BCG

Executive Perspectives

AI-First Companies Win the Future

Building an AI-First Airline

September 2025

Introduction

We meet often with CEOs to discuss AI—a topic that is both captivating *and* rapidly changing. After working with over 2,000 clients in the past 2+ years, we are sharing our most recent learning in a new series designed to help CEOs navigate AI. With most sectors going through major shifts, the focus in 2025 is on how to leverage predictive, generative, and agentic AI to fully transform organizations and create new sources of competitive advantage

In this edition, we discuss the future of airlines and the role AI will play in turbocharging growth. We address key questions on the minds of executives:

- What does an AI-first airline look like? What is the opportunity at stake?
- How can I leverage predictive and GenAI to dramatically bend the efficiency and effectiveness curve?
- What are leaders in airline, travel & leisure, and other sectors doing differently, and how are they using AI solutions to accelerate their transformation?
- How do I get started, how do I fund the journey, and how do I get this right?

This document is a guide for airline executives to cut through the hype around AI and understand what creates value now and in the future.

In this BCG Executive Perspective, we articulate the vision and value of building an AI-first airline

Executive summary | Transform into an AI-first airline

WHY
now is the right time to act

- AI capabilities have matured with tools that drive rapid, step-change cost and revenue improvements for airlines
- Airlines face multiple pressures: volatile demand, inherently low margins, labor "brain drain," and higher customer expectations
- Booking and distribution are already being disrupted by GenAI and digital-native entrants, creating urgency for airlines to respond.
- Few airlines are AI-future built; getting there quickly offer potential to sustain 5–6% higher margin advantage.

WHAT
an AI-first airline looks like

While AI can help airlines reimagine commercial and operational functions like never before, to differentiate they must progress across three horizons of maturity:

- Deploy (table stakes, early wins): Apply AI to support functions and routine processes (e.g., contact center copilots, automated transcription). These are necessary to compete but not differentiating.
- Reshape (core differentiators): Reimagine how core commercial and operational functions work (e.g., real-time personalized offers, dynamic pricing, disruption management copilots, predictive maintenance). These reshape how airlines create value and drive structural competitiveness.
- Invent (future vision): Create new, AI-first concepts that redefine the airline model itself (e.g., fully personalized AI “retailers” for every customer, end-to-end planning that integrates commercial and operational tradeoffs, lifecycle optimization across fleet/maintenance/labor, and agentic AI “smart journeys” with real-time interventions).

HOW
to start the journey to transform into an AI-first org

To start becoming an AI-centric enterprise, airlines can begin the transformation through a series of steps:

- Develop an AI-specific agenda and prioritization to target highest-value areas tied to the broader airline strategy roadmap
- Build out a shared data layer across domains with an architecture for modular flexibility for future state use cases
- Create early success behind a coalition of "evangelist" C-suite executives and a new org/op model to cement the change
- Embed governance and an AI transformation office to ensure changes are properly scaled, valued, and fulfilled across org

AI is having a breakthrough: capabilities have grown from analytics into automated decision support tools

Rapid growth and advancements

GenAI, LLMs, and predictive analytics have expanded the possible:

- Natural language used by generative chatbots
- Powerful, real-time predictions
- Personalized content and experiences at massive scale
- Agentic solutions taking actions without human touch

Affordability and accessibility

Computing and storage costs are at an all-time low and continue to fall:

Cloud AI enables easy access, resource-intensive use cases

Powerful, off-the-shelf AI tools can now be rapidly piloted and scaled

Mature use cases

Airlines have started to reshape processes with AI solutions:

- Contact center automation
- Enhanced customer demand forecasting
- Flight disruption simulation and recovery optimization
- Maintenance technician copilots

Implications for airlines

AI performance is accelerating rapidly, with GenAI capabilities doubling every 6–7 months

Billions of airline data points across bookings, schedules, networks are now computationally approachable

97% of airlines are planning on or already integrating AI into global operations

Source: BCG analysis

Airlines face serious and consistent pressure on profits

New air travel demand patterns

- Travel demand has grown steadily in recent years, but forecasts for future remain volatile
- Demand capture has been uneven; past 5 years have seen new winners and losers in airlines
- Rapidly evolving customer base built around burgeoning middle class in emerging markets

Productivity and knowledge loss

- Aging workforce, low retention, and terminations have made building back labor force difficult
- Skilled labor exodus during COVID has created productivity gaps across airline ops orgs
- These labor shortages have directly increased wages from 15–40% across airline value chain

Higher customer demands

- COVID created environment in which customers demand built-in flexibility in travel plans
- Customers seek and are willing to pay for more premium travel experiences, meaning airlines must adapt current offerings beyond competing on fare alone
- Personalization is normalized, driving improved satisfaction with tailor-made service

Supply chain disruptions

- Global supply chain disruptions have led to shortages in aircraft parts and MRO supplies
- 75% of airline disruptions are caused by supply chain delays, impacting MRO, engine turnaround times, total capacity, costs for the airline, and end-price paid by consumers

More complex operations

- Global networks grow more complex, adding difficulty to fleet and crew scheduling
- Commercial processes like sales and booking are being eyed by digital-native entrants to capture travel dollars without worrying about operational difficulties and capital barriers

Source: BCG analysis

Shifting stakeholder expectations mean that airlines cannot choose to "opt out" of AI

Customers

Customers are AI-savvy as 37% already use LLMs to assist in trip planning; they will gravitate to airlines that offer seamless AI-driven services, abandoning those that do not

Industry partners

Airports, ATC, and distribution partners are deploying their own AI tools such as airport ops centers and biometrics; airlines that lag may fail to integrate with digital-forward travel ecosystem

Competitors

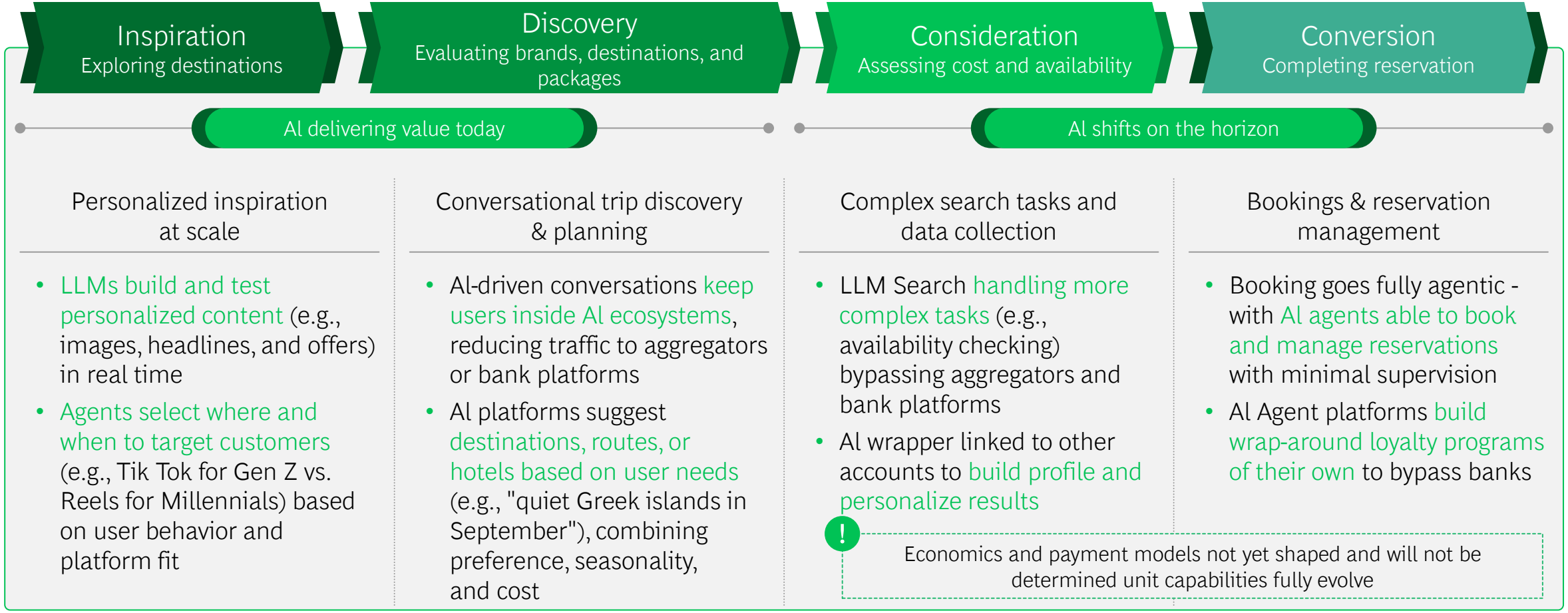
Airlines that adopt early will move ahead; already, performance gaps are widening in AI-driven customer satisfaction, and more attractive offers help competitors grab market share

Workforce

Modern airline employees expect modern tools at their disposal to simplify tasks, reduce manual work, and improve safety and reliability

Source: BCG analysis

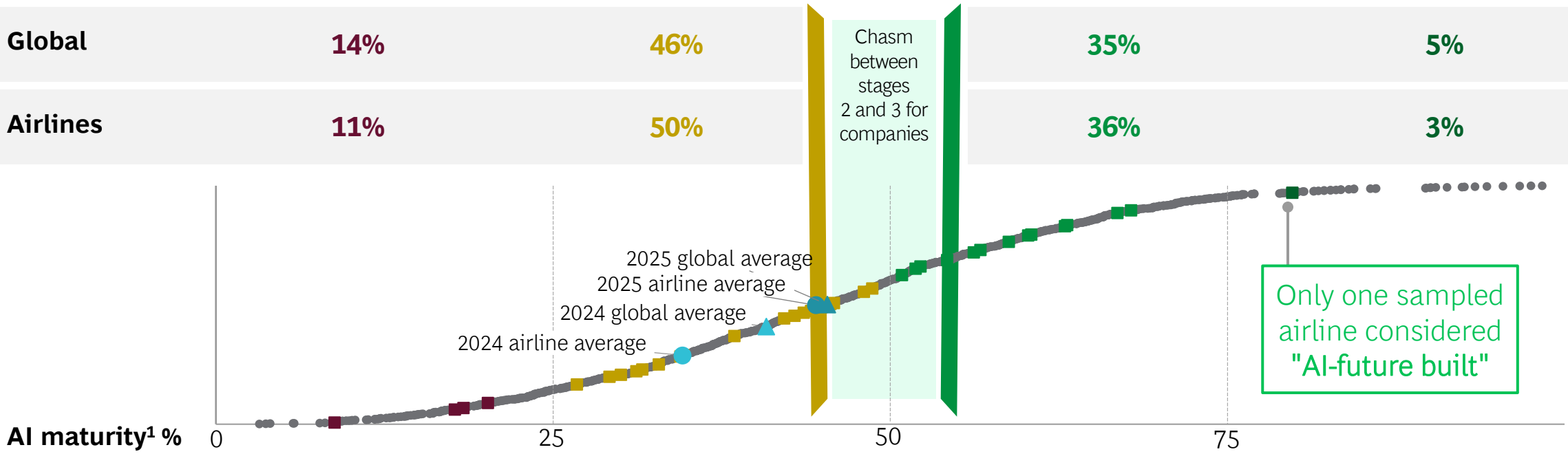
Customers | AI is already delivering against inspiration and discovery use cases with capabilities in consideration and conversion on the horizon



Source: Expert Interviews; BCG analysis

Few airlines are truly "AI-future built“: now is the time to for lagging airlines to invest, differentiate, and win

	1. AI-stagnating	2. AI-emerging	3. AI-scaling	4. AI-future built
Global	14%	46%	35%	5%
Airlines	11%	50%	36%	3%



Taking minimal or no AI action, lack foundational capabilities, journey to AI yet to be activated

Developed foundational capabilities but are struggling to scale and generate value

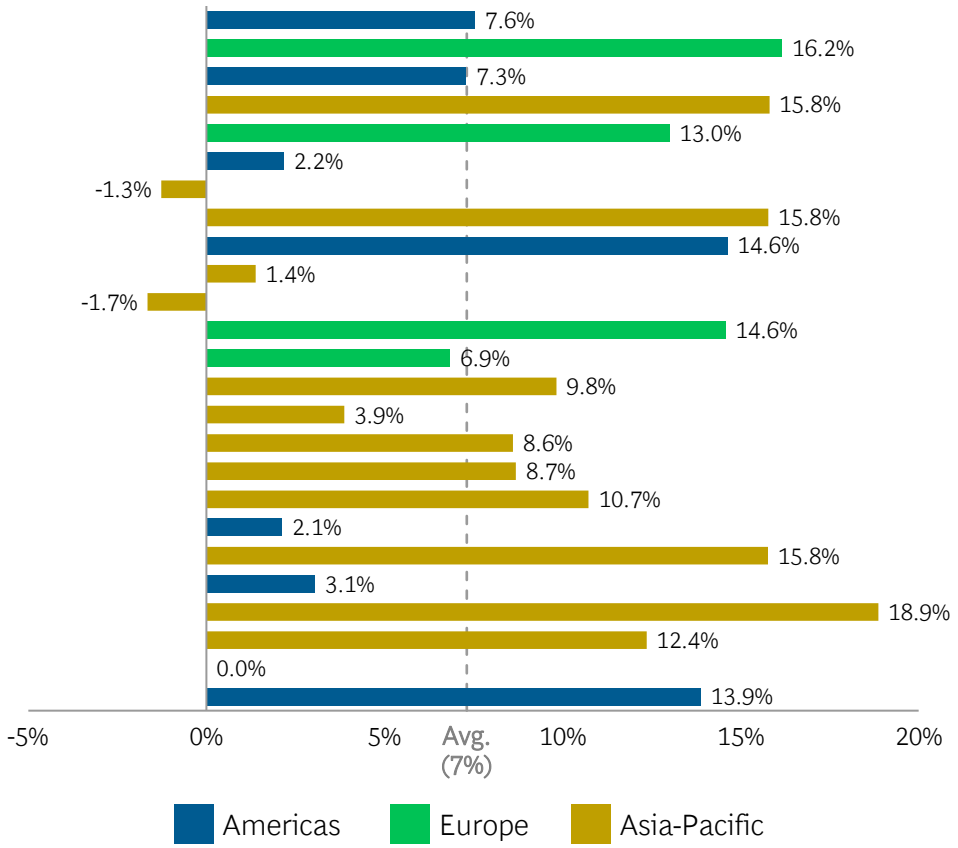
Developed an AI strategy and advanced capabilities, scaling them effectively while starting to generate value

Possess cutting-edge AI capabilities across functions while consistently generating substantial value

1. AI maturity is assessed through 41 dimensions
2. AI-scaling and future-built versus AI-stagnating and AI-emerging
Source: BCG Build for the Future 2025 Global Study (n=1,200 ; n=36 for airlines)

AI-leader airlines can create a structural advantage of +5–6% margin versus peers

Top 25 global airlines by market cap[1] operating margin (%)[2]



AI leaders' outperformance relative to AI laggards

Leaders have higher IT budgets, invest more in AI …

1.2x
IT budget 2025[3]

2x
Share for AI 2025[4]

… fueling revenue growth and cost efficiency …

+4.9%
Expected revenue increases from AI[5]

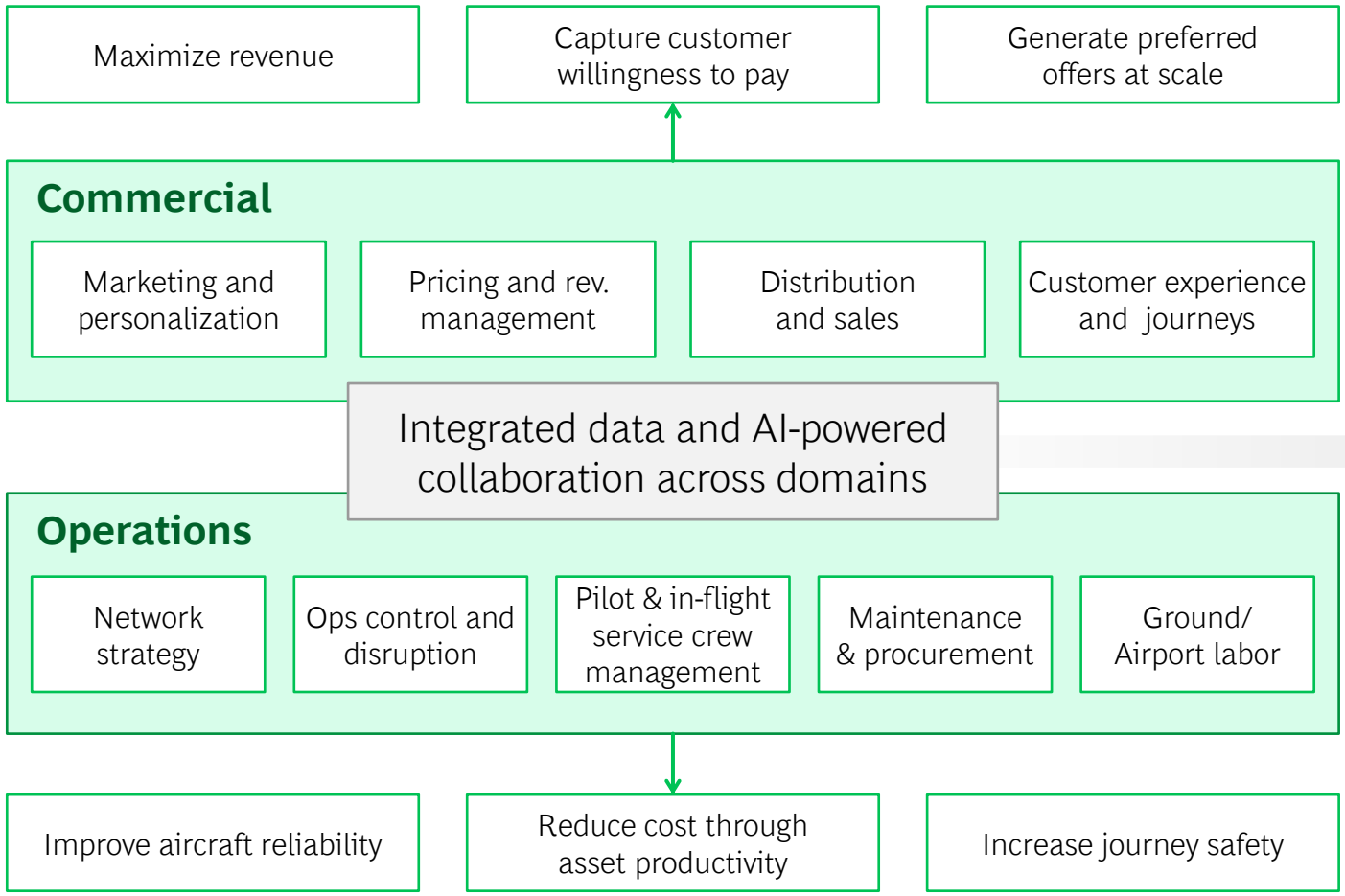
+5.8%
Expected unit cost decreases from AI[6]

… meaning sustained margin advantage for leaders

+5.4%
Projected average operating margin by 2030

1. As of August 25, 2025 2. Based on trailing 12 months of public data 3. What is your company's approximate IT budget (% annual revenue) in 2025?
4. What % of your company's overall IT budget in 2025 is dedicated to AI? 5. What % of revenue growth did you achieve/project in 2028 (in % of annual revenue) through AI efficiency gains?
6.What % of cost reduction did you achieve/project in 2028 (in % of total op. expenses) through AI efficiency gains?
Source: BCG analysis

AI enables commercial and ops integration like never before, making AI a game changer for customer experience and profitability management



Customer centricity

- Personalize journeys
- Support proactively in-trip
- Enable frictionless touch points
- Improve Net Promoter Score

System profitability

- Schedule smarter
- Plan operations in sync with commercial org
- Enable predictive maintenance
- Promote higher service levels

AI use cases for airlines can take 3 different strategic forms, all of which must be used to maximize value

Focus of this document

Deploy

Already becoming pervasive in airlines

Embed off-the-shelf AI into existing processes, delivering productivity, reduced labor needs, and less traveler friction

Airlines have already begun to deploy

- GenAI for internal web
- Automated note and meeting transcriptions
- Fuel-optimization analytics in flight planning
- Predictive load factor models in RM

Reshape

Beginning to be developed by airlines

Change existing processes within airline domains with new use cases for gains in speed, quality, and cost

Airlines are starting to reshape

- Predictive tail allocation via value tradeoff models
- Crew-pairing solutions through predictive AI
- Network planning via AI-predicted market share
- Automatic pricing through agentic-AI monitors

Invent

Untapped and not yet proven in airlines

Create new processes with cross-domain use cases by integrating data and decisions to unlock new value

Airlines should aspire to invent

- End-to-end planning with cross-company tradeoff decisions, across ops and commercial
- Holistic view of aircraft reliability unified into broader ops
- Personalized travel journeys with "smart" interventions

End-to-end transformation across all 3 plays

Combine multiple AI initiatives for an end-to-end transformation

Scale from functional transformation to company-wide transformation

Source: BCG analysis

Reshape | Revenue and customer experiences will be amplified in critical commercial functions while AI helps redefine network and ops control

Commercial | **Network planning and control**

1 Marketing and personalization	2 Pricing and rev. management	3 Distribution and sales	4 CX and customer journeys	5 Network strategy	6 Ops control and disruption	7 Contact center and pax. support
Lack of personalized offers; content is slow to market	Manual pricing lacks speed and demand responsiveness	Disconnected channels limit real-time personalization	Fragmented touch points prevent end-to-end journey	Network is not optimized for demand or cost efficiencies	Manual coordination delays responses	Service quality is inconsistent, personalization limited, and labor costs high
Select examples						
Offer personalization Bundles and flight offers predicted and recommended using past purchases	**Market monitor** Monitoring of internal, competitor, and trend revenue signals to trigger actions	**AEO optimization** Mass tests to optimize AEO/ GEO visibility and performance	**Pre-flight comms** Preflight tips and airport guidance provided by LLM assistant	**Network and schedule** Predictive sizing and share capture for various simulations of network setups	**Cost tradeoff analysis** Real-time cost impact analyses at various delay intervals	**Disruption recovery** Predictive issue resolution and intervention recommendations
Segments/targets Simulated focus groups for segment testing using AI-generated consumer panels	**Demand forecast** Potential pax. quantity for routes, classes, and dates predicted by LLMs	**Trip planning support** GenAI assistant for trip discovery, planning, and booking	**Digital concierge** Personalized LLM engine with planning functions, predicted offers, and mid-journey trip support	**Design simulation** Multivariable simulations run on multiple parameters, e.g., fleet, bases, ops rules, and constraints	**Disruption response** AI recommendations on swaps, cancels, delays based on target KPIs	**Call center operations** GenAI copilots for contact center agents for highest-value scripts and recommended commercial bundles

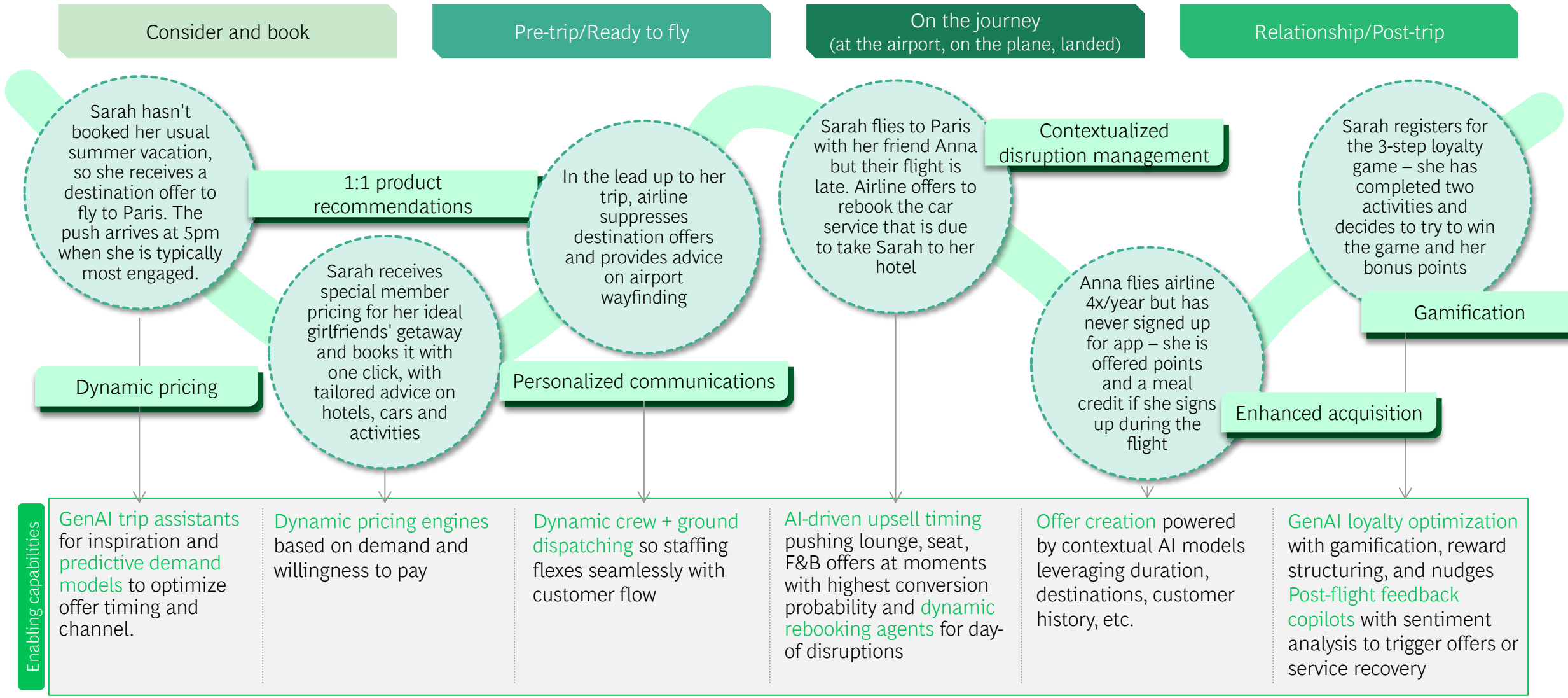
Typical impacts

- **Enhanced experience** — Improved **brand loyalty and NPS** with tailored experience
- **Reduced effort** — **Faster time-to-market** for offers, reducing manual effort
- **3–6%** — RASK improvement
- **Optimized pricing** — Allowing **real-time responses** to demand
- **50%+** — Flight paths optimized
- **75%** — Queries resolved **without human help**
- **20–30%** — HR staff time savings
- **30–40%** — Reduction in delays

Reshape | AI can help reimagine costs in critical operational functions like maintenance and airport/customer service labor

Non-flight operations			Enterprise		Cargo
Engineering and maintenance	Airport and ground ops	Airline operations	Procurement	Talent life cycle	Cargo optimization
Reactive MX causes preventable disruptions in network	Disconnected and poorly planned ops on the ground lead to delays	Crew-pairing logic creates difficulty with hiring and long-term planning	Sourcing is fragmented with limited visibility into suppliers	Standard training lacks personalization and agility	Underutilized belly space and spill cause revenue loss while adding cost
Select examples					
Engine maintenance Predictive MX and engine health monitoring via models built on sensor data and historic trends	**Baggage flow** Enhanced baggage tracking and recommendations on sorting/flow on ground	**Time coordination** Optimized medium-term crew-planning models based on network/pairings	**Contracting** NLP-based contract templates, writing, and review	**Acquisition and retention** AI-driven candidate sourcing and screening for hard-to-fill technical roles (pilots, mechanics, data talent)	**Revenue maximization** Predictive models for excess belly space to increase transparency into loadable capacity
Engineering AI-enabled copilots for technicians to upskill junior workers, unlock easy access to troubleshooting, manuals, and FAQs	**Workforce rostering** Dynamic ground worker allocation models in conjunction with network and ops control decisions	**Rebuilding pairings** Dynamic rebuilding of pairings during flight disruptions in real time	**Inventory management** Cross-network view of parts inventory optimized for lead time and station-readiness	**Employee experience and engagement** AI-enabled pulse surveys and sentiment analysis to track morale, fatigue, and safety culture	**Logistics coordination** Predictive recommendations of sequenced cargo transfers; NLP-based customs and documents templating
Typical impacts					
20% Reduction in downtime **Operational stability** Smarter MX and turnaround decisions reduce delays			**30%** Increase in **equipment availability** **Workforce enablement** Effective upskilling across tenures		**Revenue uplift** Increased revenue from **optimized cargo planning**

Invent | Multidimensional personalization can be implemented at scale to enhance commercial performance and the customer journey



Invent | Operations and network control can be enhanced through cross-domain data integration and AI-based recommendations

Today
Predictive insights in the ops center

- Centralized control decisions must be made quickly leading into and during "day-of" operations
- Vast data is available, but difficult to combine and meaningfully synthesize
- Data governance and capture have not evolved, meaning data either not present, not well-segmented, or unreliable

Innovative use case
Pathfinder fleet assignment tool

- Who: KLM Royal Dutch Airlines (in partnership with BCG)
- Tool for operations control to optimize fleet and tail assignments based on predictive factors for optimizing cost, robustness, and OTP
- Considers multitude of factors to make OCC predictions and recs, including operational rules, maintenance planning, crew rosters, passenger behavior, delay predictions, and cost/revenue
- Shown to rapidly improve multiple target KPIs after model is leveraged, including fuel burn, carbon emissions, delays/OTP

Tomorrow
AI-built, holistically integrated ops control

	Integrated and predictive operations	People and organization enablement	Disruption recovery
Signature capabilities	Schedule robustness simulations	Pilots + FA crew scheduling	Optimized (re)routing and schedule moves
	Facilities (e.g., gating) utilization forecasts	Integrated ground planning (internal and external)	Dynamic resource dispatching
	Customer and resource risk assessments	Real-time risk visibility and prioritization	Seamless, specific customer comms

Foundational capabilities

- Data products
- Data foundations
- Data platforms

Real-time, integrated data products offering visibility into risk, available levers and recommendations to operate robust schedules balancing reliability, service, and profitability through more surgical buffer allocation

Invent | Asset lifetime management of the future means integration of maintenance into broader operational decisions

Today
Siloed aircraft maintenance use cases

- Network, tooling, supply chain/parts, and labor decisions are made in siloes, meaning difficult to execute preventative MX
- As a result, maintenance still often conducted on scheduled, historical basis with limited coordination from other domains

Innovative use case
Skywise unified preventative MX platform

- Who: Delta Air Lines Tech Ops with Airbus/Palantir "Skywise" System
- Integrates data across disparate E&M + ops sources to facilitate a broader intelligence "ecosystem" for more robust preventative MX
- Layers open platform UI over data to develop bespoke maintenance workflows/apps, powered by machine learning and predictive AI models
- Unplanned MX events drastically cut as MX cancellations dropped from 5,600 to 55 over 15 years; more than 2,000 operational disruptions mitigated in the first year of Skywise use

Tomorrow
Integrated, cross-domain asset management

MX risk integrated into fleet strategy	Build predictive MX into fleet decisions to balance utilization vs. cost/safety	〉 Optimal A/C downtime
Cost-informed network planning	Create network plan informed by non-linear MX costs over asset lifetime	〉 More cost-optimized fleet
Station-level readiness	Align footprint and buffer strategy with improved predictions of aircraft flow	〉 Better basing alignment
Unity across labor, MX, and procurement	Build integrated visibility into tooling, labor, and parts at station level	〉 Improved resource utilization
E&M role in ops decisions	Integrate E&M input for all tactical ops decisions for predictive MX feasibility	〉 Stronger cross-functional partners

Any airline looking to transform into an AI-first org faces hurdles

Fragmented priorities

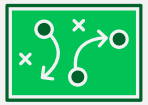
Diffused priorities and agendas lead to misaligned incentives, a long list of use cases, and no common view of impact across domains. Resources are left fragmented, with limited focus on execution

Legacy IT systems

Airlines often operate on antiquated tech stacks developed decades ago; heavily customized systems have minimal ability to overlay new use cases; talent optimized around "maintaining" existing system

Siloed operations

Each airline domain operates with own tech systems and makes decisions with little emphasis on cross-functional impacts; some domains rely on third parties while others rely on niche customized systems



Inflexible op models

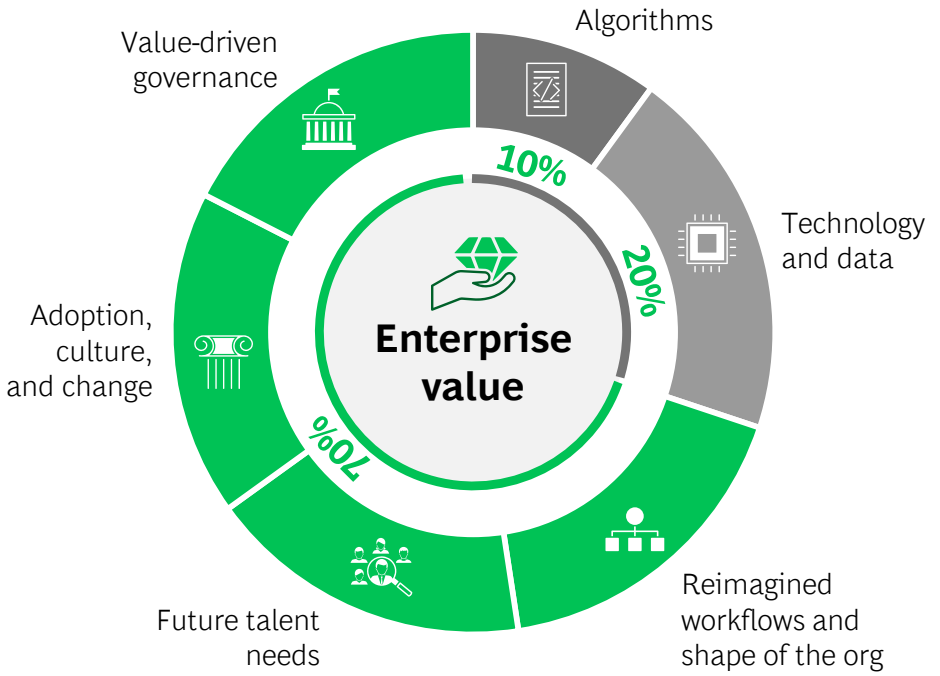
Delivery model is often built more around keeping old systems running; talent and location strategy not optimized to creating org with resources dedicated to fast implementation, scaling, and learning

Lack of governance

Dedicated resources and senior sponsorship are required to centrally run the transformation, constantly assessing value and steering use case scaling to keep implementations on track and "fund the journey"

Airlines must take a series of steps to execute an AI transformation, from aligning on an AI vision through setting up proper governance

AI strategy



Develop the AI agenda to prioritize highest-value areas

Focus on a few, rigorously measured high ROI opportunities supported by well-defined business cases aligned to airline strategy

Design integrated, modular data and digital platforms

Build an integrated data layer across domains with clear ownership and quality checks; establish modular data platform across systems to develop integrated use cases

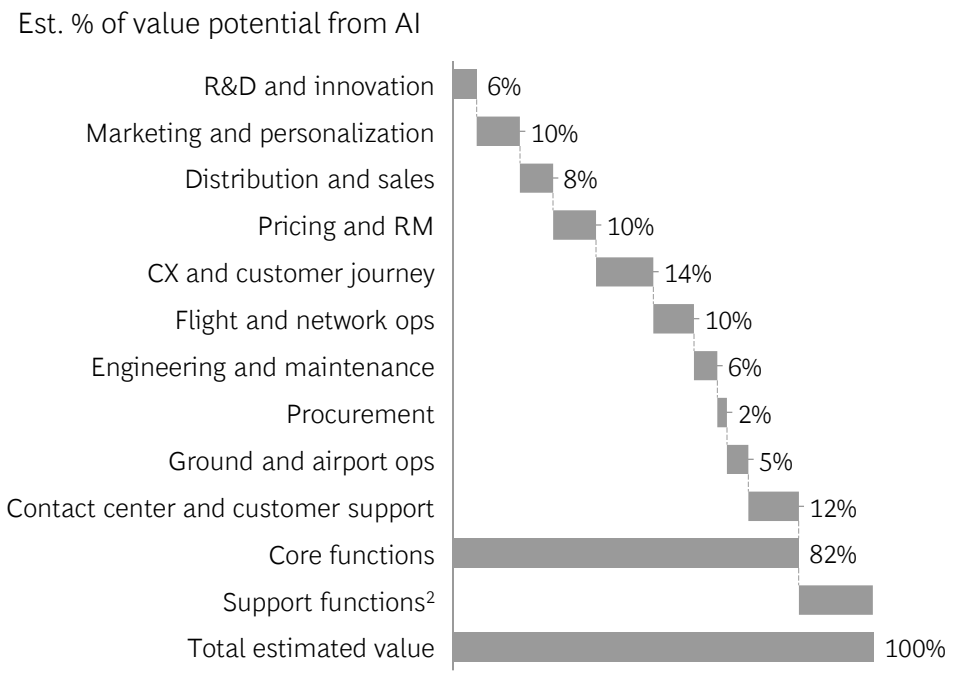
Shape the internal org and op model to support change

Catalyze change through review of workflows across divisions to identify future organizational needs and value-driven governance model

AI agenda | Setting the agenda requires a centralized effort from executive leadership on what the transformed airline will (and will not) look like

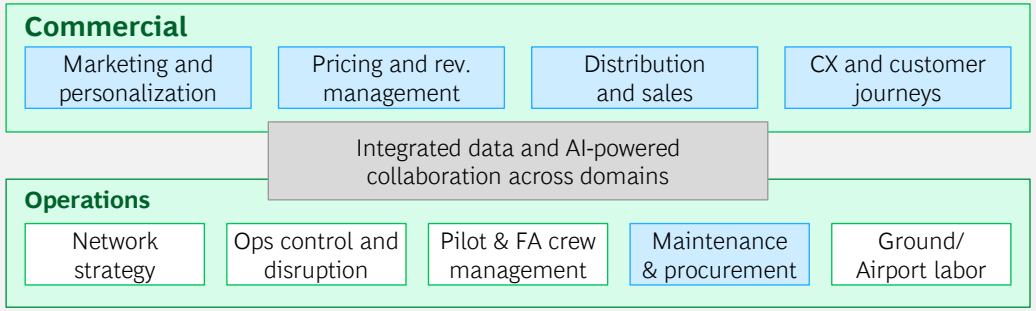
Understanding the value at play …

Estimated distribution of value potential across airline domains in 2025 from AI[1]

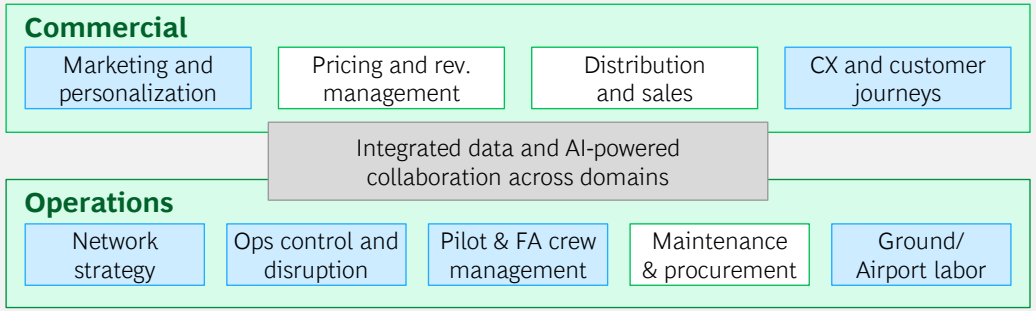


… to target specifically important domains to the airline

Example: Single fleet ULCC with simple network design but struggles with price positioning



Example: Full-service carrier with chronic staffing shortages, complex network design



Once specific domains are prioritized, leverage "test, learn, and scale" approach to use cases to sequence and drive long-term value

1. Please distribute 100% across the following functions regarding value (value comprises topline growth and cost reduction) [KPI7], 2. Function added in 2025 framework, not present in 2024. Support functions include back of house support staff (e.g., IT, HR, finance, legal)
Source: BCG Build for the Future 2025 Global Study (n=1,200 ; n=36 for airlines)

Data and digital platforms | Replacing legacy systems requires transforming the modular business layer, not just the data layer

API management and security

Smart business layer	Orchestrates the customer journey across channels Specific transversal business logic coordinates core systems (e.g., select applicable payment provider)	• Higher touch point intimacy through seamless journeys • Greater convenience and relevance for employee and customer • Increased agility (logic in one place) • Consistent user experience • Focused co-creation with markets
Data layer	All relevant data in one place (1st, 2nd, and 3rd party) Unlocks AI and advanced analytics	• Increased agility (develop in weeks over months) • Higher efficiency through data-driven decisions • Greater customer intimacy through integrated single view on customer
Core transaction layer	Core systems are leveraged and interoperable	• Lower risk (reuse of existing proven solutions) • Reduced TTM (unlocking existing functionalities)
Infrastructure layer	Infrastructure is global and can be programmed	• Increased agility (leverage cloud) • Reduced TTM (automation and devops)

Examples of integrating cross-domain data layers within an airline

Large North American FSC created an enterprise-wide data transformation and analytics tool

Large European FSC integrated data layers to optimize crew, maintenance, and commercial planning

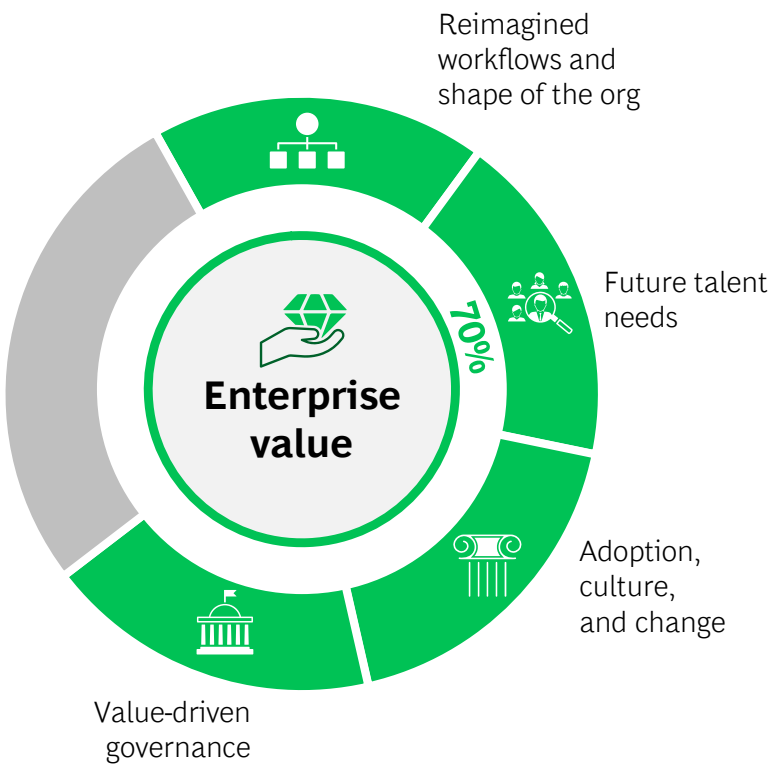
Large North American FSC created an optimized predictive maintenance and ops platform with an aircraft supplier

Key principles

- Development is at the business level: use case driven, in rapid sprints
- Data infrastructure is built in increments, unlocks value on the go
- Data becomes independent from underlying systems and is hosted in the cloud
- Reduction of technical/ organizational debt can happen independent from business-driven changes

Org and op model | Transformation comes from realigning the org and operating models to codify the change

Enterprise value



Imperatives to accelerate value

1. Focus on differential productivity gains to fund the journey across commercial, ops, and support functions
2. Put the right talent in the right roles, with the right skills to deliver, understanding employee value proposition of the future
3. Revamp adoption efforts and cultivate culture required for scaling, creating centers of excellence
4. Stand up central delivery office to measure and evaluate performance against business objectives (e.g., RASK, OTP, EBIT, NPS)

Example: Latin American full-service carrier

C-suite-level engagement on priorities across divisions

Established distinct teams owning platform, data within each domain, and use-case "consumers"

Evaluated new org in context of necessary talent gaps and existing roles needing upskilling

Set guardrails for internal talent evaluation with lean teams of upskilled employees

Established rigorous metrics to monitor value delivery and adoption

Getting started | Six steps for executives to set their airline on an AI-first path

1. Refocus strategic priorities — define what you're solving for, which competitive advantages to strengthen, and which consumer and customer shifts to anticipate

2. Align governance, resourcing, business, and technology efforts to a few "game changers" — and preserve space for bottom-up innovation and experimentation

3. Adapt tech strategy for agility — create optionality in choices of tech partners, decouple AI efforts from existing backbone modernization

4. Set up a focused AI delivery office — anchor the AI program in a central delivery team connected to transformation and finance

5. Anticipate medium-term impacts — Plan for changes to org design, talent strategy, and competitive dynamics as AI scales

6. Drive cultural change — shape new behaviors and mindsets through leadership posture and organization-wide upskilling

Source: BCG analysis

More info | Read more about BCG's insights in airlines, travel, and AI

Article

Digital Innovation Can Take Airlines to New Heights

Article

How AI Agents Are Opening the Golden Era of Customer Experience

Interview

Video: The Data-Driven Future of Airports

Article

Six Strategies to Improve Airline Maintenance

Article

Unpacking the $15 Trillion Opportunity in Leisure Travel

Product Suite

BCG-KLM Airline Operations AI Suite

For more information, go to: https://www.bcg.com/industries/travel-tourism/airline-industry

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