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IMPROVING AIRLINES' ON-TIME PERFORMANCE

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SOMETIMES IT PAYS TO sweat the small stuff. Take on-time performance (OTP). In the airline business, one late aircraft early in the morning can lead to more than 70 delayed planes later in the day. Delay minutes double, on average, by end of day, one reason US domestic flights are about 80% on time at 6:00 a.m. and only about 50% on time at 6:00 p.m. At some highly congested airports in Europe, OTP falls below 30% by end of day. Shaving one minute off the time each aircraft is on the ground between flights can save $5 million to $10 million a year in freed aircraft time and hidden costs across the operation.

No other aspect of an airline's operations has as broad or as deep an impact on the entire organization. Good OTP requires many people and functions to perform well together—consistently and over time. And when things go wrong, as they inevitably do, OTP hits costs, profits, customer experience, and employee morale hard.

Airlines have a tough time getting their arms around OTP and how to manage it—with good reason. In addition to sheer complexity, many of the factors affecting OTP lie beyond a company's influence, such as weather and air traffic control. OTP is also affected by decisions made in multiple areas, including fleet size and composition, flight crew composition, and flight turnaround times. The precise nature of and reasons for OTP's complexity differ for each type of airline—full-service legacy carriers (FSCs) and low-cost carriers (LCCs), multi- and single-hub airlines, and domestic (or regional) and international carriers.

But the challenges of complexity and difficulty pale beside the benefits of getting OTP right and the high costs—financial, operational, cultural, and reputational—of enduring ongoing problems. And while perfection may be impossible, substantial improvement is mostly a matter of taking on the task. On the basis of our work with all types of airlines around the world—work that has helped clients achieve double-digit percentage point increases in OTP—we have developed a strong point of view and a twofold approach. The first step is

making the system resilient to disruption; the second is enabling an airline to catch up more quickly when disruption occurs.

The Benefits and Costs of OTP

Good OTP management is not about achieving 100% punctuality. Rather, it is about delivering against a target that takes into account the context of the airline's cost structure, culture, geography, and competitive landscape. Some airlines seek too low a target; others go too far and invest excessively to "buy" OTP, unnecessarily eroding the bottom line. Setting the right target requires balancing the benefits of higher OTP with the costs necessary to deliver it.

There are tangible and hidden benefits of good OTP. Customer satisfaction is an obvious benefit—one airline found a 90% correlation with OTP. Cost control through efficient use of aircraft and employee time is another. OTP greatly influences company culture and employee morale, since better OTP improves predictability and employees' work-life balance.

At the same time, the costs of poor performance are high. Direct costs include vouchers, compensation, and rebooking expenses for affected passengers, as well as expenses such as premium and overtime pay for crew and ground staff and higher deadhead crew costs. Moreover, poor OTP can have serious downstream effects, from which it can take days, or even weeks, to recover. In the age of social media, persistent OTP problems can also hit a brand's reputation, especially if they lead to widespread cancellations that strand large numbers of passengers or cause customers to switch to other airlines.

The Causes of Complexity

Maintaining good OTP is an uphill battle. Many people, processes, functions, and technologies need to work together with a high degree of integration throughout the day. For example, scheduling and operations personnel must be in constant communication, since the activities and decisions of one directly affect the other. Poor scheduling often creates problems for operations, and when operational groups fail to execute, scheduling may need to be adjusted on the fly.

OTP is also a consequence of complexity built up over years. (See Exhibit 1.) Deci-

EXHIBIT 1 | OTP Is a Consequence of Complexity

Source: BCG analysis.

sions about fleet makeup, route network, schedules, cabin design, and even in-flight offerings or gate layout have profound and varying effects on an airline's OTP. Operational decisions with respect to turn time (the time required to unload an airplane after its arrival at the gate and then prepare it for the next trip), block time (the total flight time, from pushing back from the departure gate to arriving at the destination gate), crew reserves, and spare aircraft and workers add to the complexity and the odds of delay. Myriad combinations of these and other factors can limit the buffers and flexibility needed to handle delays when a disruption occurs.

Getting the Diagnosis Right

Any airline's goal should be to make the system resilient to disruption and quick to catch up when disruption occurs. The specific nature of the solution will differ between FSCs and LCCs, across regions, and among individual airlines. In fact, each airline has its own optimal point of balance between operating flexibility and profitability, depending on its structure, context, and operating environment.

FSCs, for example, often have higher levels of complexity in fleet makeup and other areas for sound revenue-enhancing reasons, but they pay a price in OTP resilience. LCCs typically maximize resource utilization to minimize costs, likewise leading to limited resilience when OTP issues arise. Individual airlines face challenges stemming from where they operate, since each country or region presents its own complications, including severe weather, congestion, and problems relating to infrastructure and air traffic control.

Regardless of the specific nature of the OTP challenge, the first step for any airline is getting execution right within its existing schedule. Once a carrier has succeeded at consistently executing to the best of its capabilities, it can adjust the schedule to unlock value by freeing up aircraft time or adding buffers to compensate for operational limitations. In our experience, too many airlines jump too soon to the second step without addressing key operational issues first, or they resort to adding schedule buffers as a default solution. Poor execution is not a good reason to relax the schedule, since buffers are costly and difficult to reverse and lead to long-term subpar performance. The key is to first understand how much value improving execution can deliver—and then decide if changing the operating model is a better option.

Beyond basic system design and execution, airlines need to develop plans and actions both for normal "blue sky" days, when OTP disruptions are minimal and contained, and for days of extreme disruption, when events such as bad weather or air traffic control delays lead to widespread OTP problems. Each department needs to have clear guidelines and well-structured processes to manage OTP and disruptions in different circumstances.

The levers for addressing OTP fall into two main categories: delay avoidance and delay recovery. (See Exhibit 2.)

Delay Avoidance

Airlines have three ways to protect their systems against delays in a cost-effective manner: improving execution, reducing complexity, and creating buffers. Some moves involve tradeoffs and some can affect other areas, so careful planning and consideration of consequences are essential.

Improving Execution. Well-executed operational procedures, predictive maintenance, and anticipatory adjustments on days with a lot of disruption can minimize OTP delays. For example, predictive maintenance enables a maintenance router to ascertain when an aircraft is likely to need attention—before a technical problem results in a delay. When disruptions do occur, quick adjustments to flight and maintenance schedules can limit the downstream impact. Core process design should seek to reduce variability, which can have a compounding effect throughout the system when disruption occurs in one part.

EXHIBIT 2 | Two Primary Levers for Improving OTP: Delay Avoidance and Delay Recovery

	TYPICAL "BLUE SKY" DAYS (NO EXTREME UNCONTROLLABLE DISRUPTIONS)	EXTREME-DISRUPTION DAYS (SEVERE UNCONTROLLABLE EVENTS)
DELAY AVOIDANCE	Schedule and operational plan that is sufficiently resilient to accommodate normal delays while balancing profitability and OTP goals (100% OTP is not the paramount goal)	Schedule and operational plan that has limited dependencies and contains normal disruptions to a limited set of markets, crews, and aircraft
DELAY RECOVERY	Resources and processes that enable the system to absorb inevitable, normal delays (e.g., passenger delays, maintenance needs)	Resources and processes that enable the system to catch up in case of major disruptions (e.g., severe weather, air traffic control delays)
	Enabled through cross-functional collaboration, a culture of OTP, and performance metrics	

Source: BCG analysis.

Reducing Complexity. Reducing complexity in markets served and in fleet composition, product offerings, and service models is another option. But multiple considerations need to be taken into account. A multimodel fleet allows airlines to match aircraft type to routes flown based on demand and distance. But it also increases complexity and costs in maintenance bases, parts, and flight crews, among other factors. Some airlines unintentionally add complexity when they specify new cabin configurations and services in their aircraft purchases (including purchases of models they already own), undermining their ability to swap aircraft to manage delays.

One tool for reducing complexity and containing the impact of delays is the use of "modular flying units" in aircraft scheduling and crew pairing. For example, an aircraft-scheduling system based on linear routes ("out and back" patterns, such as New York to Atlanta and back) or even "triangular" patterns (such as New York to Boston to Miami to New York) helps airlines restrict delays to the affected units without disturbing the rest of the network.

Many airlines already have simplified modular flying schedules for their fleets. The application to crews—pairing flight and cabin crew together or pairing either with particular aircraft—is more complex. Because airlines already go to significant lengths to improve crew productivity through pairing configurations, tradeoffs are inevitable. (See "The Airline Crew Opportunity: Boosting Productivity While Improving Service," BCG article, January 2016.) While using crews that aren't paired on the same trips increases flexibility, it can also have significant downstream impacts, with multiple departing flights waiting on the same late-arriving aircraft.

Creating Buffers. Buffers may include added block time or turn time to create more flexibility in the event of non-flight–related delays, such as those caused by unexpected maintenance. Other buffers involve having standby crews, spare aircraft, or spare parts readily available, or keeping some seats empty for passenger reassignment. Buffers carry a financial cost, of course, which is often substantial, so they should be used strategically to balance improved OTP against the costs of delivering it—and often only as a lever of last resort. Data and historical experience related to time of day, airport, route, aircraft type, and season can help facilitate decision making.

Delay Recovery

For blue-sky days, airlines need a schedule and an operational plan that are sufficiently resilient to accommodate normal operating issues while balancing profitability and OTP goals. But delays are inevitable, so a big part of improving OTP is addressing problems

quickly and minimizing their impact through the system. There are two main levers: guidelines and procedures to prioritize actions and a flexible operating model.

Guidelines and procedures with preestablished priorities can make a big difference in managing the extent and impact of a disruption. Examples include guidelines that identify "must dos" for tight turns and a flight prioritization matrix that steers decision making regarding follow-on delays and cancellations. The matrix can take into account such factors as flight revenue, load factor, the number of connections, alternative flight options for customers, and downstream impact.

Airlines can also build up resource flexibility through employee contracts, but this requires time and advance planning (depending on when collective-bargaining contracts come up for renegotiation, for example). Building flexibility into a maintenance contract can allow for a temporary expansion of capacity so that more aircraft can undergo maintenance ahead of a big storm. Flexible staffing contracts that allow for part-time work, flexible schedules, and overtime pay when additional help is required enable the airline to buffer resources when necessary.

The Right Culture and Performance Metrics Help

Cross-functional collaboration, a company culture based on OTP (balanced with cost consciousness and customer service), and the right performance metrics are critical enablers of better OTP—so long as they support collective success.

Collaboration. Cross-functional collaboration and communication, such as meetings between flight crew members and crew-scheduling personnel to discuss ways to improve crew schedules, can do a lot to uncover problems and find solutions. Clear communication between airport gate staff and ground handling crews can also help airlines improve OTP.

Culture. Employees across the airline should be encouraged to value OTP, and they should be rewarded for meeting established goals. It is essential that employees understand and internalize the implications of OTP for the company's financial performance and reputation—as well as for passengers, whose lives are affected in myriad ways when flights are delayed.

Performance Metrics. Individual functions and departments need OTP performance metrics so that the responsibility for delays is clear. One Asia-Pacific carrier assigns targets for departures and arrivals for each operations group. And good OTP performance must be rewarded, although not all incentives need to be financial. Special recognition (such as a visit from the CEO or an annual special event that rewards the best-performing airports) can have a big impact. A South American airline switched from a system of trivial bonuses for achieving OTP targets to tiered levels of recognition from senior executives.

Start with a Comprehensive Diagnostic

Attacking OTP effectively begins with a robust diagnostic to identify the key drivers of delays (by operational department) and their root causes, as well as the tradeoffs between cost minimization and OTP maximization. The action plan that results requires strong leadership, active participation by the entire organization, and staged implementation over time. The results can yield double-digit OTP improvement and measurable shifts in industry position. The following are some of the key components of the diagnostic:

- Analyzing the root causes of delays from both a quantitative perspective (accurate delay code analysis from multiple sources) and a qualitative perspective (processes, governance, decision making)
- Benchmarking best practices, both within the airline and across competitors
- Developing and prioritizing initial solutions, including potential impact and return on investment, feasibility, and time frame

- Defining success in terms of goals and key metrics
- Assessing implementation readiness

The airlines that we have worked with have seen meaningful OTP improvement from this approach. One European LCC is targeting a 10 percentage-point increase (or higher) in OTP. An FSC in Asia-Pacific has achieved best-in-class OTP performance and regained its industry leadership position. A US-based FSC has identified 15 key pain points and opportunities to improve OTP by approximately 5 percentage points. A South American LCC improved OTP by 9%, crew satisfaction by 50%, crew productivity by 10%, and airport FTE productivity by 11%; it also reduced lost baggage by 20%.

Improving OTP is a high-impact undertaking. The complexity can be daunting. But it's hard to be a winner—never mind a leader—in the airline industry when your planes don't arrive on time. The rewards of improving OTP—financial, operational, cultural, and reputational—more than outweigh the time and resources that most airlines will need to commit.

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