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Travel Technology Investment Trends 2024

Airlines

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Foreword

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Aviation is changing.

Today, the traveler expects to be wowed long before they arrive at the airport. They want a smooth, effortless journey combined with exceptional, personalized experiences from their favorite airline. In other words, airlines need to become traveler-centric retailers.

Against this backdrop, it is encouraging to see a strong appetite for investment among airlines, both low-cost and full-service carriers. Realizing the potential to enhance their offering to passengers, airlines of all models are seizing the opportunities afforded by new technology.

Travel Technology Investment Trends revealed several areas where evolving technology presents significant opportunities. Not least among these is the journey to Offer & Order[1]. This accelerating transformation will create a new traveler-centric operating foundation, built on open systems, automation, optimization, artificial intelligence, and personalization. When complete, airlines will utilize a new operational framework to develop and commercialize new, rich, differentiated offers (new itineraries, new products and services, new bundles and new partner revenue streams), personalized to the preferences of the individual, segment, or market. Meanwhile, the Order transformation means all airlines will move to a technology that overcomes the limits of today's standards like PNRs, tickets, and EMDs.

These are significant changes, and we are on hand to help every step of the way with Amadeus Nevio[2] for full-service carriers and Navitaire New Skies[3] for their low-cost counterparts. With both portfolios based on next-generation, open, cloud-native technologies, you can connect easier, build quicker, and operate smarter, to bring tangible benefits for travelers and your business alike. If you're an airline using a PSS today, you can use 'smart bridging' for a smooth transition to immediately take advantage of new modern retailing capabilities.

Elsewhere, the ongoing roll-out of NDC capabilities comes under the spotlight. There is a growing understanding in the industry that this technology's potential is now being delivered. Amadeus data shows that some airlines are now seeing one in three travel agency bookings facilitated with New Distribution Capability (NDC).

Also on the agenda for this report are the airport experience, enhanced schedule planning, overcoming disruption and a look at how we can strengthen airlines through new technology for interline partnerships. In each of these areas, Amadeus is working alongside its stakeholders from across the aviation ecosystem to develop new solutions, specifically tailored to the changing needs of the industry.

We hope you enjoy reading this report – and if you have any questions, we look forward to hearing from you.

1   Amadeus, 2023, "Introducing Amadeus Nevio. It's how airline retailing works better." --> https://bit.ly/3SJY7YG

2   Amadeus, "Amadeus Nevio. It's here. It's now", --> https://bit.ly/4bKQbz3

3   Navitaire, "New Skies airline reservation platform" --> https://bit.ly/4bN4q6s

Introduc

Travel Technology Investment Trends 2024 is a milestone research project carried out by market insight agency, <u>Opinium Research</u>[1], alongside <u>Amadeus</u>[2].

It seeks to understand technology investment trends across the different segments of the travel industry – a task Amadeus, with its position at the center of the travel ecosystem, is uniquely positioned to take on.

Findings are presented in a series of eight reports – addressing sectors including airlines, hospitality, corporations, travel sellers, airports, and payments. The project is designed to take a unique, panoramic view across the entire travel industry. The work investigates the developments that will define the sector over the coming year and beyond.

This specific report is focused on airlines. It is based on individual responses from 100 senior airline leaders based in ten key countries – Brazil, China, France, Germany, India, Mexico, South Korea, UAE, UK and USA – combined with expertise from Amadeus' executives.

1   Amadeus.com
2   Opinium.com

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The report explores the technology needs of both:

Full-service carriers (FSCs): Those airlines which typically operate a hub and spoke network, flying longer haul routes to large, urban airports, those with diversification of their distribution strategy via direct and indirect channels.

Low-cost carriers (LCCs): Airlines which primarily fly point-to-point, short-haul routes between regional airports, with a strong focus on price-sensitive traffic, mostly leisure passengers.

By asking aviation leaders from both segments about investment plans, business challenges and priority areas, this report offers a globally representative understanding of the airline industry, its concerns and ambitions for 2024 and beyond.

The report is divided into seven sections:

01 Investment drivers, challenges, and ambitions

02 Investment priorities for airlines in 2024

03 A journey to modern retailing

04 Merchandising and distribution (including NDC)

05 Building stronger airlines through interline partnerships

06 Passenger experience at the airport

07 Schedule planning and overcoming disruption

Each section investigates technology priorities. What factors are shaping investment trends in 2024, which priorities are front of mind and what are the challenges airlines are seeking to overcome?

These sections are followed by brief conclusions.

Investment drivers, challenges, and ambitions

Aviation is currently undergoing a once-in-a-generation evolution.

Not only are airlines of all sizes being asked to reduce the environmental impact of the sector, the way they engage with passengers is also being fundamentally rethought. Branded[1] by the International Air Transport Association (IATA) as "possibly the most important transformational project of the next decade," adapting the industry to the world of modern retailing, underpinned by a transition to Offers & Orders, will require significant investment from all industry stakeholders.

Over the long-term, these changes will move the passenger to the center of the ecosystem, offering travelers the chance to create trips personalized to their specific needs. Any aspect of the journey, from inspiration and planning, right through to booking, payment, and enjoying the flight, arriving at the destination and associated services, needs to be tailored to the needs of the passenger.

Today, travelers expect personalization, efficiency, and seamless engagement – and with the transformation to modern retailing, airlines are responding.

1   IATA, "Airline Retailing: An industry vision for Offers and Orders", 2021 --> https://bit.ly/49jHKJB

Airlines adapt to evolving expectations.

In response to this changing environment, half of airlines surveyed by Travel Technology Investment Trends are planning to make 'moderate' investment into their business in 2024, with the figure standing at 46% for LCCs and 54% for FSCs. At the same time, some 89% of all airlines plan 'at least' moderate investment in their business, with FSCs again slightly more bullish than their LCC peers.

In total, 98% of all airlines will spend 'the same or more' on technology over the coming twelve months when compared to the prior year. A very significant 64% will spend 'more', while only 2% of LCCs will spend less and not a single FSC plans to reduce its investment in technology.

On average across the countries explored by Travel Technology Investment Trends, LCCs plan to increase investment in technology by 14.4% in the coming twelve months, compared to 12.2% at FSCs.

64% of airlines planning to 'spend more'

34% of airlines planning to 'spend the same'

2% of LCCs planning to 'spend less'

"

It's good to see airlines preparing to invest more in technology this year. While the aviation industry has modernized over the last 20 years, since the widespread adoption of digital channels and tools, this has mainly been by expanding service via customer touchpoints. The next step is to leverage new tech and new, more effective processes, throughout the traveler journey.

For example, with new technology and processes, if their customer has been browsing luxury beachfront hotels, or frequently books lounge access, an airline will be aware. This knowledge can be combined with the airline's product inventory, and that of its partners, to create an irresistible offer and serve it at the right moment, to drive additional sales. So new tech and new processes will allow airlines to become more relevant and more dynamic. We are already working with pioneering airlines to make it a reality."
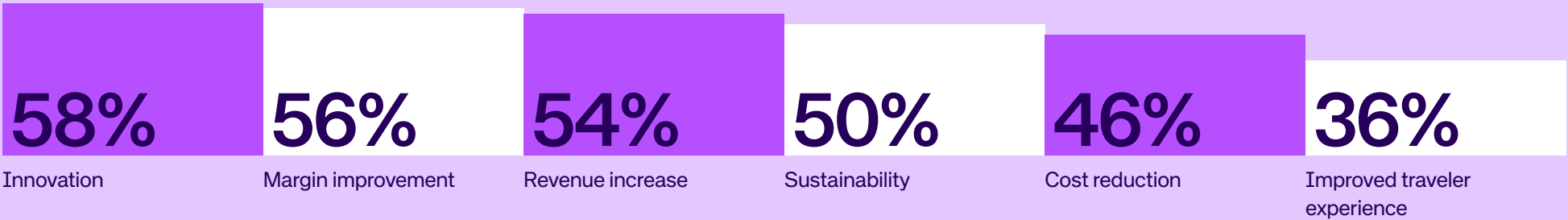
Cyril Tetaz
EVP, Airline Solutions
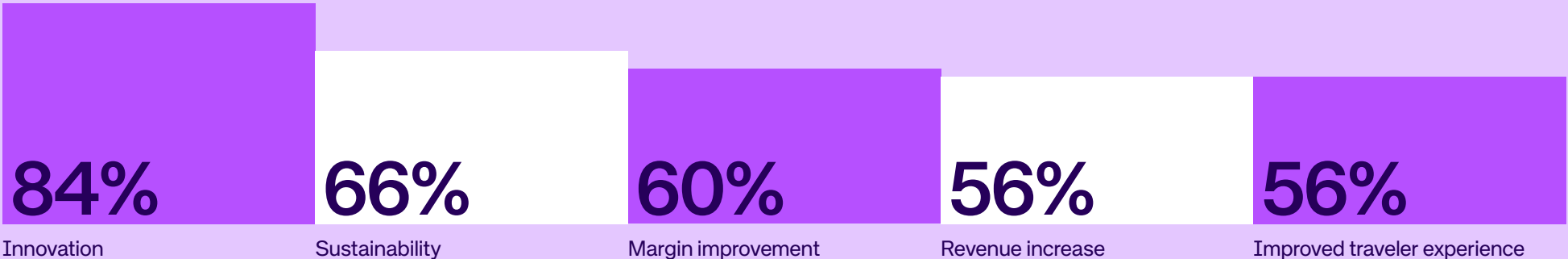Amadeus

Investment drivers for the coming year.

A wide variety of objectives are behind these ambitious technology investment plans, with innovation, sustainability, and margin improvement topping the list of priorities.

Previously, aviation has led the way in several technical changes for the travel industry, including revenue management, high transaction systems, computerized reservations and online storefronts. Today, as technical change becomes increasingly urgent in the retailing space, airlines are working to seize new opportunities once again.

The top objectives driving investment for LCCs over the next 12 months are:

58%	56%	54%	50%	46%	36%
Innovation	Margin improvement	Revenue increase	Sustainability	Cost reduction	Improved traveler experience

In comparison, the top objectives for FSCs over the coming year are:

84%	66%	60%	56%	56%
Innovation	Sustainability	Margin improvement	Revenue increase	Improved traveler experience

Interestingly, sustainability is a bigger investment driver for FSCs, while, perhaps unsurprisingly, reducing costs is more of a priority for LCCs.
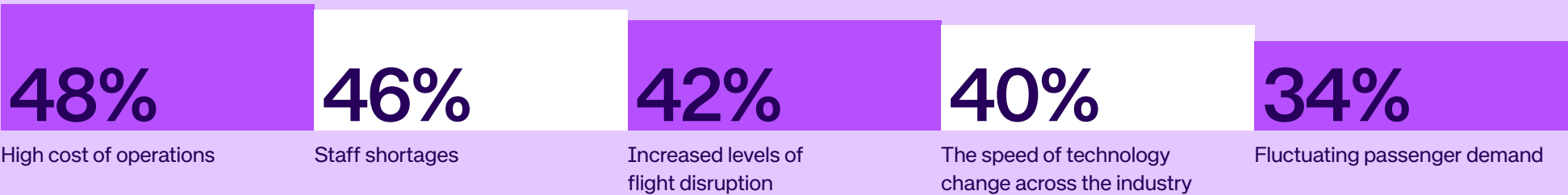
This may reflect investments made by LCCs in modern, fuel-efficient jets, and the consequent argument they have a stronger sustainability story to tell.
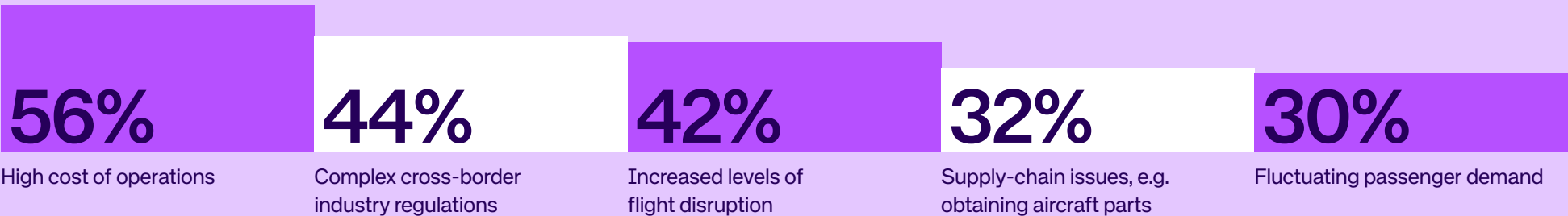
Operational challenges for the coming year.

When questioned by researchers for Travel Technology Investment Trends 2024, airlines highlighted several challenges they face today, including the cost of operations, increased disruption, and fluctuating passenger demand. Effective deployment of new technologies could help to address these over the coming 12 months.

The top operational challenges for LCCs are:

48%
High cost of operations

46%
Staff shortages

42%
Increased levels of flight disruption

40%
The speed of technology change across the industry

34%
Fluctuating passenger demand

The top operational challenges for FSCs are:

56%
High cost of operations

44%
Complex cross-border industry regulations

42%
Increased levels of flight disruption

32%
Supply-chain issues, e.g. obtaining aircraft parts

30%
Fluctuating passenger demand

"

The challenges reported by airlines, both in the LCC and FSC sectors, are consistent with the themes that have characterized the industry over the past two-to-three years. Airlines face a challenging servicing environment as they strive to improve core operational performance to meet rapidly increasing demand."

Holger Mattig
SVP, Product Management, Airport and Airline Operations
Amadeus

Investment priorities for airlines in 2024

Travel Technology Investment Trends research suggests a top priority for airlines this year is improving service at the airport, while also working to deliver an outstanding experience across the entire journey.

New solutions will help carriers achieve both ambitions, personalizing every aspect of the trip using rich traveler profiles for context-aware service, biometric recognition, and one-click payment. New airline technology coming online today means travelers can be empowered to self-serve any change they like, including seats or ancillaries, across any touchpoint.

At the same time, new retailing technology can spot traveler experience issues as they happen and help airlines to respond intelligently through automation.
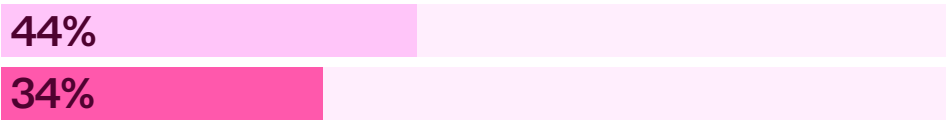
What do you see as the top three biggest priorities in airline technology currently?
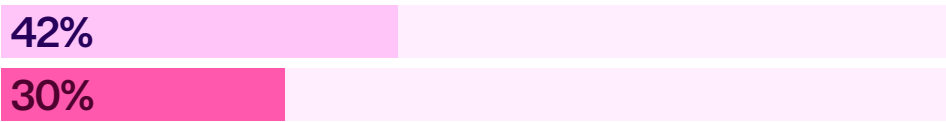
■ FSC ■ LCC

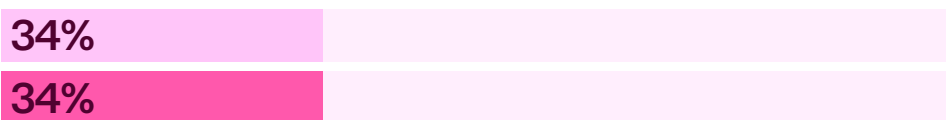**Improving the passenger's experience at the airport**

44%
38%
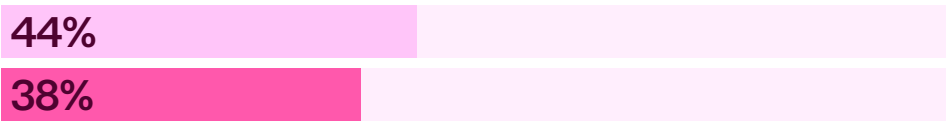
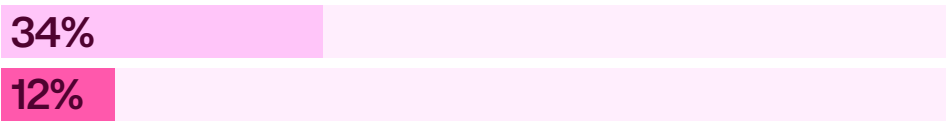**Delivering an outstanding traveler experience across the entire journey**

44%
34%

Automating customer service across your airline

42%
30%

Modernizing your approach to revenue management to incorporate additional market data

34%
34%

Modernizing ramp operations

34%
12%

Automating your approach to disruption management to better re-accommodate passengers and recover flight operations

30%
20%
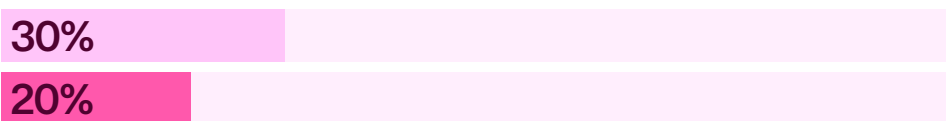
Modernizing your airline's approach to Network Management

50%
28%
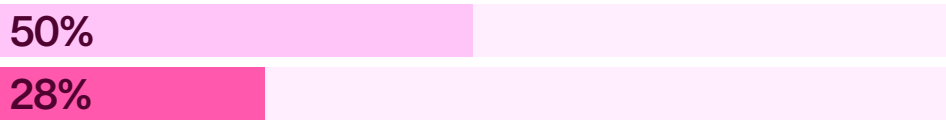
Modernizing how your airline accepts and processes payments

28%
28%
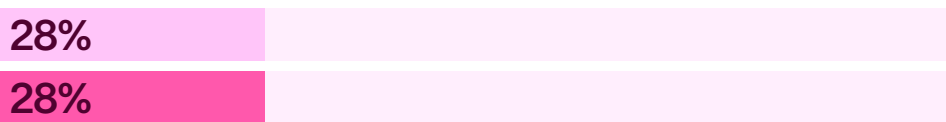
Bringing together data from disparate systems

28%
26%
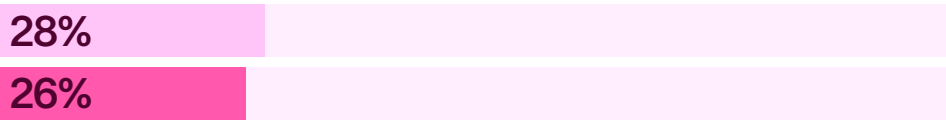
Improving the effectiveness of your interline relationships with partner airlines

26%
34%
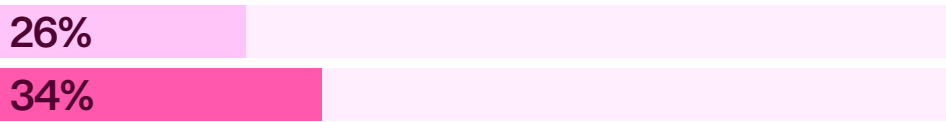
Personalizing the traveler experience at every touchpoint based on a 360 degree customer view

24%
22%
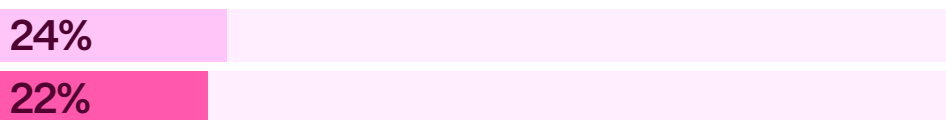
Transitioning to become a retailer (including move to Offer & Order)

22%
22%

Delivering a modern distribution approach and selling more through NDC in the indirect channel

22%
16%
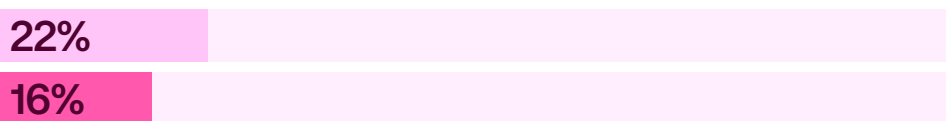
Anticipated impact of technology over the coming year.

When anticipating which technologies will have the greatest impact on the airline industry over the coming year, there is some agreement between LCCs and FSCs. For example, both expect machine learning and digital payments to be an important influence, while the role of cloud computing is expected to increase in both segments.

Notably, both types of airline expect machine learning to have the biggest impact on their businesses, not only in the next 12 months but over a five-year time horizon too. The role of Generative Artificial Intelligence (Generative AI) is also predicted to be central in the near future.

Technologies LCCs expect to make the greatest impact over the next 12 months:
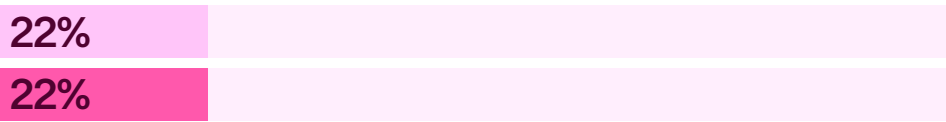
%	Technology
50%	Machine learning
40%	Cloud computing
38%	Digitalization
32%	Digital payments
30%	Data analytics
30%	Biometrics
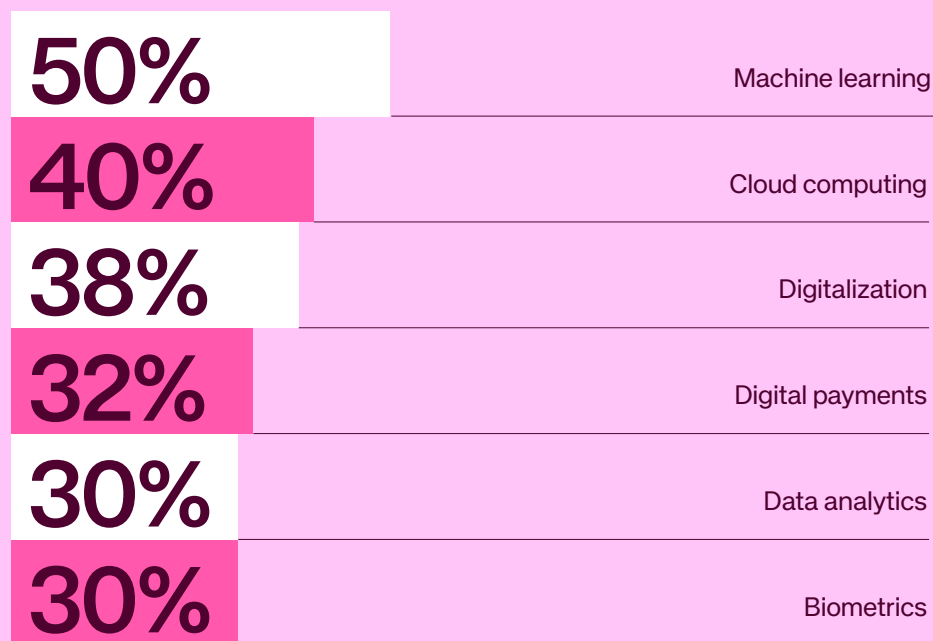
Technologies FSCs expect to make the greatest impact over the next 12 months:

%	Technology
54%	Machine learning
54%	Cybersecurity
50%	Generative AI
48%	Digital payments
44%	Digitalization
42%	Cloud computing
40%	Self-service technology and data analytics
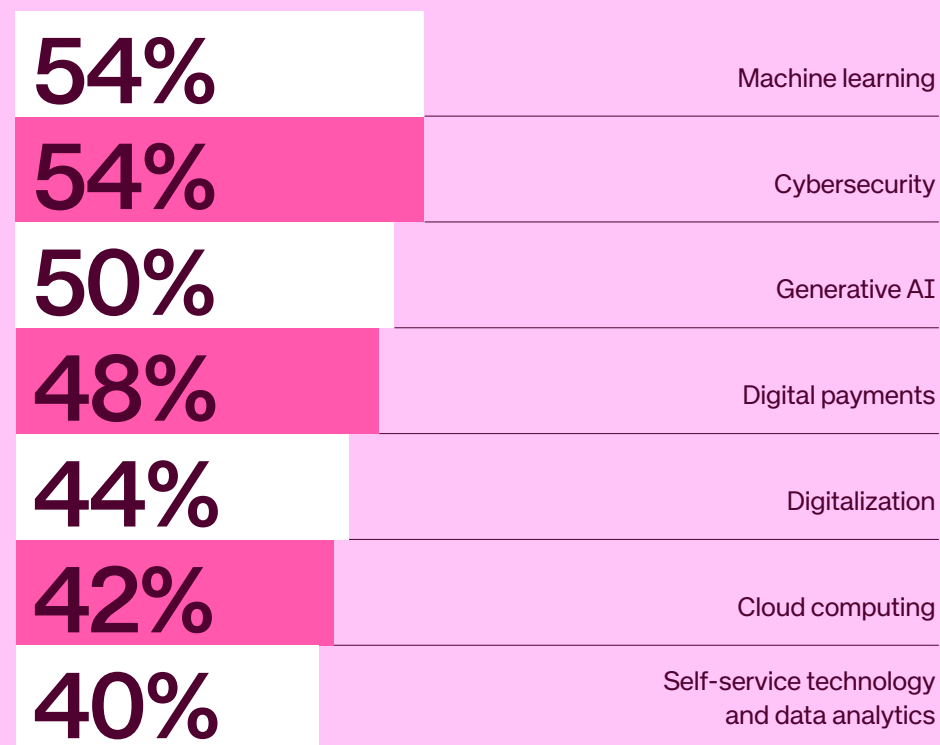
When considering plans for the actual deployment of new technologies over the one-to-five-year horizon, there are significant differences in the ambitions of LCCs and FSCs.

LCCs are focused on the practical elements of a journey, with modernizing ramp operations (32%), automatic service (26%) and driving the airport experience (26%) all cited as key areas of implementation over the coming year.

Anticipated deployment of technology over a one-to-five-year horizon.

To some extent this reflects the existing digital sales and merchandising methods of LCCs – in many cases, these carriers are already using an Offer & Order approach, so investment in this area is naturally less of a priority.

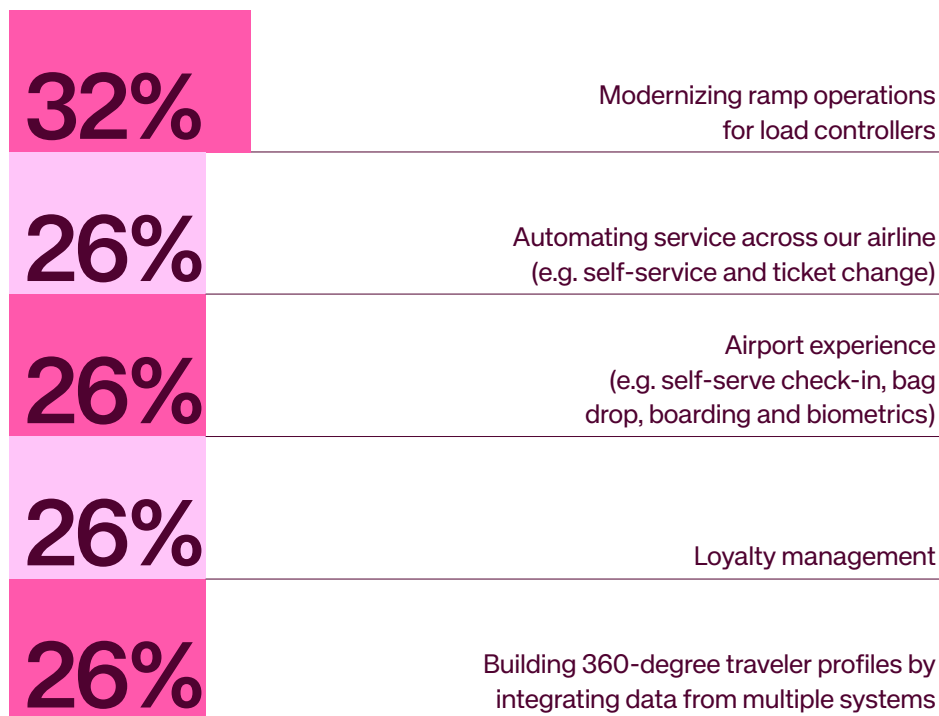In contrast, FSCs are focused on 'offer creation'. This is cited as the most sought-after technology over the coming year by 46% of the study, followed by 'order management,' cited by 44%. These results are very much in line with the modern retailing transformation as described by IATA, underlining the accelerated adoption of new retailing capabilities across the market.

LCCs are focused on implementing the following capabilities in the short-term (next 12 months):

32% Modernizing ramp operations for load controllers

26% Automating service across our airline (e.g. self-service and ticket change)

26% Airport experience (e.g. self-serve check-in, bag drop, boarding and biometrics)

26% Loyalty management

26% Building 360-degree traveler profiles by integrating data from multiple systems

In comparison, FSCs are more focused on Offer & Order:

46% Offer creation (e.g. packaging your own and third-party services into a personalized offer)

44% Order management

38% Automating service across the airline

36% Modernizing ramp operations

32% Digital traveler experience (e.g. online retailing and associated technologies)

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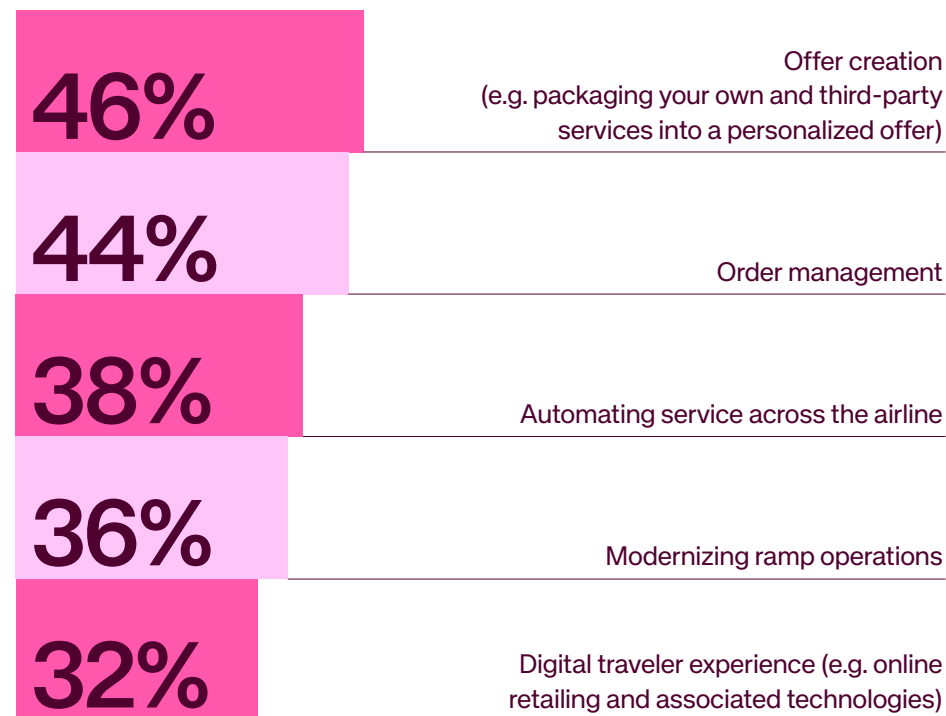
It's no surprise that full-service airlines are focused on unlocking new value creation possibilities, from the ability to sell more dynamically optimized offers, to providing tailored and frictionless purchase, self-servicing, delivery and operations. For these reasons, dynamic offer creation and order management are generally considered the first steps for airlines pursuing retailing transformation.

The Amadeus Nevio portfolio of solutions, which we are excited to be implementing with several airlines, allows them to differentiate, compete and optimize revenue and experiences through every traveler interaction, using a new operating foundation built around offers, orders and a nucleus of traveler-centric, data-driven automation and intelligence. We're really excited about the value unlock possibilities we will be enabling."
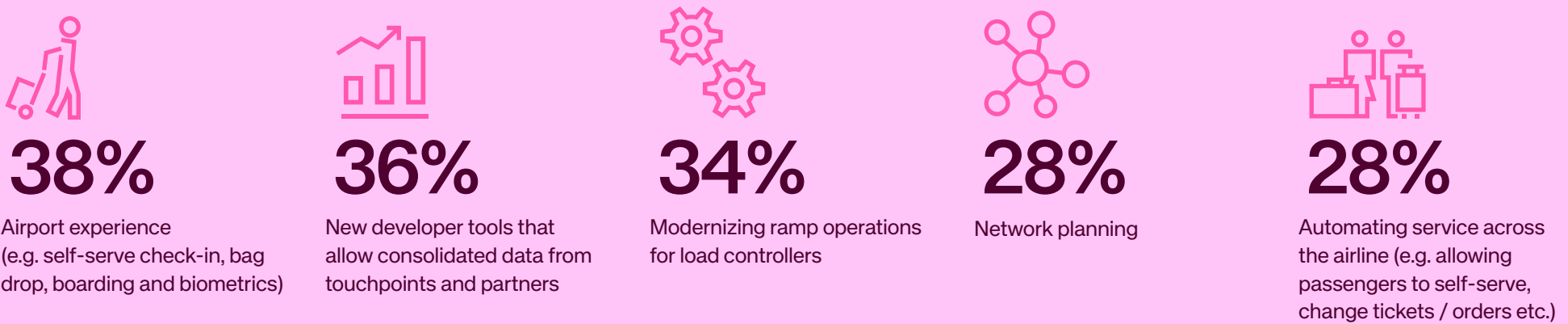
Meg O'Keefe
VP, Airline Solutions Product & Portfolio
Amadeus

Taking a closer look at loyalty, 54% of FSCs plan to implement a new, or significantly upgraded, loyalty system in the next five years.

At the same time, FSCs told Travel Technology Investment Trends researchers that an 'ability to inform agents at the contact center and airport to serve travelers based on their specific history' (38%) and 'tailoring benefits based on passenger value' (30%) were among the top service challenges. Looking out over the five-year horizon, this picture remains relatively consistent, with LCCs working to improve efficiency.

However, only 16% of LCC and 22% of FSC respondents selected 'delivering a modern distribution approach' and 'selling more through New Distribution Capability (NDC)' as a priority. This may be explained by many airlines focusing on their own direct channels, or perhaps that other priorities are competing for budget and attention.

Over the next five years, LCCs are focused on the deployment of:

38%
Airport experience (e.g. self-serve check-in, bag drop, boarding and biometrics)

36%
New developer tools that allow consolidated data from touchpoints and partners

34%
Modernizing ramp operations for load controllers

28%
Network planning

28%
Automating service across the airline (e.g. allowing passengers to self-serve, change tickets / orders etc.)

Over the next five years, FSCs are focused on the deployment of:

38%
Modernizing ramp operations for load controllers

32%
Airport experience

32%
Automating service across the airline

32%
End-to-end disruption management

30%
Order management
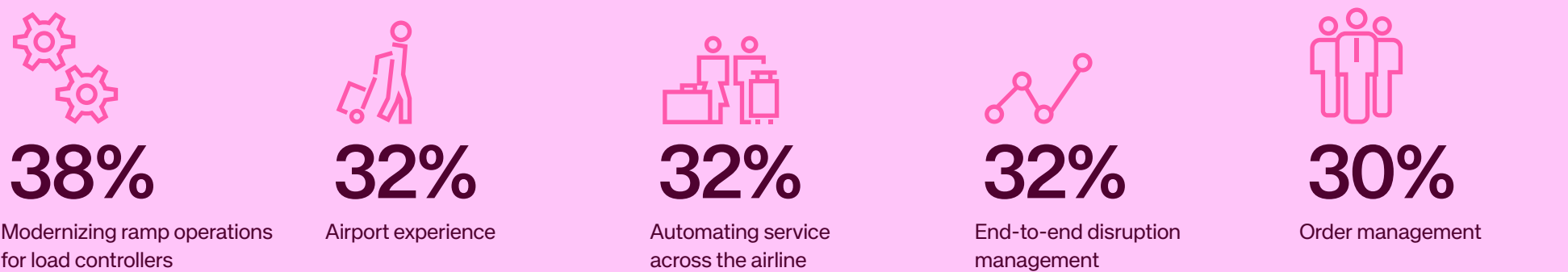
A clear priority across both timeframes for LCCs is investment in self-service technology, both at the airport and digitally pre-trip.

When combined with a focus on improved ramp operations, it is clear LCCs are working to reduce costs through operational efficiency at every opportunity – without sacrificing the passenger experience.

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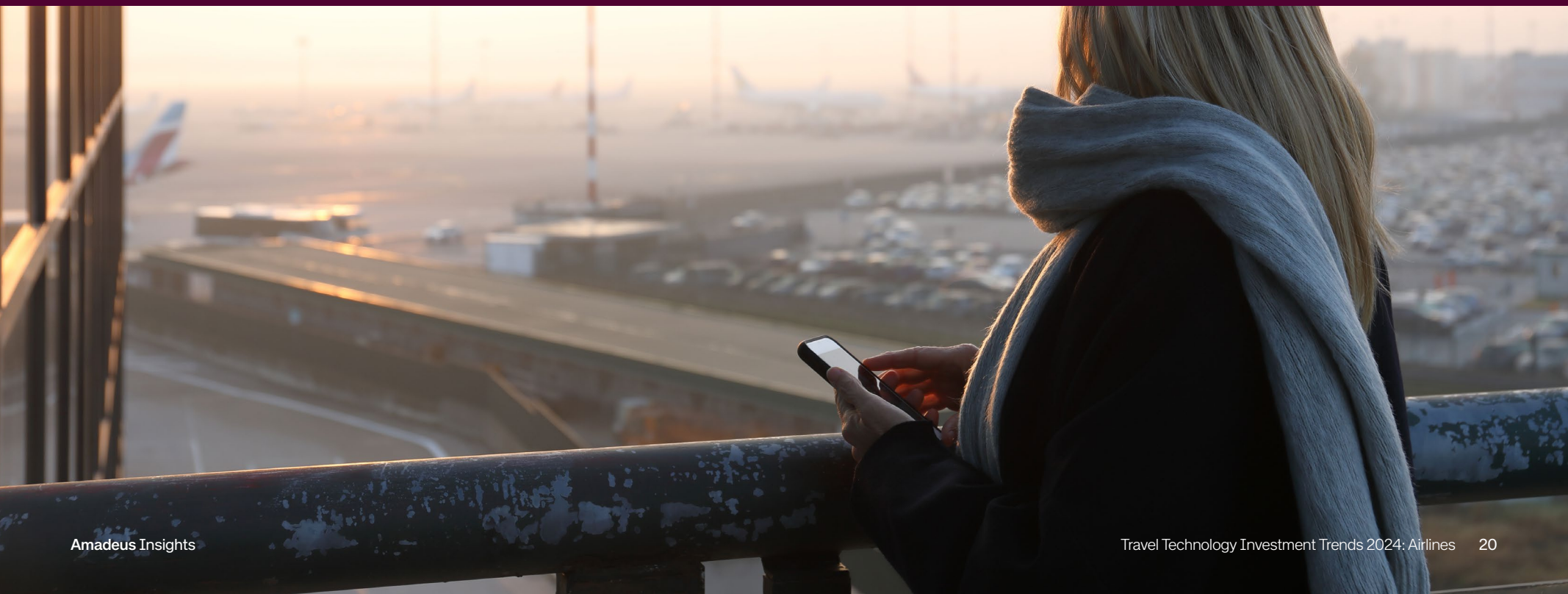
The 'low-cost' in LCC comes from the way these carriers operate, using a fuel-efficient fleet across a rapidly growing footprint throughout many global regions. Consistency is key, with numerous daily departures driving revenue. As such, any technology which helps automate processes, speed up boarding or drive efficiency is vital to the success of their model. This is reflected in the Travel Technology Investment Trends' findings and through Navitaire we have a trusted suite of solutions on offer that help LCCs achieve their ambitions over the coming one-to-five-year horizons."

Dave Evans
CEO, Navitaire
Amadeus Travel Unit

How Finnair is making modern retailing a reality

In December 2022, <u>Finnair was announced as Amadeus' first customer for Amadeus Nevio</u>[1] to support its transformation to modern retailing.

Amadeus and Finnair are working closely together on sixteen different cross-department 'value streams' – sets of actions that take place to add value for a customer and drive business outcomes, to accelerate the benefits of the transition to traveler-centric retailing.

During 2023, significant progress was made. An early focus has been dynamic pricing, which is replacing traditional fare classes so airlines can flexibly price offers based on contextual factors like the duration of a trip, time to departure, travel day and revenue management insights.

Dynamic pricing also encompasses 'continuous pricing', which frees airlines from rigid, historic fare classes so they can choose any point on the pricing curve for an offer. Finnair has tested dynamic pricing across key routes and generated a 3% revenue increase, which is ahead of expectations.

Travel Technology Investment Trends research found support for the roll-out of continuous pricing. Some 46% of FSCs and 32% of LCCs are looking to be able to offer any price based on the supply and demand for a flight, rather than being constrained to 26 booking classes, within the next two years.

1   Amadeus, "Amadeus partners with Finnair to make airline retailing transformation a reality", 2023 --> https://bit.ly/48veMF3

"

Amadeus Air Dynamic Pricing, driven by artificial intelligence, allowed us to test continuous pricing considering contextual insights on 70-or-so Origins & Destinations (O&Ds). We saw a revenue increase of 3% on average, ahead of expectations. Our focus now is to deploy the solution at scale, to unlock the full revenue potential, extend functionality and logic to ancillary services and pave the way to total offer optimization."

Antti Tolvanen
SVP, Network and Revenue Management
Finnair

03 A journey to modern retailing

The opportunities afforded by enhanced retailing capabilities could generate significant revenue for airlines. For example, McKinsey finds[1] that, by offering passengers greater choice, new products, services tailored to their specific needs and greater pricing flexibility, airlines could earn an additional $45 billion by the end of the decade.

In an industry where profit margins are consistently slim, this is a significant figure – and airlines are increasingly aware of the potential. Indeed, Finnair[2] has worked with Amadeus to trial dynamic pricing across 70 or so origin and destination pairs. This new approach to pricing Finnair's offers incorporates traveler context to deliver more relevant and precise prices. The initial project is already delivering a 3% revenue improvement, well ahead of expectations.

1   IATA, "Up to $45 billion in value creation available by 2030", 2023 --> https://bit.ly/4bIuDTM
2   Amadeus, "Amadeus partners with Finnair to make airline retailing transformation a reality", 2022 --> https://bit.ly/48veMF3

IATA is aiming to see 100% of airline transactions take place in an Offer & Order environment by the end of the decade – and it appears the airlines responding to the Travel Technology Investment Trends survey are aligned with this goal.

When asked about their approach to Offer & Order management:

- Nearly three in five FSCs (58%) stated they are planning on a gradual shift, enabling new models with current interline partners.

- Just under half (48%) are doing so by enabling partnerships with non-air travel suppliers.

- A similar proportion (46%) are shifting to modern retailing across NDC-enabled indirect channels first.

- Finally, 44% are planning on a shift on their own digital channels.

FSCs were asked 'have you started implementing or do you plan to implement any of the following steps to transition to Offer & Order management'?

Steps in transition to Offer & Order management:

■ We have not started this yet   ■ This is in progress   ■ We have implemented this

A strategic business plan to transition to Offer & Order management

| 4% | 52% | 44% |

A clear understanding of the Total Cost of Ownership of my IT during and past transition

| 8% | 54% | 38% |

Hiring new talent and skills to undertake the transition

| 10% | 48% | 42% |

A detailed transition plan for our airline's business process

| 12% | 48% | 40% |

Adapting my airline organization to execute retailing transformation strategic plan

| 14% | 50% | 36% |

The necessary IT services and consulting relationships to prepare for and undertake the transition

| 16% | 44% | 40% |

"

We see clear advances in airlines readying themselves to tackle the retailing transformation. Our research for Travel Technology Investment Trends confirms that more than half the industry is currently active preparing their move to new standards and putting business realization plans in place to make it happen. Many airlines are actively ramping up their knowledge, skills, leadership and transformation capabilities and we observe a clear trend of airlines drawing on other retail-savvy industries to source this talent and know-how."

Meg O'Keefe
VP, Airline Solutions Product & Portfolio
Amadeus

Value of Offer & Order transition.

There is optimism around potential revenue generation following a shift to Offer & Order. A quarter of FSCs (24%) anticipate a 5-10% uplift in revenue over the next five years from transitioning to Offer & Order and becoming a 'retailer,' while 36% expect a 10-20% uplift and an optimistic 32% anticipate a 20-30% uplift.

At the same time, 12% of LCCs expect a 5-10% increase in revenue from the transition to Offer & Order, while a third expect the value to be 10-20% of revenue and nearly half expect a 20-30% rise in revenue.

On average, FSCs are expecting modern retailing to achieve a revenue increase of 18% when fully implemented.

Anticipated % revenue uplift over next five years with Offer & Order – LCCs

12% 5-10% uplift

30% 10-20% uplift

44% 20-30% uplift

Anticipated % revenue uplift over next five years with Offer & Order – FSCs

24% 5-10% uplift

36% 10-20% uplift

32% 20-30% uplift

How long will it take to realize the full benefits of Offer & Order?

On the journey to Offer & Order, airlines can realize value from technology more quickly with an agile approach aligned to their specific business objectives. There's no need to wait for community functionality – instead each airline can build or request the new capabilities they want. Best-of-breed modules can be deployed individually or end-to-end based on each airline's strategy, leveraging the full power of the entire partner ecosystem.

A good example includes the dynamic pricing innovations seen at Finnair outlined in the case study previously.

When asked to estimate how long the full transition to Offer & Order would take, airlines told researchers it would take an average of four years, with a third of respondents arguing it will take less than three.

- LCCs plan to move towards the model faster, expecting the process to take an average of four years, with around a third believing the process can be completed in three years.

- FSCs argue it will take an average of five years, with 28% optimistic it can be done in just three.

> "
>
> Every airline is unique, and the pace of change will depend on the strategy of each individual carrier. Some airlines are already quite advanced, for example we are working with both Finnair and Saudia across multiple workstreams, as well as some other airlines. The estimate of four years will be appropriate for some carriers, but we do expect it will take others longer."
>
> **Cyril Tetaz**
> EVP, Airline Solutions
> Amadeus

Enabling exceptional guest experiences for Saudia.

During 2023, Saudi Arabia's national flag-carrier and Amadeus announced the airline will transition to Amadeus Nevio[1], to help Saudia grow revenue, differentiate itself and better serve its guests.

These new offerings will allow Saudia to transform every aspect of its operations to become more guest-centric in full alignment with IATA's vision of a more dynamic and modern shopping experience. With the move to Amadeus Nevio, the airline will be able to offer guests more relevant and personalized travel experiences that include its own and partner products, like hotel, airport and destination services.

The new partnership encompasses the full spectrum of end-to-end modern retailing capabilities, including:

- Dynamically priced offers to present granular pricing options that best suit the particular needs of guests.

- Distribution of offers through the widest possible distribution channels, supporting end-to-end NDC booking flows.

- Modernization of every aspect of the guest experience, from digital touchpoints to the contact center and airport service points so guests can self-serve if they choose.

- The use of AI for network and schedule planning to predict potential disruption and build flight schedules that deliver better on-time performance.

1   Amadeus, "Saudia to deliver a superior traveler experience with Amadeus Nevio", 2023 --> https://bit.ly/3uDmPC7

"

We want to refocus every aspect of our business around the guest, which is in line with Saudi Arabia's Vision 2030 – from the offers we make, the schedules we operate and the level of flexible and personalized service we provide across all our touchpoints. We want every aspect of the Saudia experience to delight our guests. Amadeus Nevio will give us new levels of flexibility and the ability to achieve this throughout our entire operation."

Arved von zur Muehlen
EVP & Chief Commercial Officer
Saudia

04 Merchandising and distribution (including NDC)

In the coming years, as the transition to modern retailing with Offers & Orders continues, airlines will also remain focused on effectively merchandising ancillary services and taking them to market through a mix of channels, including direct and via travel agency partners. When working with agencies, airlines are focused on maximizing the potential of both traditional and new distribution standards like IATA's New Distribution Capability (NDC). This section of the report recaps airline perspectives on these issues.

Focus on ancillaries offers opportunity to drive revenue.

LCCs told Travel Technology Investment Trends researchers ancillary revenues accounted for, on average, 29% of overall revenue. For half of re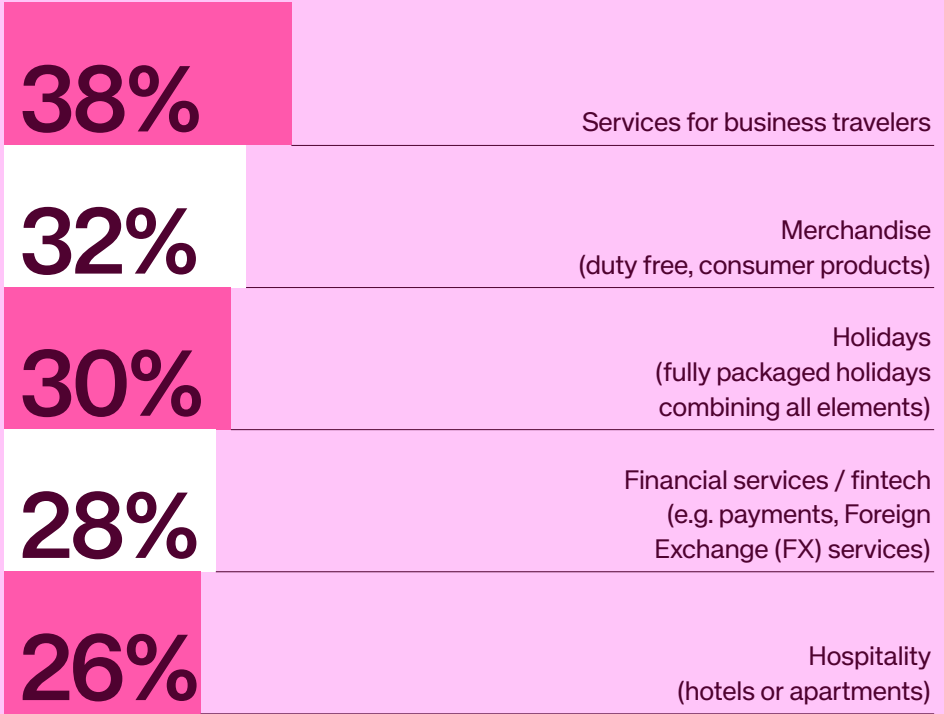spondents, ancillary revenues represent between 30-50% of overall income. However, no LCC said it generated more than half of total income from ancillary sales.

Among FSCs, the additional revenue generated by ancillary services was still a significant 23.5% on average, highlighting the importance of effective merchandising for both segments.

Top ancillary service categories currently offered by LCCs today:

Percentage	Category
58%	Extra legroom, bags, speedy boarding, flexible tickets
50%	Airport (fast-track, parking and lounge)
48%	Destination tours and activities
46%	Holidays full holiday packages
40%	Ground transport car, rail or bus
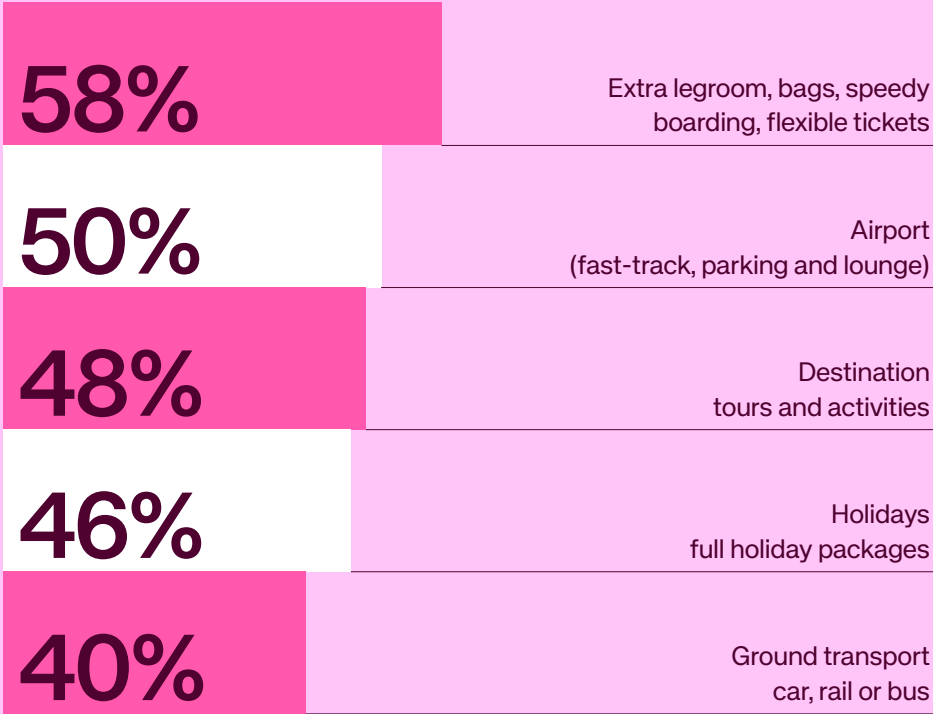
Top ancillary service categories LCCs plan to add over the next three years:

Percentage	Category
38%	Services for business travelers
32%	Merchandise (duty free, consumer products)
30%	Holidays (fully packaged holidays combining all elements)
28%	Financial services / fintech (e.g. payments, Foreign Exchange (FX) services)
26%	Hospitality (hotels or apartments)

Perhaps unsurprisingly, the majority of LCCs said they currently offer ancillaries related to the flight, including extra bags and legroom, closely followed by airport services, such as parking, and expedited boarding. Close to half of respondents consider their LCC as offering complete holiday packages today.

Interestingly, a further 30% said their LCC intended to offer complete holiday packages over the coming three years, which would take the figure to 80% as this segment of the industry embraces third-party product bundles.

Around a third of respondents said they already offer ancillary services aimed specifically at business travelers. These come in bundles that include lounge access, speedy boarding and fast-track.

However, 38% plan to add this category of ancillary service over the next three years, suggesting LCCs are tailoring their product offer specifically to attract higher yielding business travelers.

Travel sellers offer the chance for effective merchandising.

When asked about the role travel agencies play when merchandising ancillary products, nearly half of airlines said 11-20% of additional revenue is generated by travel agencies.

When asked about the challenges involved with merchandising in the indirect channel:
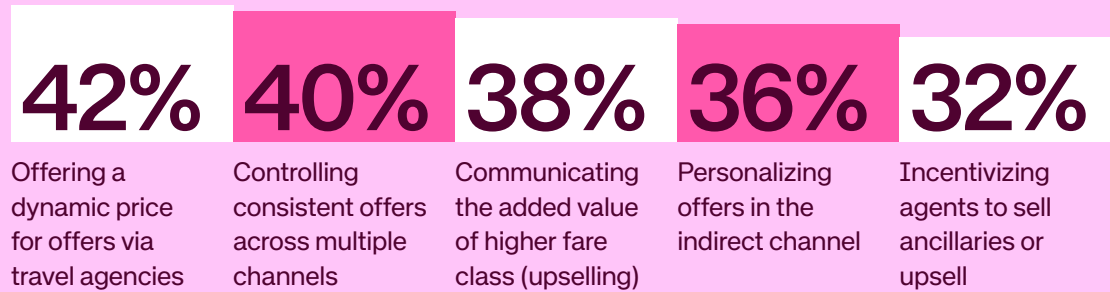
LCCs pointed to the cost of travel agency distribution as their top challenge (42%), followed by the difficulty of offering dynamic prices via travel agencies (36%).

For FSCs, the top challenge is offering a dynamic price for offers via travel agencies (42%), followed by controlling consistent offers across multiple channels (40%).
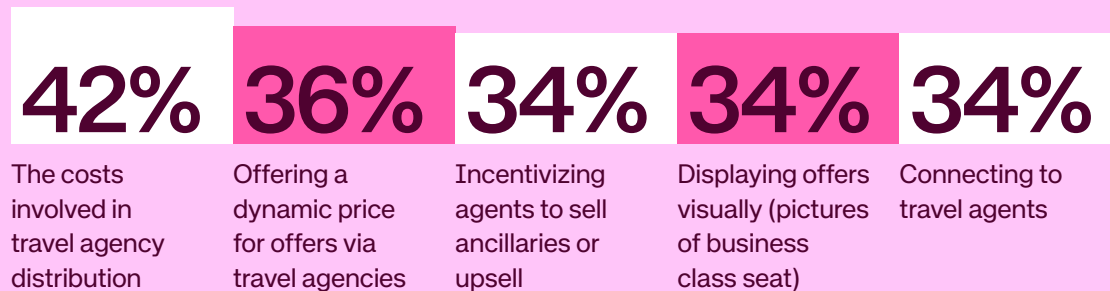
However, airlines are seeking to directly address many of these challenges over the coming year, with 46% planning to introduce dynamic prices for offers made via agents. Some 43% are also planning to make ancillary services available via travel agencies and planning to personalize offers across the indirect channel.

The move to IATA's NDC standard is also gaining pace. In fact, for some Amadeus airline customers, around one in every three indirect bookings is now made using NDC. Amadeus has made NDC maturity a key objective, with 98% of travel sellers now NDC-ready.

For FSCs, the biggest challenges when merchandising the offer through travel agencies are:

42%
Offering a dynamic price for offers via travel agencies

40%
Controlling consistent offers across multiple channels

38%
Communicating the added value of higher fare class (upselling)

36%
Personalizing offers in the indirect channel

32%
Incentivizing agents to sell ancillaries or upsell

For LCCs, the biggest challenges when merchandising the offer through travel agencies are:

42%
The costs involved in travel agency distribution

36%
Offering a dynamic price for offers via travel agencies

34%
Incentivizing agents to sell ancillaries or upsell

34%
Displaying offers visually (pictures of business class seat)

34%
Connecting to travel agents

"

Amadeus offers airlines a range of solutions to give them control over how their flights and ancillary products are presented and sold. We have the tools needed to offer airlines the ability to connect to existing and new partners quickly and easily, expanding reach through metasearch, social media and other new innovative touchpoints."

Dave Evans
CEO, Navitaire
Amadeus Travel Unit

The rollout of NDC, which allows airlines to distribute content in new ways, creating bundles and tailored offers, remains a hot topic.

FSCs estimate an average of 25% of indirect sales will be completed through the NDC standard over the next year, with this rising to an average of 31% in 2026 and 35% in 2030.

LCCs expect 25% of their overall indirect sales to be made using NDC within the next 12 months, with the figure anticipated to rise to 30% by 2026 and 38% by the end of the decade.

These figures demonstrate that respondents expect a gradual adoption of the new standard over several years. However, only 4% of respondents anticipated 100% of indirect sales would be made using NDC by 2030, as IATA anticipates.

Anticipated % of indirect sales through NDC – LCCs

25% In the next year

30% By 2026

38% By 2030

Anticipated % of indirect sales through NDC – FSCs

25% In the next year

31% By 2026

35% By 2030

"
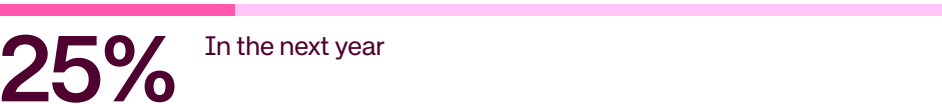
Collectively across the industry, we are in the middle of a transformation towards a more traveler-centric ecosystem, a transformation driven by travelers' evolved expectations for buying and experiencing travel. NDC is a key enabler of this transformation, allowing us to offer more personalized, relevant, and diverse travel options. At Amadeus, we are proud to be the global leader in NDC roll-out and adoption as we continue to make NDC content available to our travel sellers across the globe, now covering 98% of markets. And the result shows, one in every three indirect bookings is made on NDC for several airlines."

Elena Ávila
EVP, Travel Distribution
Amadeus

When asked about the top drivers for selling via travel agencies, LCC respondents said:

56%

To reach more potential customers

50%

To ensure we can provide the flight within holiday packages

48%

To improve our competitive position

46%

To improve reach in countries where our brand is less well known

34%

To reach 'higher value' customers e.g. business travelers

More than a third of all airlines (39%) view NDC as an opportunity to deliver dynamic pricing and bundling over the next two years, while 37% see it as an opportunity to enable promotional fares. Around a third of airlines view NDC as a chance to gain greater control over the distribution of their products and to present richer information to travelers while shopping.

At the same time, 52% of FSC respondents and 32% of LCCs cited 'presenting richer information about offers' (including onboard menu choices, detailed descriptions of different seats or frequent flyer mileage information) as a priority, while 38% of LCCs sought to highlight promotional fares.

The top indirect distribution capabilities FSCs are seeking to improve or introduce:

48%
Offering dynamic prices for offers via travel agencies

46%
Incentivizing agents to sell ancillaries

46%
Communicating the added value of higher fare classes

46%
Making ancillary services available via travel agencies

46%
Personalizing offers in the indirect channel

Dynamic pricing is the top indirect distribution capability FSCs are seeking to introduce (48%) as airlines seek to better match offers and prices to the specific traveler conducting the search. FSCs are also very focused on better communicating the value of higher fare classes (46%) and working with agents to drive ancillary sales (46%).

More than a third of all airlines (39%) view NDC as an opportunity to deliver dynamic pricing and dynamic bundling over the next two years, while 37% see it as an opportunity to enable promotional fares.

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Overcoming concerns over excess polling.

One of the much-discussed challenges surrounding NDC is the additional workload airline IT systems must handle to respond to huge volumes of low-intent-to-book search traffic. Underlining the scale of this issue, just 6% of respondents said they thought their existing IT systems would be able to handle this additional polling.

In response, a significant 61% of those surveyed said they are looking for a cache-style solution that still allows the airline to control the offers it makes available. Some 60% of LCCs said they would also invest in their airline's IT systems in preparation for the additional polling required with the NDC model, compared to just 4% for FSCs.

However, half of airlines said this problem was so acute that they planned to 'scale back their NDC ambitions' due to increased volumes of queries.

"

IATA has set a goal for 100% of airline bookings to be carried out over NDC channels by 2030. However, the issue of scalability is one that must be addressed. Indeed, when questioned by Travel Technology Investment Trends researchers, respondents from Online Travel Agencies (OTAs) said the top challenge they face when seeking to improve search is readiness of airline systems to handle massive polling requests.

Amadeus has been working to create solutions to these concerns, namely the NDC Offer Repository, giving us confidence challenges related to top-of-the-funnel searches can be overcome for the benefit of the whole industry."

Bénédicte Isnardon
Associate Director Search & Inspire, Product Marketing Management
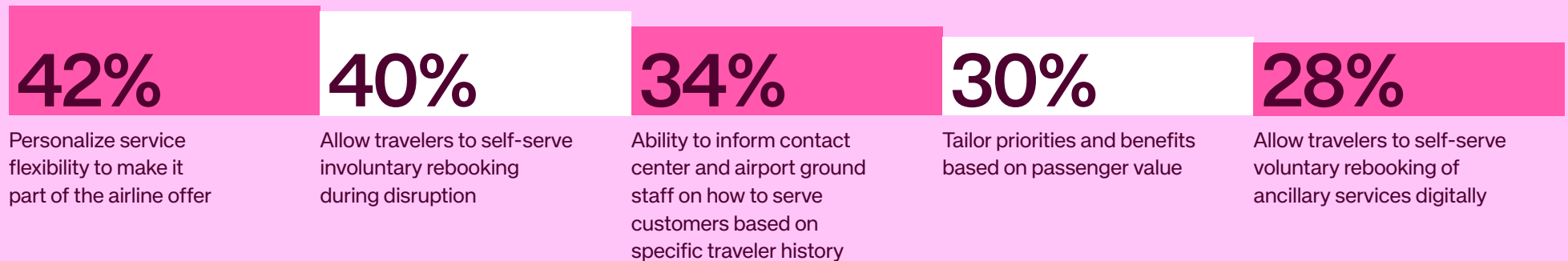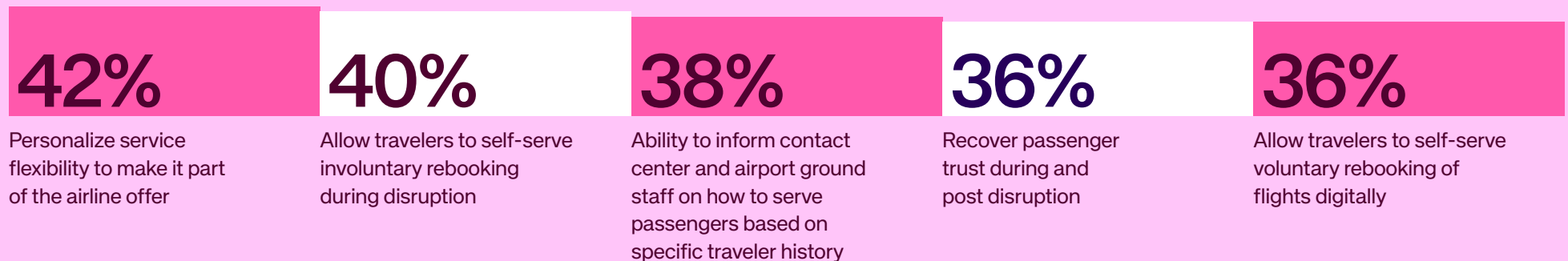Amadeus

Meeting traveler demands through servicing.

When it comes to servicing, the top airline challenges cited were the ability to personalize service to make it a part of the airline offer (42%) and allowing travelers to self-serve involuntary rebooking during disruption (40%).

The findings tie in with wider trends from the Travel Technology Investment Trends, suggesting airlines are prioritizing the move to self-service options across every element of the trip.

For LCCs, the most challenging elements of servicing are:

42% Personalize service flexibility to make it part of the airline offer

40% Allow travelers to self-serve involuntary rebooking during disruption

34% Ability to inform contact center and airport ground staff on how to serve customers based on specific traveler history

30% Tailor priorities and benefits based on passenger value

28% Allow travelers to self-serve voluntary rebooking of ancillary services digitally

For FSCs, the most challenging elements of servicing are:

42% Personalize service flexibility to make it part of the airline offer

40% Allow travelers to self-serve involuntary rebooking during disruption

38% Ability to inform contact center and airport ground staff on how to serve passengers based on specific traveler history

36% Recover passenger trust during and post disruption

36% Allow travelers to self-serve voluntary rebooking of flights digitally

Building stronger airlines through interline partnerships

Interline partnerships allow passengers to book 'through itineraries' on two or more airlines with less hassle than booking each one separately. Interline partnerships give travelers the flexibility to choose the schedule and routing that meets their needs, while helping airlines grow their networks.

As airlines move to modern retailing, it will become much easier to establish such partnerships. Airlines will no longer be limited to partnering with others running on the same underlying technology or the lengthy process involved with setting up a new interline partnership. Instead, they will be able to connect to any other airline quickly and easily, irrespective of business model or underlying technology. This presents new opportunities, particularly for FSCs and LCCs that choose to work together.
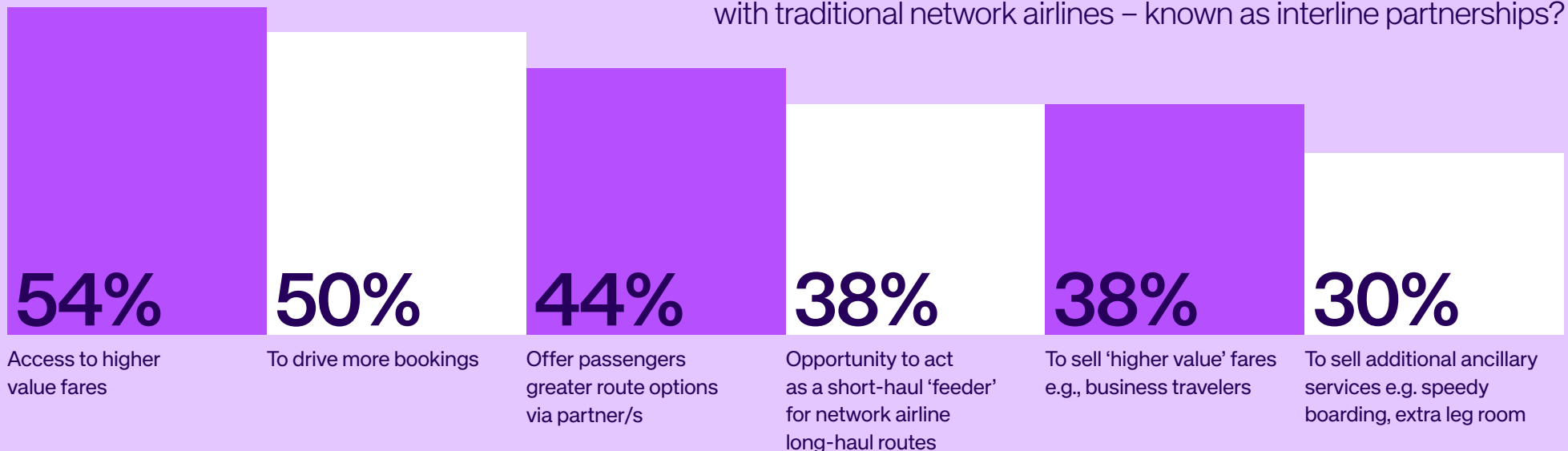
Around a third (36%) of LCCs say they are already partnering or interlining with traditional carriers today.

A significant 54% say they would consider partnering when the shift to Offers & Orders makes it easier for different types of airlines to partner. Only 8% said they would not consider this type of partnership in the future.

When asked about why they wanted to build such partnerships, LCCs cited access to higher value passengers as the top opportunity (54%), followed by an overall increase in bookings (50%) and the opportunity to offer greater choice and routes (44%).

Such new flexible partnerships promise to drastically expand the choice of air travel routes for passengers, while simplifying the booking process. Imagine booking a multileg international flight on your favorite FSC but having the freedom to begin your journey on an LCC. In this scenario, modern retailing would allow both LCC and FSC to exchange baggage and service conditions and be able to apply those agreed by the carriers for each leg.

What opportunities do you see from airlines forming closer partnerships with traditional network airlines – known as interline partnerships?

54%	50%	44%	38%	38%	30%
Access to higher value fares	To drive more bookings	Offer passengers greater route options via partner/s	Opportunity to act as a short-haul 'feeder' for network airline long-haul routes	To sell 'higher value' fares e.g., business travelers	To sell additional ancillary services e.g. speedy boarding, extra leg room

Passenger experience at the airport

When the airport is considered, almost every LCC respondent to the Travel Technology Investment Trends survey indicated their airline has already, or is planning to, roll out self-service across key touchpoints, including check-in, bag drop and boarding.

Some 32% of LCCs have done this to date, with the remaining 68% planning to have done so by 2030. A third of LCCs said they are planning to roll out self-service within 12 months.

To date, 26% of LCCs have deployed biometric solutions at key touchpoints, while:

72%

Some 72% plan to deploy this technology by 2030

30%

A total of 30% of LCCs plan to deploy biometric technology at key touchpoints in the next 12 months

At the same time, 64% of FSCs believe they have saved 25-50% of staff time with self-service technology at the airport, while:

30%

Some 30% of FSCs have deployed self-service technology at key touchpoints, with the outstanding 66% planning to by the end of the decade

20%

In terms of biometrics at key touchpoints, 20% of FSCs have deployed the technology at key touchpoints to date, 72% plan to by 2030

4%

A total of 4% of FSCs plan to introduce biometric technology at the airport after 2030, while a further 4% never plan to

Have you implemented or do you plan to implement any of the following capabilities related to passenger experience and airport operations?

FSC **LCC**

Biometrics at key touchpoints e.g. check-in, bag drop, boarding

76%
62%

Self-service at key touchpoints e.g. check-in, bag drop, boarding

70%
82%

Cloud-based passenger processing capabilities that allow ground agents to serve passengers (check-in, boarding, service changes) from any location inside or outside the airport terminal

70%
72%

Common communication channels for our agents, load controllers and the airport to improve operations at the ramp

64%
66%

End-to-end disruption management e.g. intelligent recommendations to re-accommodate passengers, rebuild schedules and proactively manage flight operations

58%
68%

Common understanding of cargo and baggage demand per flight to allow us to maximize revenue from our hold

58%
68%

Data insights about airport operations e.g. data on mishandled bags that can feed analytics to predict baggage mishandling

52%
74%

However, airlines pointed to several barriers to the deployment of biometrics at the airport.

> "A growing number of airlines and airports are interested in deploying biometrics across the end-to-end airport passenger experience. Offering passengers the choice to enroll for biometrics, or to use other forms of digital identity credentials, simplifies the overall experience, reduces reliance on paper documents and is a key component of delivering the modern retailing vision."

Holger Mattig
SVP, Product Management, Airport and Airline Operations
Amadeus

What are the biggest barriers to your airline deploying biometrics for passenger services?

49%
Legacy technology at airports makes it hard for airlines to deploy biometrics

43%
Maturity of biometrics technology

42%
Passenger concerns with biometrics

38%
Hard to prove the business case for biometrics at the airport

37%
Lack of engagement from airport partners

32%
Fragmented biometrics regulations

07 Schedule planning and overcoming disruption

When it comes to network and schedule planning, challenges for airlines include the ability to 'readjust schedules after publication towards maximizing profit in a way that minimizes impact across the network,' which was cited by 34% of LCCs and 42% of FSCs.

Top LCC network planning challenges included 'simulating network performance with a 'digital twin'[1] (50%) and 'factoring in timely and complete data from our revenue management system' (46%).

For FSCs, the ability to build entirely new airline schedules from scratch without relying on historical data from previous operations was a top challenge, cited by 36% of respondents.

The results are interesting, given that it is now possible to use new sources of data to improve network and schedule planning, including more detailed market information and data from the revenue management systems of an airline. Both are important to align schedules and plans to commercial and operational objectives. An excellent example is provided by Southwest Airlines – the airline reported it "directly observed revenue uplift" after deploying both revenue management[2] and network and schedule[3] planning tools from Amadeus.

1   Amadeus, "Coming to an airport near you! How the IoT and digital twins could transform operations", 2022 --> https://bit.ly/49TtS8S

2   Amadeus, "Southwest Airlines upgrades revenue management with Amadeus and Kambr", 2023 --> https://bit.ly/3wSpEA2

3   Amadeus, "How Southwest Airlines used art and science to enhance network profitability", 2021 --> https://bit.ly/3vfZcQf
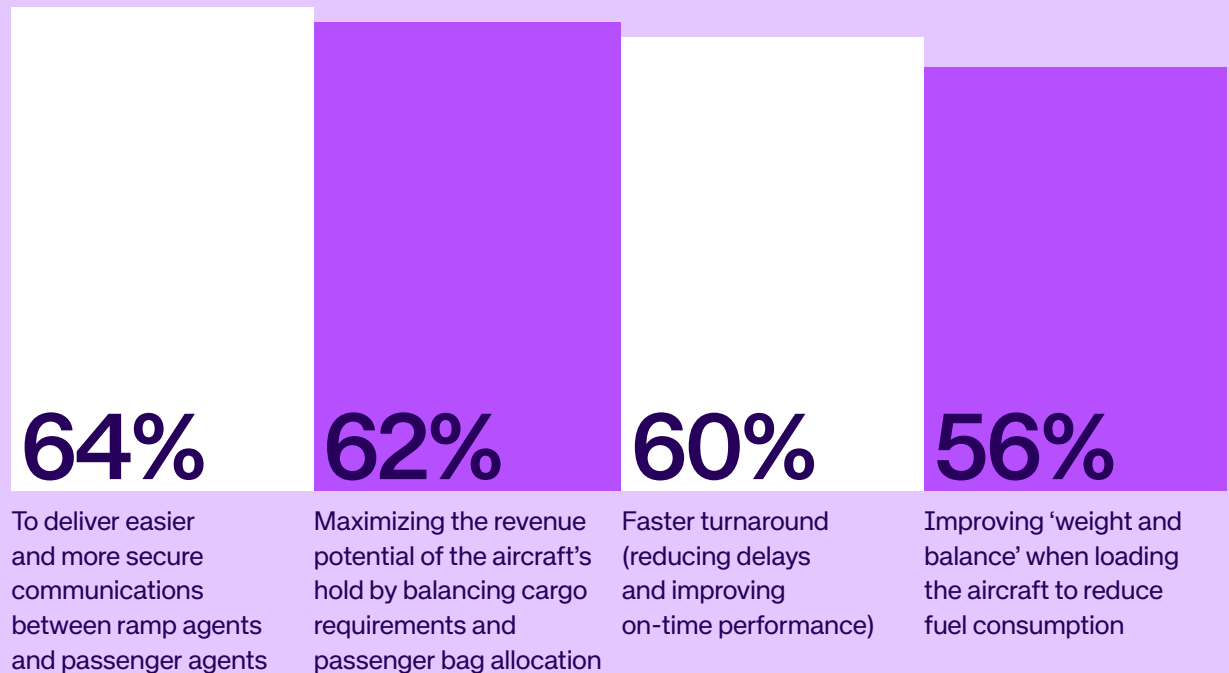
Enhancing operational capabilities.

LCCs confirmed that various new operational capabilities are priority investment areas for 2024. Some 62% of respondents plan to invest in data analytics relating to their airport operations so they can better predict mishandled bags.

Similarly, 66% plan to implement common communications channels for agents, load controllers and the airport to improve the efficiency of ramp operations. An even higher number (88%) have plans to achieve a common understanding of cargo and baggage demand so they can better maximize revenue from the hold.

When considering ramp services and preparing the aircraft and hold for departure, there are several key areas FSCs believe could be improved with technology.

Which of the following things related to ramp services would FSCs most like to see improved with technology?

64%
To deliver easier and more secure communications between ramp agents and passenger agents

62%
Maximizing the revenue potential of the aircraft's hold by balancing cargo requirements and passenger bag allocation

60%
Faster turnaround (reducing delays and improving on-time performance)

56%
Improving 'weight and balance' when loading the aircraft to reduce fuel consumption

Which of the following capabilities related to ramp services do LCCs plan to implement?
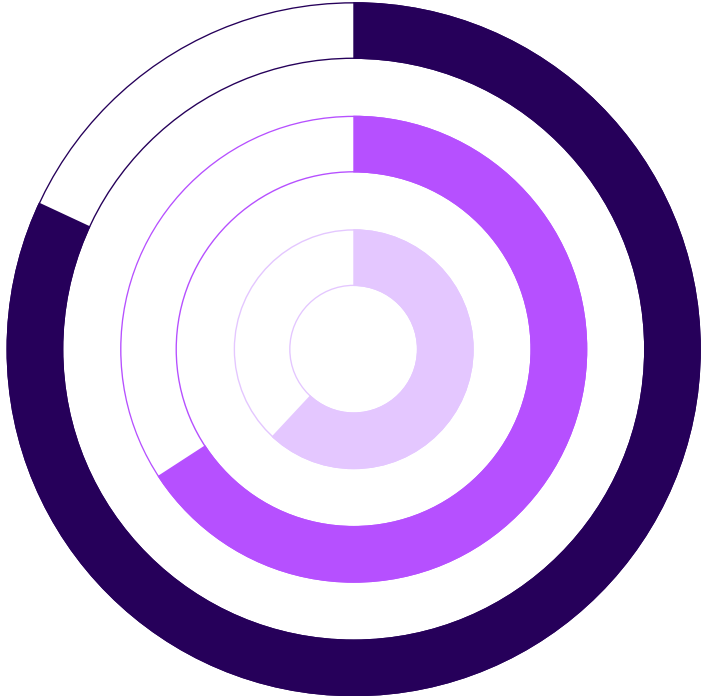
82%

Common understanding of cargo and baggage demand to maximize revenue from hold

66%

Common communication channels for agents, load controllers and airport to improve ramp operations

62%

Data insights about airport operations to improve ramp services

> The move to modern retailing is about more than selling in new ways. It's about upgrading every aspect of an airline's operations to improve commercial and operational performance. We view the ramp as a key area where modern technology can help airline agents communicate more easily and more securely.
>
> We're working on new approaches to provide better common awareness around baggage, which should reduce a major source of delay and frustration."

Holger Mattig
SVP, Product Management, Airport and Airline Operations
Amadeus

Disruption management: Challenges.

Overcoming disruption has been a major theme in the airline industry over the past two years, with 43% of all airlines revealing they are observing more disruption than before the COVID-19 pandemic. A further 24% see about the same levels, while 32% reported less disruption than pre-pandemic.

Respondents were split on whether disruption would return to its pre-pandemic norm. Some 46% of FSCs and 48% of LCCs feel elevated levels of disruption are here to stay, with 46% of FSCs and 38% of LCCs saying disruption 'will eventually' return to pre-covid levels.

Only 5% of Travel Technology Investment Trends respondents said there were no challenges preventing them from managing disruption effectively today.

There was widespread agreement that airlines face challenges when managing disruption, though specific challenges varied by airline business model.

Top five barriers preventing LCCs from managing disruption effectively:

38%
Lack of common technology platform with operational stakeholders at the airport

38%
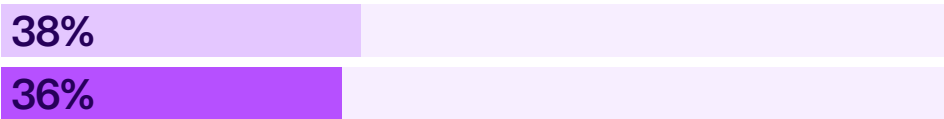Lack of automated and computerized planning for rebuilding flight schedules

34%
Difficulty cascading key information within an airline

32%
Inability to understand the impact of decisions on the onward plans of passengers

28%
Lack of automated and computerized planning for re-accommodating passengers

Top five barriers preventing FSCs from managing disruption effectively:

44%
Difficulty cascading key information within an airline

40%
Fragmented operational systems within an airline (e.g., crew and maintenance systems do not talk to passenger systems)

34%
Inability to understand the impact of decisions on the onward plans of passengers

26%
Lack of common technology platform with operational stakeholders at the airport

26%
Lack of automated and computerized planning for rebuilding flight schedules

Airlines agree there are a wide range of capabilities that can improve how disruption is managed – though, once again, priorities differ.

FSCs highlighted a need for the better cascading of information, enhanced data analytics and a closer integration of operation systems, while LCCs sought better data sharing with airports, the cascading of information with stakeholders and improved collaboration with other airlines.
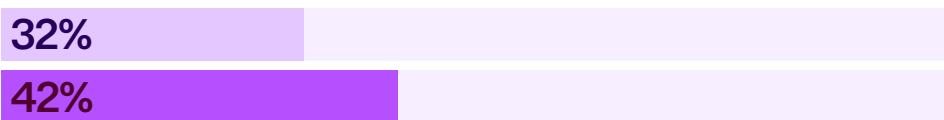
Capabilities that would help airlines and stakeholders to better manage disruption

■ FSC ■ LCC

Better data sharing so airport resources like stands and gates can be reallocated in seconds based on your airline's revised flight schedules during disruption events

38%
36%

Single technology platform where all airport stakeholders could gain a common situational awareness and communicate digitally in one place

30%
30%

Better cascading of information amongst stakeholders

32%
42%
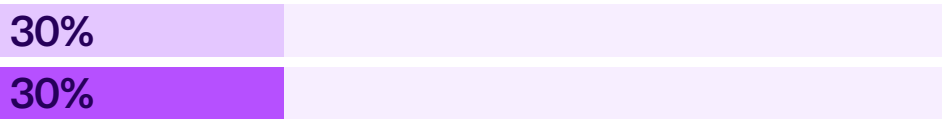
Data analytics that could predict when disruption is likely to occur offering advanced warning

28%
38%

Improved collaboration with other airlines to find cross-airline passenger recommendation options

32%
30%

Close integration between all our airline's operational systems to gain a holistic view during disruption scenarios

26%
46%

Data analytics that could analyze your airline's response to disruption scenarios offering insights to improve in the future

30%
46%

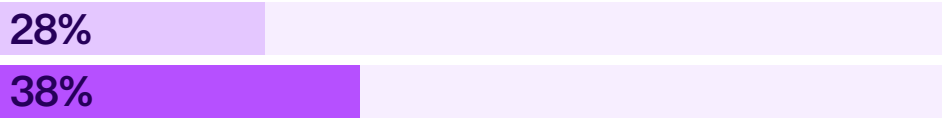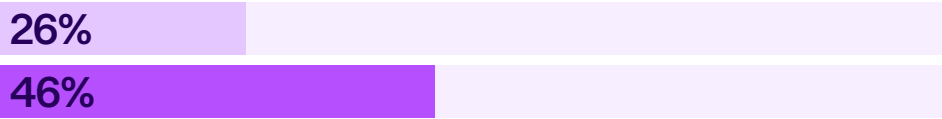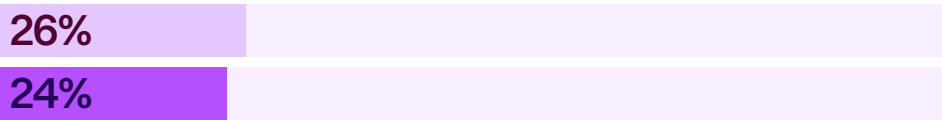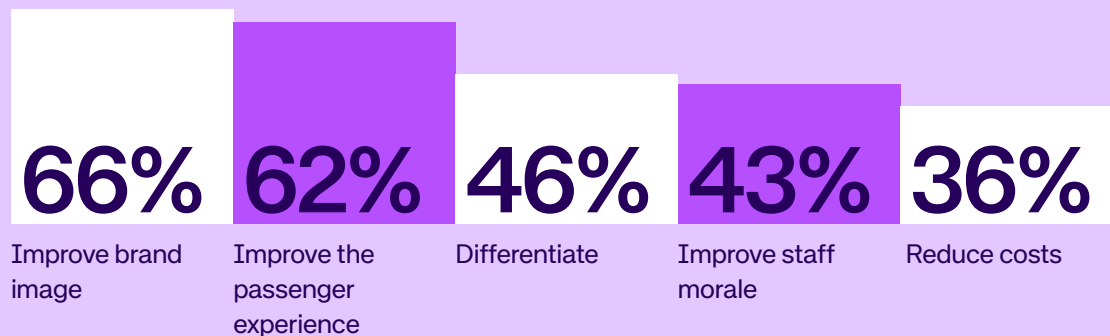The ability to quickly calculate the best possible passenger re-accommodation options based on your airline's policies

26%
24%

The ability to quickly calculate the best possible options to rebuild your airline's schedule based on your airline's policies

30%
32%

With this widespread understanding of disruption, and the potential of technology to overcome it, some 57% of airlines surveyed said they are currently investing in technology in this area. Only 5% of all airlines said they have no plans to invest in disruption management.

Airlines are investing in technology to overcome disruption to:

66%	62%	46%	43%	36%
Improve brand image	Improve the passenger experience	Differentiate	Improve staff morale	Reduce costs

When asked if they have end-to-end disruption management in place, with tools to re-accommodate passengers, rebuild schedules and proactively manage flights, just 35% of respondents were confident they had this in place today. However, some 63% are intending to implement this technology by 2030, suggesting this area is a priority for every airline in the survey.

Only 38% of airlines can measure costs relating to 'non-air' recovery, such as compensation and overnight stays for disrupted passengers. A similar number (41%) can understand crew costs associated with disruption. However, more respondents said they can understand direct operational costs arising from fleet misalignment (44%).
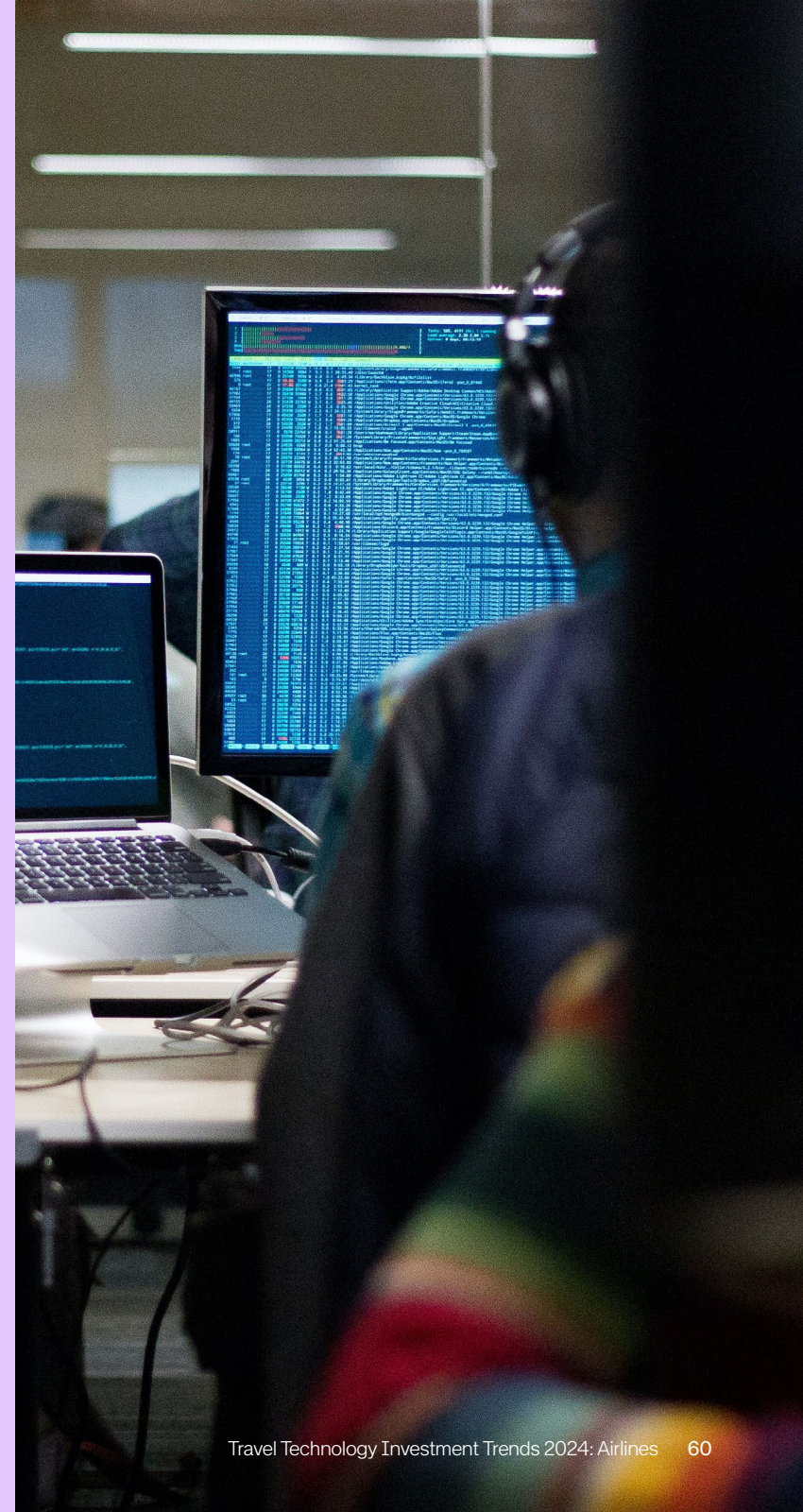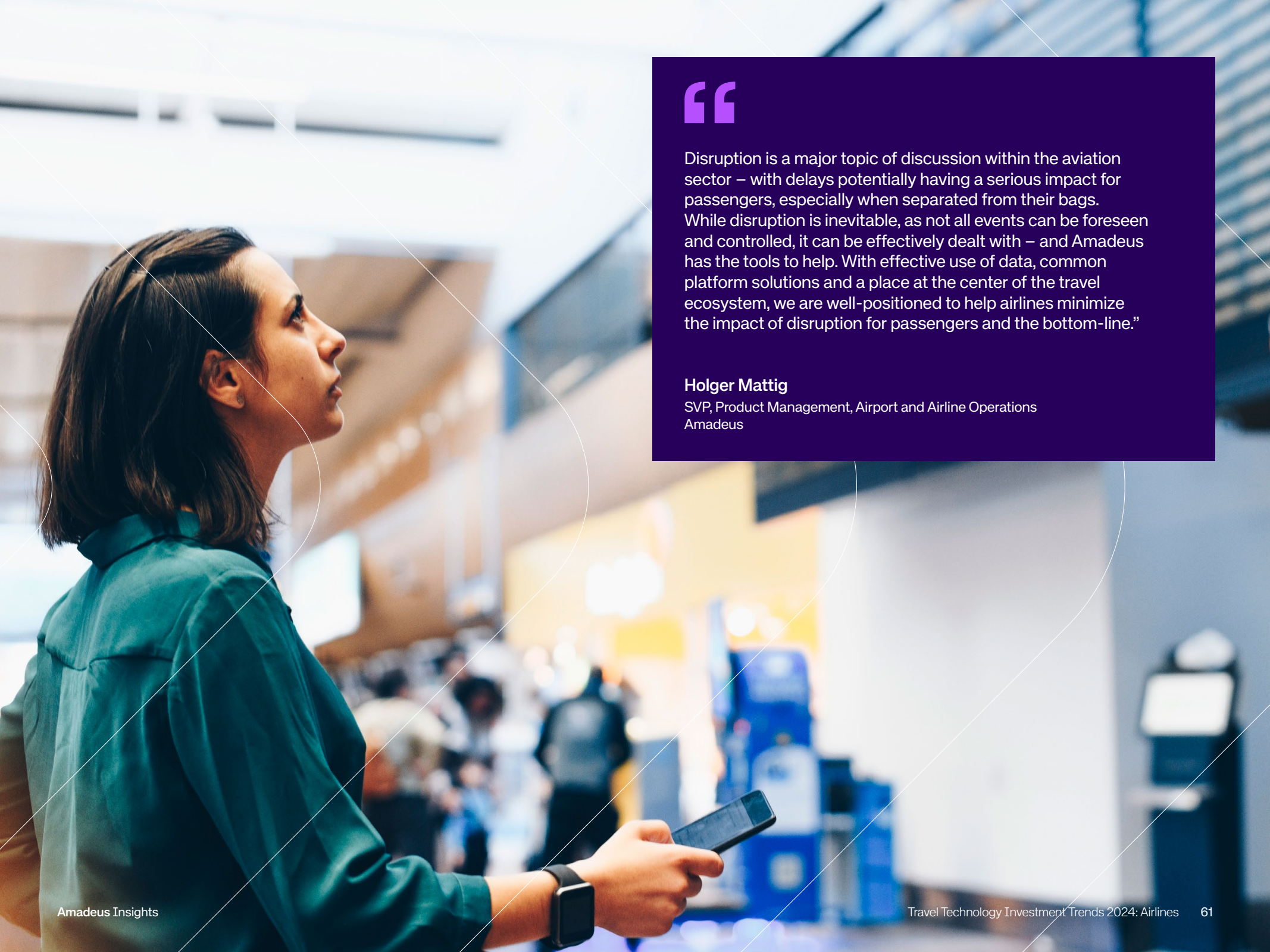
> "
>
> Disruption is a major topic of discussion within the aviation sector – with delays potentially having a serious impact for passengers, especially when separated from their bags. While disruption is inevitable, as not all events can be foreseen and controlled, it can be effectively dealt with – and Amadeus has the tools to help. With effective use of data, common platform solutions and a place at the center of the travel ecosystem, we are well-positioned to help airlines minimize the impact of disruption for passengers and the bottom-line."

Holger Mattig
SVP, Product Management, Airport and Airline Operations
Amadeus

Conclus

This is a time of great change and excitement for airlines, with standards and technologies that have underpinned the sector for decades being comprehensively rethought.

sion

Airlines are responding with a significant increase in technology investment, with LCCs planning to increase investment in technology by an average of 14.4% in 2024, alongside an average increase of 12.2% for FSCs.

Several priorities for these funds have emerged from the Travel Technology Investment Trends research this year, as airlines work to improve the traveler experience at the airport and deliver connected, end-to-end trips.

Front of mind is the transition to modern retailing, effectively a complete overhaul of an airline's technology stack. Carriers are optimistic about this transformation, believing it could happen in the next five years or less, while there are ambitious aspirations for revenue impact, with airlines anticipating an 18% uplift in revenues on average.

If the industry is successful, passengers are set to benefit from this change, with more airlines able to make unique offers tailored to their needs in a single transaction. New self-service opportunities will make it easier to make changes to an order, while the deployment of biometric technology is set to improve the airport experience over the coming years.

The study shows the adoption of NDC continues to accelerate, with new options to create personalized, end-to-end trips for travelers being seized by airlines. While there are valid concerns around high volumes of low-intent search traffic from airlines and travel agencies, new solutions are coming to market that can shield an airline's own IT infrastructure.

New technology will also allow for the closer integration of FSCs and LCCs. Using modern technology to enable more flexible interline

agreements to the benefit of both airlines and their passengers, the number of flight options and combinations looks set to increase. New network planning and scheduling capabilities are also integrating better market and competitive information, allowing airlines to harness AI to achieve the optimal balance between on-time performance and profitability.

Finally, with disruption never far from the headlines, many airlines are preparing to invest heavily in a new generation of tools to help them better re-accommodate passengers and to deliver a more coordinated and collaborative response.

The industry is embarking on a period of significant change and as this study demonstrates, senior technology leaders are already taking well-funded investment steps to transform their airlines.

Methodology

This report is informed by a survey with 100 senior leaders involved in technology investment decision-making at airlines, 50 from low-cost carriers and 50 from full-service carriers.

The research was carried out in ten countries to provide a globally representative view. Respondents were drawn from the following countries: Brazil, China, France, Germany, India, Mexico, South Korea, UAE, UK and USA.

The survey was conducted by an independent market research agency, Opinium, in quarter four of 2023.

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