanced end-to-end analytical capabilities place capacity on new routes before their legacy competitors had even held a decision meeting.

- **Create transparency around algorithms.** Algorithms can be hard to understand for data scientists, let alone for the many domain and functional experts who come together to work in mixed teams. Data teams that can create transparency around their algorithms (by, for example, ensuring visibility along the data pipelines and creating other function-specific dashboards) can generate buy-in from across domains and train their algorithms faster.
- **Develop strategic data partnerships.** It is typically inefficient for individual carriers to own all the data or develop all the relationships they need to stay on top of the rapid evolution in alternative information sources. Fortunately, service providers that can help airlines navigate the fast-changing data landscape have proliferated.

Many airlines are aware of the importance of data and analytics. However, the first wave of data adoption ran on adrenaline—as it did in many other industries. The companies that will outperform in the long term will be those that are thoughtful and strategic in how they explore and embrace new data, leave old approaches behind, and introduce new ways of working into their commercial functions.

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