

OAG®

TRAVEL TECH REPORT 2023

FROM OLD TO NEW: THE SYSTEM TRANSITION IN THE AIRLINE INDUSTRY



ABOUT OAG

Every day we at OAG help businesses across the world grow and innovate with access to high-quality travel data. Our mission is to help the travel ecosystem thrive by capturing the power of its data. Today's complex and competitive industry is our biggest adventure yet. With thousands of airlines and airports serving billions of travelers, the pressure is on from all sides: passenger demand, consumer expectations, regulatory complexity, the experience economy, and the drive for personalization. The propelling force in our industry has always been ground-breaking technology. We're built on it - powering frictionless travel in a data-driven world.

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THIS REPORT

Embracing our ethos of constant innovation and striving to serve the industry with valuable insights, we have developed this comprehensive report on the System Transition in the Airline Industry. We believe that understanding the intricate dynamics of today's evolving airline industry is vital to staying ahead in this fast-paced environment.

This report serves as an analytical lens, focusing on the technological transformations that are redefining the landscape of airline commerce. It is an extension of our mission, illuminating the intricacies of the industry's digital evolution and fostering an informed dialogue about the opportunities and challenges it presents.

By drawing attention to these key transitions, we aim to equip stakeholders with the knowledge to navigate the complexities of the modern travel industry and to seize opportunities in the face of disruption. This endeavor reflects our commitment to delivering insights that facilitate informed decision-making and drive the future of travel.

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THE
AIRLINE
RETAIL
TRANSITION

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IN THE AIRLINE VALUE CHAIN, THERE IS A MAJOR TRANSITION TAKING PLACE.

At the moment, two systems are running in parallel:

One is a historically-grown legacy system that the industry has relied on for decades. While it is still relatively strong and necessary, this system was created for an older generation of technology users and is complete with outdated user interfaces and limited flexibility. Some legacy components in use today date back to the 1970s, making them less functional in today's industry and presenting a possible risk for data security and IT outages, see the **Southwest failure**. Additionally, this system can be challenging to update or replace when newer technologies emerge, requiring significant effort and resources to operate correctly. Finally, this legacy system may not be able to integrate with newer third-party software solutions that airlines need to remain competitive in today's market.

Another is a modern, dynamic, and adaptive system that will enable a better future for airlines and travelers alike. This modern system offers improved usability, scalability, and cost savings compared to its legacy counterpart. It is designed with today's users (airlines) and end-users (travelers) in mind - those who expect intuitive user interfaces and features, such as customization options and detailed analytics. The system runs on modern, cloud-native software solutions that can easily integrate with other business applications so airlines can gain real-time insights into customer

behavior or make decisions based on data-driven analytics results. Finally, the new system is easier to maintain than its legacy counterpart, which can save airlines time and money in the long run by avoiding costly repairs or upgrades down the road.

TWO MAJOR TRENDS ARE DRIVING THIS TRANSITION

This new system, which doesn't just refer to the airline industry's IT infrastructure, as we will explore later on, is driven forward by two underlying trends that are closely intertwined:

- ➔ New technologies allow airlines to offer products in more flexible ways. One example is NDC (New Distribution Capability), which enables more individualized inventory packaging through indirect channels. However, there are many more instances out there, such as modern software solutions that leverage machine learning and enable better techniques to predict and serve traveler demand. A company **like Hopper**, for example, analyzes billions of historical price points associated with flights to accurately predict future air travel ticket prices. In turn, such a company outperforms the forecasting abilities of many airlines, which continue to use classical ways of modeling passenger demand.
- ➔ Changing customer needs is another major trend. Nowadays, travelers expect new products, such as CO2 offsetting and cancellation insurances, to be consistently available at the click of a mouse. Today's travelers are

used to buying everything they need on Amazon with ease. The airline retail experience, by comparison, feels traditional and is ripe for evolution. Customers expect to buy airline tickets and related services with the same convenience they find on other e-commerce platforms. This puts pressure on airlines to enable better customer experiences. On a similar note, travelers are no longer willing to accept being stuck in airlines' customer service hotlines for hours in cases of flight disruptions like cancellations to re-book their flights or request reimbursements. The digital traveler of today demands immediate digital self-service.

A NEW BREED OF TRAVEL TECH COMPANIES

Together, these trends have led to a rapidly growing ecosystem of Travel Tech companies, many of which are startups, aiming to own the end consumer via customer-facing mobile apps.

We will explore many of these big and small tech players in more detail as part of this report. Here is a sneak peak.

Most of these Travel Tech players are leveraging digital technologies, such as Machine Learning and AI, to serve customers in ways the legacy system simply won't allow. These companies have set out to try and untangle airlines from old, clunky tech

systems. Instead, they want to provide innovative software solutions that can revolutionize how things are currently done.

More importantly, these tech companies can leapfrog the entire airline industry towards a modern, dynamic, and customer-friendly system in near-exponential ways.

Overall, this accelerating transition is transforming all major steps of the airline value chain.

In fact, as we indicated earlier, it refers to more than just the IT stack of the airline industry.

The system transition also affects how physical aircraft are powered through the air, as in the case of **Sustainable Aviation Fuel (SAF)**. This "technology" is increasingly replacing conventional jet fuel amid rising sustainability concerns among travelers (and the public). Also, in this space, a rapidly growing **ecosystem of startups and innovative corporations** is pushing for progress.

However, the system transition predominantly focuses on the customer-facing (retail-) side of the airline business. How flights are offered, packaged, sold, and also re-booked in cases of flight disruptions is changing dramatically, which will benefit airlines and travelers alike. The way data is shared among major industry stakeholders like airlines and airports is also transforming rapidly, enabling a more seamless travel journey.

AIRLINES ARE CAUTIOUS GIVEN CHALLENGES

As a whole, the aviation industry has a natural risk aversion. Given this, airlines remain hesitant to fully move away from the legacy system. This is mainly due to the misconception that said system provides greater stability since it has existed for a long time.

Developments in technology have enabled the industry to transform their traditional processes and embrace change. However, legacy systems have remained resilient in the face of innovation.

Nasly Yoosuf

Co-founder and CTO of Avtra

The airline industry has long been a low-margin business which is unlikely to change anytime soon, despite U.S. airlines expecting to generate a **record profit of 1 USD per passenger** in 2023. Therefore, airlines often approach radical transformation efforts with caution. They navigate a

complex landscape with factors beyond their control, always prioritizing passenger safety above all. For industries like aviation, where human lives are paramount, significant change often necessitates cautious initial investments, as the imperative isn't just immediate payoffs.

As 2023 progresses, it's evident that there's a growing momentum in the airline industry to accelerate transformation. While some airlines are advancing faster, recent IT outages suggest that the perceived stability of legacy systems might be a misconception.

Cynics have started labeling the dependency of airlines on legacy systems the **"Southwest Syndrome."** As time marches on, this syndrome is affecting other airlines around the world. The legacy systems currently running will continue to be stress-tested in unprecedented ways, especially with rising numbers of air travelers in the future. On top of this, external shocks, such as extreme weather events and labor strikes, will likely lead to more unexpected disruptions of airline operations on a more frequent basis. In turn, these disruptions will demand more agile systems. Given this, the timing is ripe for airlines to embrace a new system with a more robust technology stack.

The benefits that come with these systems will lead to not only better-performing operations but also happier customers.

THE RIGHT OFFER AT THE RIGHT TIME

This paradigm shift towards “Airline Retail of the Future” will ultimately enable a new system, which can be best described as

Travel Done Right: Creating the right offer at the right time

What do we mean by this? Here’s one concrete example related to this transition, which is specifically tied to airline ticket sales:

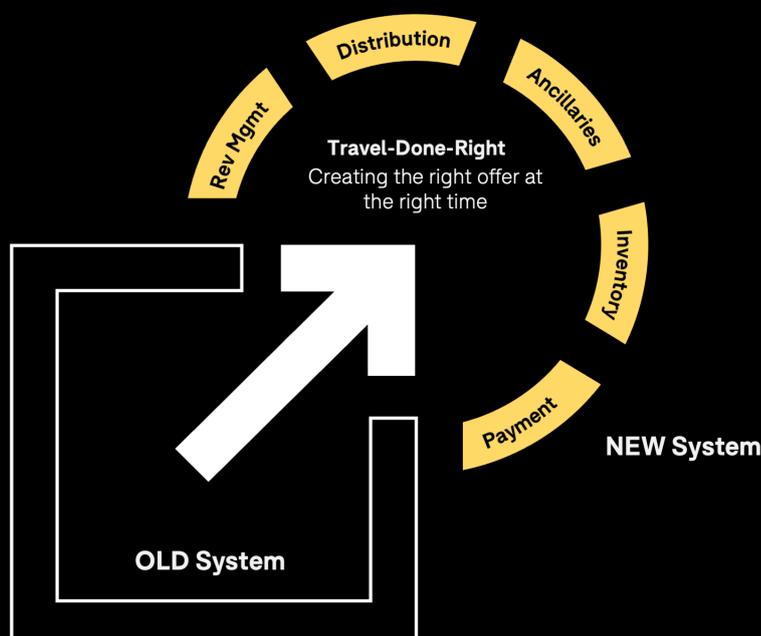
Old System: For the longest time, airline tickets and respective ancillary add-ons, such as extra legroom and additional baggage allowance, were historically offered by airlines at one or two pre-defined touch-points during the travel journey. This happened when people booked their flights (online or in-person) or when speaking to an airline agent at the check-in counter. The available buying options were limited, defined by existing rules in the industry, such as existing network agreements

between airlines. This meant travelers could only choose from a limited combination of flight legs.

New System: However, since the onset of the Travel Tech Transition, air travel tickets and ancillary services can now be purchased more flexibly during the entire travel journey. This can happen when travelers are at the gate, as in the case of seat upgrades via **Plusgrade**. As well, it can take place in fully flexible combinations, such as across airlines without a network agreement, which is the case when it comes to **Virtual Interlining**. The same is true for more flexible payment schemes, such as buy-now-pay-later models, which were unavailable to customers just a few years ago.

There are many more examples like this that we want to explore in more detail.

And they will become much more obvious and important given that the transition towards “Travel Done Right” is just getting started.



1 THE EVOLUTION OF AIRLINE REVENUE MANAGEMENT: THE IMPACT OF EMERGING TECHNOLOGIES



The airline industry is experiencing a massive overhaul, transforming its value chain to embrace new technologies and shifting customer expectations. This shift is critical in order to scrap outdated and clunky legacy systems that create headaches for staff and passengers alike.

Now, airlines are moving towards more flexible, real-time, and future-ready cloud-native solutions.

Why start with revenue management?

Revenue management is a critical component of how airlines make money. From pricing to inventory control, revenue management plays a critical role in ensuring that airlines maximize their profits. As the industry shifts, it's only natural that this crucial function will get a refresh.

Let's discover how cutting-edge technological solutions that enhance capacity

optimization, customer segmentation, pricing strategies, and forecasting accuracy are becoming increasingly important for airlines to gain a competitive edge.

In this chapter, we will explore how this transition affects the revenue management of airlines. Here's what we will do:

- ➔ Briefly explain what revenue management is and lay out how the airline industry has played a role in shaping this topic over the past few decades.
- ➔ Explore the future of airline revenue management and its transition toward continuous pricing that leverages the power of real-time data.
- ➔ Present some of the most exciting emerging tech companies that are driving the evolution of next-gen revenue management.

Framework

From OLD to NEW – The Transition in the Airline Business



Revenue Management

From Dynamic Pricing to Continuous Offers



FOR NEWBIES: WHAT IS REVENUE MANAGEMENT?

Airlines' revenue management role is to analyze and forecast the demand for each flight and set prices accordingly.

This job involves using complex statistical models and historical data to forecast the demand for each flight and then setting optimal prices for each seating class. Modern revenue management systems consider not only historical data but also future data. Future data can include a variety of different sources, such as social media activity, search and weather data. By analyzing this data in real-time, airlines and their pricing algorithms can gain a more comprehensive understanding of customer demand and market conditions, and adjust pricing and inventory levels even better.

The result of this process is a finely tuned pricing strategy that fills as many seats as possible without risking over- or under-booking. This helps airlines optimize their revenues by selling more seats at higher prices during peak periods and selling fewer seats at lower prices during off-peak periods.

In a nutshell, revenue management plays a critical role in the financial success of airlines, helping them increase revenue, reduce costs, and maximize profitability. With robust data feeds that allow real-time pricing adjustments on the fly, airlines can better manage their resources and stay competitive.

THE ROLE OF DYNAMIC PRICING

Dynamic pricing has long been a key component of revenue management for airlines. It allows them to adjust prices based on changes in demand and other market factors.

For airlines, dynamic pricing means that ticket prices can change frequently based on various factors, such as adjustments in capacity and flight frequencies, competitors' routing, time of day, day of the week, seasonality, and even the weather. For example, if demand for a particular flight is high, the airline may increase the price of the remaining seats to maximize revenue. Conversely, if demand is low, the airline may lower the price of the remaining seats to attract more customers.

Dynamic pricing helps airlines achieve a more optimal balance between supply and demand. By constantly adjusting prices based on market conditions, airlines can maximize their revenues and fill as many seats as possible. This is especially important in the highly competitive airline industry, where profit margins are often slim and demand can fluctuate rapidly.

AIRLINES AS THE "PERCEIVED" INVENTORS OF DYNAMIC PRICING

While airlines did not invent the concept of dynamic pricing per se, the airline industry was one of the first to adopt dynamic pricing on a grand scale. Many consider airlines to have been at the forefront of making revenue management what it is today.

Here is how it all went down:

- American Airlines is **often credited** with having pioneered the use of revenue management techniques in the airline industry with the development of the “Super Saver” fare in 1978. This was a discounted fare that was available only under certain conditions, such as advance purchase and minimum stay requirements.
 - Also, other airlines like SouthWest, Laker Airways, and even People Express were among the early adopters of dynamic pricing and helped to popularize the concept in the airline industry. People Express, **for instance**, introduced a new pricing strategy called the “People’s Express Grab Bag,” which offered discounted fares to customers willing to accept a seat assignment at the last minute.
 - In these early days of revenue management, airlines would manually adjust prices based on factors such as time of day, day of the week, and seasonality. This sounds basic but was a revolutionary pricing approach back then.
 - In the 1980s, airlines began to use more sophisticated computer systems to manage their dynamic pricing, which allowed them to make more accurate and timely adjustments based on changes in demand.
- So, while airlines did not invent dynamic pricing, they have been instrumental in popularizing and refining the practice, and it has become an essential component of their revenue management strategies.



TODAY'S STATE OF REVENUE MANAGEMENT

While the airline industry pioneered pricing and revenue management, many legacy airlines have struggled to keep up with more recent innovations. Some critics even argue that airline revenue management has stagnated and is still stuck in the late 1990s. However, the truth is that it is less about the complacency of airlines and more about legacy systems, data silos, and other challenges making it increasingly difficult for these airlines to stay ahead of the curve.

As a result, many airlines now face the challenge of updating their systems and processes to keep pace with rapidly changing market conditions and emerging technologies.

In fact, IATA itself admits that the industry is still relying on major breakthroughs from the past in order to price today's flights and ancillary products. Here's an example: the amount that a customer pays for a flight is still predominantly calculated through the application of predetermined static price points that limit inventory allocations using 26 booking classes. In other words, the majority of airlines have not yet unlocked the full spectrum of real-time insights into their pricing engines.

What was innovative and new in the 1980s has long been overtaken by the digital revolution.

Sebastian Touraine

Head of Airline Commercial Systems at IATA and
former Head of Dynamic Offers

THE FUTURE OF REVENUE MANAGEMENT

Airlines have been slow to adopt the latest technologies in revenue management. As a result, the airline industry as a whole is facing mounting pressure to upgrade its revenue management systems.

As **Fortune describes**, currently, most prices are still set by humans. And price analysts can spook easily and lower prices if there is a concern about a low load factor, which is one of the key metrics airlines keep an eye on to determine the percentage of available seats that could have been filled by passengers.

With this being said, today's mostly "static" revenue management systems and processes must be replaced by modern retail-oriented offer management systems. This is a crucial moment for airlines to figure out how to stay competitive in an ever-changing landscape.

How exactly?

The future of revenue management in the airline industry will be shaped by AI-related technologies that allow airlines to capture and analyze big data in real-time and automate pricing decisions—a process often referred to as continuous pricing.

FROM DYNAMIC TO CONTINUOUS PRICING

Continuous pricing refers to the practice of adjusting prices dynamically and continuously in real-time based on changes in demand, supply, and a plethora of external market factors. This approach to revenue management is more fluid than traditional revenue management techniques, which rely on fixed pricing structures and periodic adjustments.

Continuous pricing is a further enabler of offer optimization, as the airline can greatly refine the offered price compared to today's static and limited options through legacy fare filing.

IATA public statement

Continuous pricing represents a fundamental shift in revenue management, enabling airlines to maximize the value of each transaction by making precise pricing decisions based on real-time data and market conditions. To achieve this, airlines need to overcome the challenge of managing data flows from multiple sources, while ensuring accuracy by removing anomalies and inaccuracies. Building sophisticated revenue management systems is crucial to implementing continuous pricing, enabling airlines to offer more targeted and relevant products and services to their customers. This is particularly important in liberating clients from the constraints of legacy fare filing and traditional inventory controls,

clearing the way for true real-time pricing and offer management. By embracing continuous pricing and optimizing their revenue management systems, airlines can increase their competitiveness and conversion rates, ultimately driving profitability and success in a fast-changing market.

The COVID-19 pandemic has proven how important the transition towards real-time-based continuous pricing is. Travel restrictions and reduced demand have made it more difficult for airlines to rely on historical data to forecast future demand and set prices accordingly. Unfortunately, many airlines could not deal with the rapid and unforeseen changes in consumer demand patterns. This has resulted in widespread industry frustration with legacy revenue management systems. The exasperation has shifted from a steady drip into an open faucet of discontent, as Cole Wrightson, **Chief Product Officer at Flyr**, concludes.

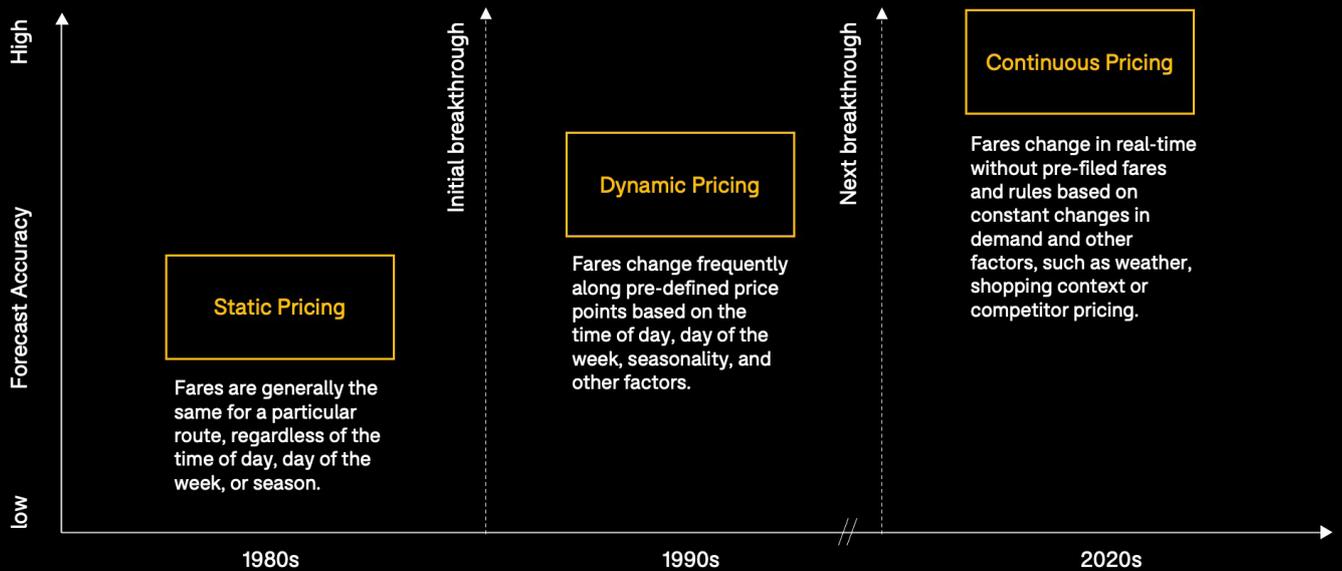
“The need for adaptive, more modern systems has become so great that some airlines have completely turned off their legacy systems and opted to manage everything manually, just to survive. The inconsistency between year-over-year demand patterns and the increased frequency of schedule and capacity changes invalidate many of the outdated assumptions upon which legacy revenue management systems are built.”

In order to ward off further frustration, continuous pricing must become the new base level of revenue management systems. However, the question arises as to which technologies will help this dream come true.

Let's take a look.

Transition

The Evolution of Airline Revenue Management



Source: OAG Analysis

THE TECHNOLOGIES NEEDED FOR CONTINUOUS PRICING

New Distribution Capability (NDC) plays, arguably, the most critical role in enabling continuous pricing for airlines. This technology provides a standardized framework for distributing dynamic pricing and personalized content to customers through third-party channels—more on that in our next chapter.

Following the publication of the IATA Dynamic Offer Creation white paper in October 2018, IATA has been leading the transition towards the next era of pricing as part of the larger movement towards fully dynamic offers. As the name spells out, the latter not only refers to dynamic price determination but a fully flexible bundling of airline products, aka content, whose offers present real-time construction characteristics in response to shopping requests and their respective contexts. For more information, check out IATA's [Dynamic Offers Maturity Model](#), which provides great insights.

From a broader technology perspective, three emerging tech advancements will take revenue management to the next level of continuous offers. These advancements enable airlines and their given revenue management systems to change parameters on the spot. In doing so, airlines can overcome the irrelevance of historical sales data for demand forecasting. This can be further enhanced using more sophisticated statistical tools.

Artificial Intelligence (AI): AI can revolutionize revenue management by allowing airlines to analyze vast amounts of data in real-time and make more accurate predictions about demand and pricing. AI can also help airlines automate pricing decisions and optimize revenue in real-time. AI enables airlines to cross-sell, upsell and serve in the moment of need. This technology will empower customer interaction and lead to a digital-first future in which the right offer is created at the right time.

Machine learning: Machine learning (as part of the broader AI terminology) can

help airlines analyze data patterns and make predictions about future demand and pricing through the correlation of data inputs, pricing decisions, and revenue performance. Deep learning technology is needed to contextually analyze data for more optimal pricing and revenue strategies, and more accurate forecasting. This technology can also personalize pricing and promotions based on a customer's past behavior and preferences. Algorithmic forecasting continuously infuses data and interprets it through machine learning without requiring the intervention of revenue managers.

Internet of Things (IoT): The IoT can provide airlines with even more real-time data on everything from flight delays to customer preferences, which can be used to improve revenue management decisions. For example, by using IoT sensors to monitor weather conditions in real-time, airlines can adjust pricing and inventory levels in response to weather-related changes on demand. Also, sensors in airports can provide data on delayed apron operations, for example, as offered by **Assaia**, which helps revenue managers adjust pricing in real-time.

As all of these technologies demonstrate, the future of revenue management is an important strategy that will enable airlines to sell the right seat to the right customer at the right time and price. This is only possible with an ever-increasing amount of data spanning beyond booking data, competitor flight schedules, and pricing, for instance, via incorporating information from capital markets, oil futures, and other economic indicators that influence the market. All this data must then be analyzed and processed in real-time for accurate decision-making.

ARE AIRLINES PREPARED TO INVEST IN THE FUTURE OF REVENUE MANAGEMENT?

As time progresses, more and more airlines are realizing it's time to switch things up. In fact, many airlines **have already invested heavily** in the development of sophisticated AI-driven systems that better forecast demand and manage inventory and pricing.

Here are a few concrete examples:

- ➔ One example is SAS, whose advanced revenue management system, in partnership with Amadeus, is based on a new revenue forecast model that applies live sales data. This technology improved the airline's demand forecasting ability by 30%, as the carrier explained in a **case study**.
- ➔ Another example is Lufthansa, which, in 2019, **partnered with travel booking app Hopper**, to leverage their AI and machine learning capabilities for more accurate predictions about flight prices.
- ➔ AirAsia also reconfigured its tech stack to operate more efficiently by heralding more forward-looking data analysis via its **collaboration with Kambr**.
- ➔ JetBlue's partnership **with FLYR Labs** has brought a host of revenue optimization opportunities for the airline.
- ➔ Azul Airlines has **partnered with Fetcherr**, another emerging Travel Tech provider, to pilot demand prediction via Fetcherr's Algo pricing platform.

➤ And many other airlines launched similar initiatives as this [Georgia Tech study](#) explains; Etihad, for instance, partnered with Sabre to better incorporate live shopping data into their pricing engines; Alaska Airlines incorporated real-time insights of travelers looking for vaccine information into their forecasting models; and Air Canada, United, and Qatar have all placed a much greater focus on AI-driven continuous pricing over the past few years.

However, the implementation of new technologies can be complex, and it requires a significant long-term investment in development, infrastructure, and personnel. The integration of new technologies into an airline's revenue management system requires changes to existing business processes and staff training, alongside

potential software integrations. Another challenge airlines face in implementing new revenue management technologies is the upfront cost. Many technology suppliers do not offer risk-sharing options, making it difficult for airlines with limited resources to invest in unproven technologies with uncertain ROI.

Airlines also continue to face challenges related to data management, as capturing and analyzing large amounts of data from multiple sources accurately to feed its algorithms can be a complex and time-consuming process. Additionally, some airlines have faced resistance from within or from other stakeholders who are concerned about privacy and data security issues. As well, the introduction of AI-based revenue management demands new skills, especially from revenue managers.



In the ever-evolving world of airline revenue management, partnerships with tech companies are becoming increasingly vital. Data-savvy tech firms have proven exceptionally beneficial in helping airlines transform their outdated systems.

LEADING REVENUE MANAGEMENT STARTUPS

Through collaborations with emerging tech players, airlines can leverage the latest technologies and expertise on the market without having to build and maintain these capabilities in-house.

Additionally, collaboration with such companies can provide airlines with access to innovative solutions and fresh perspectives on revenue management. Startups, especially, are often more agile and able to adapt more quickly to changes in the

market, which can be an advantage for the fast-moving airline industry.

As a starting point for airlines to get a high-level understanding of the growing revenue management tech landscape, below is a ranking of ten of the most promising revenue management travel tech companies.

Disclaimer:

The ranking system was created by taking into account the total amount of Venture Capital raised and the latest media attention each company has received. Unfortunately, we were unable to consider financial metrics such as revenue or client count for this ranking. Therefore, please take this ranking with a grain of salt and keep in mind that it may not be a comprehensive representation of each company's success.

Ranking

The Emerging Airline Revenue Management Tech Players

Rank	Name	Year Founded	HQ	Product Name / Slogan	Website
1	Flyr Labs	2013	Santa Monica, USA	Cirrus Revenue Operating System	flyrlabs.com
2	Fetcherr	2019	Netanya, Israel	AI-native High-Frequency Pricing	fetcherr.io
3	Volantio	2007	Atlanta, USA	The GreenLeaf Platform	volantio.com
4	Kambr (Amadeus)	2019	Wilton, USA	Revenue Management Software Eddy	kambr.com
5	Caravelo	2010	Barcelona, Spain	Airline Subscription Solutions	caravelo.com
6	Zytlyn	2021	Geneva, Switzerland	Zytlyn Predictions Platform	zytlyn.com
7	Infare	2000	Copenhagen, Denmark	Airline PPS Pricing Solution	infare.com
8	3Victors	2016	Plano, USA	PriceEye Suite	3victors.com
9	Planitas	2000	Dublin, Ireland	Plantias Adaptiv Platform	planitas.com
10	Yieldin	2012	Paris, France	Visium Revenue Management Solution	yieldin.com

Overall, there is a growing number of start-ups offering innovative solutions for revenue management in the airline industry. By partnering with these companies, airlines can leverage cutting-edge technologies to improve their revenue management strategies and stay competitive in the market.

Data is what ties all of these emerging software providers together.

The AI and machine learning capabilities of these companies can help airlines improve their revenue management systems and optimize pricing strategies in real-time.

However, there is still more that needs to be done in order to create a truly continuous pricing environment.

As previously mentioned, one of the most promising technologies for achieving this goal is NDC, a standardized data exchange protocol that enables airlines to provide more personalized and dynamic offers to customers. By leveraging NDC, airlines can offer tailored products and services to individual customers based on their preferences and behavior. In turn, airlines can adjust prices in real-time to maximize revenues.



2 THE NEW DISTRIBUTION CAPABILITY (NDC) JOURNEY: REDEFINING AIRLINE COMMERCE



The airline industry is in the midst of a profound technological transformation, with new innovations and disruptions reshaping how airlines do business. At the forefront of this transition is New Distribution Capability (NDC), a new data exchange protocol that promises to revolutionize how airlines distribute and sell their products.

NDC represents a major step forward, particularly for next-gen revenue management, enabling airlines to offer more personalized and dynamic offers to customers and optimize pricing and inventory in real time. The ultimate goal is to provide the right products at the right time—a promising and transformative vision that the industry is eagerly working towards.

In this chapter, we'll delve into the exciting world of NDC and explore how it is transforming the airline industry as we know it.

Specifically, we will explore the following key aspects of NDC and its impact on the airline industry:

- ➔ Review the progress made in implementing NDC across the industry.
- ➔ Examine the challenges that have hindered NDC adoption so far.
- ➔ Highlight real-world airline use cases demonstrating how NDC revolutionizes airline retail.
- ➔ And finally, provide an overview of the top NDC-focused Travel Tech startups that airlines, travel agencies, Global Distribution Systems (GDSs), Online Travel Agencies (OTAs), and corporate travel managers (TMCs), should consider for potential collaborations or integrations.

Framework

From OLD to NEW – The Transition in the Airline Business



Distribution

From GDS-led distribution to NDC



QUICK RECAP: THE HISTORY OF NDC

NDC traces its roots back to 2012 when the International Air Transport Association (IATA) first introduced the concept as a response to the evolving needs of both airlines and passengers. The underlying motivation for NDC was to address the limitations of the “indirect” booking flow, in which GDSs were responsible for building offers from various pieces of flight content, including availability from an airline’s Computer Reservation System (CRS), rates from air price repository **ATPCO**, and schedules from third-party databases like ours at OAG.

As **illustrated by Altexsoft**, the NDC approach was meant to empower airlines to regain control over their products, creating

dynamic packages of ancillaries, and enabling them to adjust offers based on current market demand and customer preferences, rather than relying solely on the capabilities and limitations of GDSs.

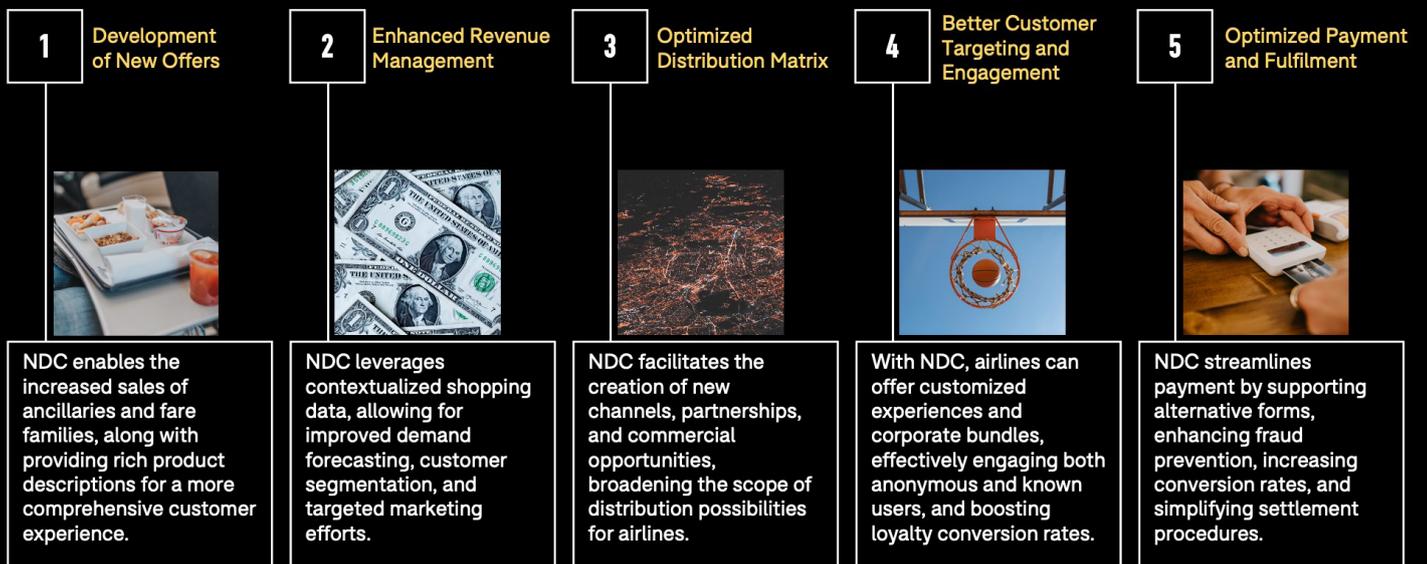
The airlines to **first adopt NDC** were Lufthansa, British Airways, American Airlines, and Iberia. The initiative aimed to address the limitations of legacy distribution systems and enable more effective communication between airlines, travel agencies, and consumers.

HOW DOES NDC WORK SPECIFICALLY?

NDC is a **communication protocol based on XML** (eXtensible Markup Language), which standardizes the way airlines and travel industry partners exchange data.

Overview

The Major Benefits of New Distribution Capability (NDC)



XML is a **markup language** that allows for structured, organized, and easily readable data. This standardized format ensures that **all parties in the distribution chain** can understand and process the information being exchanged, regardless of the specific systems they use.

Additionally, NDC leverages **Application Programming Interfaces (APIs)** to facilitate data exchange between airlines, travel agencies, and other industry partners. APIs are sets of rules and protocols that allow different software applications to communicate with each other. Through APIs, airlines can directly connect their inventory and reservation systems with travel agency platforms or other distribution channels, bypassing the need for intermediaries like Global Distribution Systems (GDSs). As well, airlines using APIs can share their product offerings directly from the airline

Passenger Service Systems (PSS) to a B2B platform or Airline Agent Portal/OTA, which many consider to be a significant advancement over the legacy **EDIFACT protocol** that has been in use for the past 40 years.

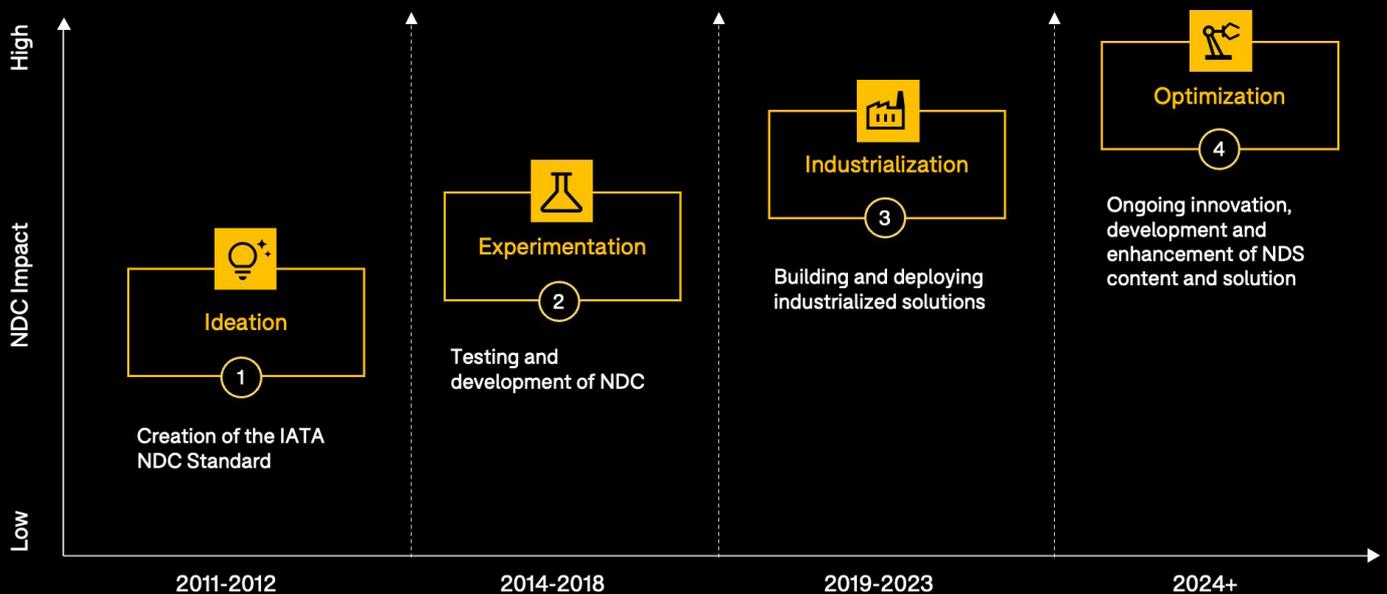
In summary, the combination of XML and API-based communication, enhanced by third-party data providers like ourselves at **OAG**, allows for richer content, personalization, and dynamic pricing in the airline distribution process.

THE ADOPTION OF NDC

Over the past few years, NDC has evolved significantly.

In 2015, IATA launched the **NDC Certification Program**, which established a set of standardized guidelines and protocols for

Transition The Evolution of New Distribution Capability (NDC)



NDC implementation. This program has been instrumental in fostering widespread adoption, as it ensures consistency and compatibility across different systems and stakeholders.

Since then, NDC has garnered the support of numerous airlines, technology providers, data providers, travel agencies, and even GDSs, with all of these key industry players actively participating in its adoption and promotion, **especially since the onset of the pandemic.**

Interestingly, the involvement of GDSs (and also data providers like OAG) in the adoption of NDC has turned out to be much more inclusive than initially anticipated. Early on, many experts predicted that NDC would cause GDSs and data providers to vanish as intermediaries between airlines and travelers. However, this has not been the case. Instead of being sidelined, technology intermediaries have taken on crucial roles in the NDC adoption process. Ultimately, NDC has fostered a far more collaborative approach among industry stakeholders than initially envisioned.

As a result of this collaborative approach, NDC adoption has gained significant momentum. IATA reported that, as of April 2021, the number of NDC certifications across airlines, IT providers, and sellers had grown by **18% year-over-year**, achieving the organization's self-set target of **20% NDC bookings** by mid-2021.

As the initiative gained momentum, the range of NDC-enabled solutions expanded, with a growing number of companies offering innovative tools and services that leverage the capabilities of this new data exchange protocol.

MANY INDUSTRY STAKEHOLDERS ARE COMMITTED TO NDC

To drive forward the development of NDC, most industry stakeholders have actively participated and collaborated to establish NDC as the go-to IT standard across the industry.

These parties include:

Most **major airlines** have embraced NDC and are working on integrating it into their distribution strategies. They have recognized the potential of NDC to enhance their offerings and improve revenue management. As of today, more than 60 airlines worldwide are NDC certified. While there are hundreds of airlines globally, it's noteworthy that these 60+ NDC-certified carriers include a diverse range of both large and smaller international airlines. This underscores the growing potential of NDC across the industry, acknowledging the importance of all airlines in shaping the future of travel distribution.

Key Global Distribution Systems (GDSs)

like Amadeus, Sabre, and Travelport have, after some initial hesitation, progressively embraced NDC and started developing solutions that support the new protocol. These companies have been investing in the necessary infrastructure and technology to facilitate the adoption of NDC by their travel agency partners and airline customers. However, GDSs continue to have a special relationship with NDC, which we will explain in more detail below.

Technology providers such as Farelogix, Datalex, and IBS Software have played a

significant role in the development of NDC by creating the technology platforms and tools that enable airlines and travel agencies to leverage the new protocol. These technology providers have designed solutions that support NDC's advanced data exchange capabilities, allowing for improved personalization and dynamic pricing.

Data providers play a crucial role in the NDC ecosystem by offering trusted, and accurate global datasets. We at OAG, for example, supply and streamline **flight schedules**. Fare data aggregators enable the process of integrating with airlines by ensuring that data is presented in a unified format, validated, and up-to-date. All these data companies remove time constraints that airlines may face in their development pipelines, allowing for a more efficient NDC rollout. By working with data providers like us, industry stakeholders can more effectively navigate the complexities of NDC implementation and benefit from a reliable and accessible data source. We enable stakeholders to access airline data at scale, providing a comprehensive and streamlined solution, rather than relying on a time-consuming and resource-intensive one-to-one approach with individual airlines.

Major **travel agencies and aggregators**, including Expedia, Booking.com, and CWT, have also embraced NDC, recognizing the opportunities it presents to enhance their services and provide a more seamless customer experience. By adopting NDC, these companies are better positioned to offer

personalized and dynamic offers to their customers, leading to increased satisfaction and loyalty. Skyscanner, for example, has applied NDC to its metasearch concept and, as a third party, connects airlines to agencies, OTAs, and customers via its **NDC solution** to enable direct bookings. Skyscanner was the **first major** search engine that jumped on the NDC standard plane. In turn, the company has offered end-customers an improved booking experience where the user has the most information while broadening airlines' customer reach. Since then, other OTAs, such as **Kayak** and **Hotwire**, have also started offering their own NDC solutions.

However, despite all of this great commitment, participation is far from complete, with an estimated 80% of all bookings still not NDC-enabled today.

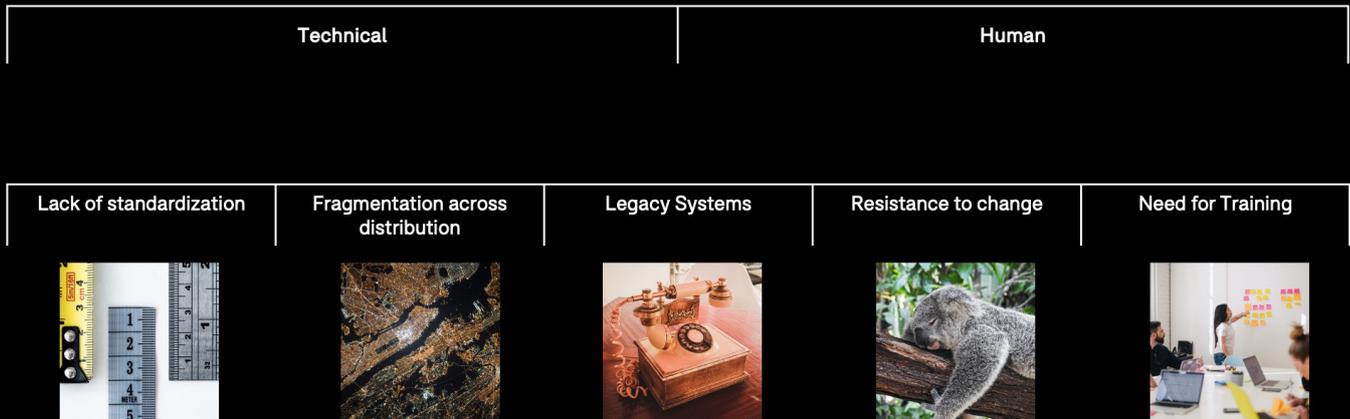
In particular, travel agencies struggle with adopting NDC more quickly. According to a **2022 Phocuswright** survey among travel agency employees, only 7% were familiar with NDC and using it, while the remaining 93% either had no access to NDC content or they were not familiar yet with the technology.

These stats illustrate the untapped potential for NDC in the future, especially since industry-wide participation in NDC is mission-critical to enable consistency and interoperability.

This brings us to some of the key challenges NDC has been facing over the past few years.

Overview

The Challenges Holding Back Faster NDC Adoption



Source: OAG

WHAT'S HOLDING NDC BACK?

While NDC has made considerable progress, its overall adoption over the past ten years has been slower than initially anticipated. **IATA reported** in June 2022 that 10% of all indirect sales were made through an NDC API. While this adoption is a significant uptake compared to the previous year when only 5-6% of indirect sales were NDC-enabled, the stats show that NDC adoption is still in its infancy.

Why is this the case despite the industry-wide commitment that has been going on for over a decade?

There are several factors and challenges that have contributed to this.

Let's go through each category in a bit more detail.

LEGACY SYSTEMS

The airline industry relies heavily on complex, deeply entrenched legacy systems, making it difficult for companies to switch to a new protocol like NDC. These complex and long-established systems often form the backbone of airlines' operations, making it challenging for companies to transition to an innovative protocol like NDC. The shift necessitates not only a significant investment of time and resources (the industry will likely need to spend between **\$3 billion and \$15 billion** over the next ten years) but also demands technical expertise to navigate the complexities of integrating NDC with existing systems.

Additionally, certain unresolved challenges with NDC may cause some organizations to view their legacy systems as more favorable going forward. One of the most

significant challenges with NDC is handling the massive volume of searches and directing them to the appropriate airline. If every search leads to calls being made to every airline API, it would result in a process that is expensive, computationally heavy, time-consuming, and inefficient. In such cases, collaborating with experienced data providers like OAG can offer streamlined solutions to efficiently manage search volume, ensuring a more effective and cost-saving approach.

Consequently, the daunting task of overhauling or updating these legacy infrastructures, combined with some unresolved challenges of NDC, has posed a substantial barrier for many organizations. This hinders their ability to embrace the full potential of NDC and its transformative impact on the airline industry.

OBSTACLES TO CHANGE

As with any significant transformation, there can be resistance to change from various stakeholders. Some stakeholders, like travel agencies, may be hesitant to adopt NDC due to concerns about the costs involved, the potential disruption to existing processes, data challenges, or a lack of familiarity with the new protocol.

GDSs have been cautious in their approach to NDC adoption, mainly due to the significant changes the new protocol brings to the existing distribution landscape. NDC enables direct connections between airlines and travel agencies or other distribution partners, shifting the dynamics of the traditional distribution process where GDSs played a central role as

intermediaries. This evolution in the distribution landscape could lead to adjustments in the GDSs' revenue models and require them to adapt their business strategies accordingly.

Fortunately, the introduction of NDC has unlocked massive innovation among GDSs. They have rethought their roles in the distribution process and explored new opportunities for collaboration and innovation. As the industry navigates this transformative journey, it is essential for all stakeholders to work together to overcome the obstacles that come with change and to fully realize the potential benefits of NDC for the entire travel ecosystem.

“No one company can bring NDC to life on its own. Re-tooling processes that have been in place across the industry for decades is a group effort, so activating NDC will take time.”

Public Sabre statement

NEED FOR TRAINING

Another key challenge hindering the rapid adoption of NDC is the need for extensive training and education of all parties involved in the airline distribution ecosystem. As Qantas' **experience demonstrates**, transitioning to NDC demands significant educational efforts across the industry,

ensuring that stakeholders at every level grasp the concepts, benefits, and implementation aspects of NDC. Qantas has focused on educating its sales teams and employees, but it also acknowledges that understanding among travel agencies can vary greatly.

As a result, it is crucial for airlines and other industry players to continuously share information and knowledge, fostering a better understanding of NDC across the entire travel ecosystem. This ongoing education will play a vital role in accelerating NDC adoption and maximizing its potential benefits for the airline industry.

DATA AND STANDARDIZATION CHALLENGES

While IATA has made efforts to standardize NDC through its certification program, variations in implementation and interpretation of the standards can still cause

challenges. While the XML schema is a standard, each airline implements this schema in their **customized APIs differently**. This means, aggregators might need to integrate with each NDC channel separately, requiring changes and investment. As a result, data standardization has been a major issue, with inconsistencies in data formats and quality across different sources. Companies like OAG play a critical role in addressing this challenge by leveraging advanced technology and agile delivery models to ensure compatibility with various data formats.

By providing API ready-to-query data sets, we streamline the integration process and enable a more efficient and seamless transition to NDC for industry stakeholders.

In summary, this lack of standardization might present itself as the biggest challenge in hindering the global adoption of NDC. Ensuring that all industry players adhere to the same set of rules and

That lack of standardization has hampered what the industry is trying to do, and also the fact that our industry is by its very nature global also creates challenges as there are all these regional variations that have to be taken into account. We're getting better, but I do think the technology in the industry is slower than many other industries.

Tom Kershaw

Chief product and technology officer at the travel technology and distribution company Travelport

guidelines is crucial for the smooth functioning of NDC, but achieving this level of standardization has been an ongoing challenge.

FRAGMENTATION ACROSS DISTRIBUTION

The airline distribution landscape is highly fragmented, with numerous intermediaries and touchpoints. This complexity can make it more challenging to implement a new protocol like NDC across the entire industry, as each player may have different requirements, preferences, and technological capabilities.

As **Amadeus explains**, adding to this are the logistics of reaching alignment across the industry. For NDC to be viable, there needs to be commercial agreements between airlines and technology partners; airlines and travel sellers/corporations; technology partners and travel sellers/

corporations. Given that there are thousands of stakeholders across this industry, a huge number of commercial agreements need to be concluded to set the terms for NDC bookings. As NDC initiatives do not prescribe standardized commercial models, it means that alignment often boils down to a case-by-case, bilateral negotiation.

In addition to the challenges mentioned above, another factor contributing to the slower adoption of NDC is the response of GDSs to the new technology. Recognizing the potential threat posed by NDC, GDSs have proactively improved their own systems and offerings. As a result, many airlines now find that the enhanced capabilities provided by GDSs have reduced the urgency to switch over to NDC. In other words, the competitive pressure exerted by NDC has led GDSs to up their game, inadvertently slowing down the overall shift towards NDC adoption in the airline industry.

With this being said, even with the introduction of NDC, it is important to note that multiple distribution models are expected to coexist in the foreseeable future. These include distribution via GDSs, NDC aggregators, and “direct connect” methods. Traditional distribution models will not only remain relevant but also continue to evolve and improve, thanks to the competitive pressure exerted by NDC. Simultaneously, new models like NDC will further emerge and expand within the industry. This diverse landscape underscores the complex nature of airline distribution and highlights the need for ongoing innovation and adaptation as industry stakeholders navigate these various channels.



In summary, It would be a mistake to attribute the slower-than-expected adoption of NDC to any single party or stakeholder.

The reality is that the challenges are multifaceted, with various industry players confronting their own unique sets of obstacles in embracing this new standard.

Moreover, alternative distribution systems have continued to exist and evolve for good reason, providing valuable solutions and options for different stakeholders in the airline distribution ecosystem.

CONCRETE EXAMPLES OF NDC'S IMPACT

Despite some of the adoption hiccups described above, the potential of NDC to transform the way airlines distribute and sell their products is enormous, particularly in terms of ancillary services. **McKinsey estimates** that the airline industry can capture up to \$40bn in additional revenue annually by 2030 (equivalent to about 4% of current industry revenues).

How exactly can airlines do this?

By adopting NDC, airlines can offer a more personalized and dynamic experience to their customers, which in turn can lead to increased revenue and customer satisfaction.

Here are a handful of concrete examples to make this more tangible:

➔ In 2017, **American Airlines** launched its NDC-enabled platform, which allowed the airline to offer customized bundled fares to travel agencies. This

innovation enabled travel agents to access and sell a range of fare families with different inclusions, such as priority boarding, preferred seating, and checked baggage, depending on the traveler's preferences and needs. Most recently, American Airlines has also taken a **controversial step** to make some of its content available to travel agencies only through NDC in its continuous push to offer customers higher customization of its products.

➔ **British Airways** has been an early adopter of NDC. For instance, British Airways was one of the first airlines to offer the "Choose Your Seat" option to customers through NDC-connected travel agencies, allowing passengers to select their preferred seats based on real-time availability. British Airways has also introduced additional price classes using NDC, which enabled it to increase price points **from a standard of 26 to more than 73** on selected short-haul routes.

➔ **Lufthansa Group** has been a strong advocate for NDC from the get-go. It has used the protocol to enhance the distribution of its ancillary products, such as the "Economy Light" fare, which offers a lower-cost option for passengers with carry-on luggage only. Through NDC, Lufthansa can provide this fare to travel agents, enabling them to cater to the needs of price-sensitive customers more effectively. Lufthansa Group was also the first airline group to levy a **cost surcharge** for bookings made via GDS in 2015, thereby, establishing a precedent for many other airlines to follow a similar strategy, including Air France-KLM, and **American Airlines**.

- **Qantas** has embraced NDC as a way to improve the customer experience and offer more personalized products. Through its NDC platform, Qantas provides real-time pricing and availability for ancillary services like extra legroom, special meals, and lounge access. This empowers travel agents to provide a more comprehensive and tailored service to their customers.
- **Finnair** is implementing NDC, amongst the usual use cases, for **continuous pricing for travel agents**. This is part of its plan to **transition fully to NDC by 2025**, for which the airline has also just announced it would be removing all of its domestic itineraries from EDIFACT distribution.

All of these examples demonstrate the exciting potential of NDC in transforming airline distribution and enhancing customer experience. However, it is important to note that, so far, much of the focus has been on establishing new “pipes” for distribution, while comparatively little progress has been made on more revenue-generating aspects, such as dynamic offers, unbundling, and other innovative service offerings. As the industry continues to adopt and refine NDC implementation, it will be essential for airlines, GDSs, and other stakeholders to shift their focus towards fully leveraging the revenue opportunities that this new protocol has to offer.

LEADING NDC-ENABLING TECHNOLOGY STARTUPS

As the airline industry continues to evolve and embrace the potential of NDC, fostering continuous innovation is crucial for driving further adoption and unlocking its transformative benefits.

In this dynamic landscape, numerous technology startups have emerged, playing a mission-critical role in advancing the NDC agenda and offering unique solutions that empower airlines and other industry stakeholders. These trailblazing companies are at the forefront of NDC enablement, shaping the future of airline distribution and helping the industry navigate the complexities of NDC adoption.

In this final section, we present a carefully curated list of the top ten most promising airline distribution startups, showcasing their unique contributions and the impact they’re making in revolutionizing the airline industry.

For years, many airlines have been innovating the way they sell fares online through their respective websites and mobile apps. However, they have faced challenges in building the digital infrastructure that enables agencies and e-commerce companies to sell tickets in similar ways. To overcome these obstacles, they have turned to young companies for assistance, some of which we will highlight in the ranking below.

In particular, flight aggregators such as **AirGateway**, **Duffel**, and **Verteil** have emerged as significant NDC enablers due to their ability to offer multiple integrations simultaneously. As **Altexsoft explains**, these aggregators are relatively new players in the airline distribution landscape, establishing direct connections with both full-service and low-cost carriers (LCCs) as well as GDSs to source NDC, GDS, and LCC offers. Travel vendors can access this content through a unified API or a prebuilt booking tool.

Disclaimer:

We excluded long-established technology companies like Accelya (which took over Farelogix), Travelport, ATPCO, JR Technologies, and similar companies that have been around for several decades. Instead, we focused on the most recent wave of technology disruptors that are working to

transform the tradition-bound business of distributing airfares.

As you explore the innovative solutions provided by these top-10 startups, you will notice two things.

First, their focus varies—some companies are helping airlines to develop NDC capabilities, while others are assisting OTAs, TMCs, and other travel partners in consolidating supply. Interestingly, some startups are working on both aspects simultaneously.

Second, a common thread among many of these startups is their emphasis on enabling airlines to offer enhanced methods for selling ancillaries. The future of ancillary retail is undoubtedly a pivotal aspect of the ongoing technology transition in the airline industry and merits a dedicated examination.

Ranking

The Emerging Airline Distribution Tech Players

Rank	Name	Year Founded	HQ	Website
1	TPConnects	2012	Dublin, Ireland	tpconnects.com
2	Verteil	2016	Kochi, India	verteil.com
3	Duffel	2017	London, England	duffel.com
4	Atriis Technologies	2016	Tel Aviv, Israel	atriis.com
5	PKFare	2014	Shenzhen, China	pkfare.com
6	Sqiva	2004	Jakarta	sqiva.com
7	AirRetailer	2018	Ernakulam, India	airretailer.com
8	Aeronology	2019	Melbourne, Australia	aeronology.travel
9	AirGateway	2017	Frankfurt, Germany	airgateway.com
10	Kyte	2020	London, England	gokyte.com

3 SHAPING AIRLINE RETAIL: THE UNSTOPPABLE RISE OF ANCILLARIES



Ancillaries are the additional services and products airlines offer beyond the base airfare, such as premium seat selection, priority boarding, additional baggage, and even hotel bookings and car rentals. Over the past decade, ancillaries have transformed from mere add-ons to becoming a cornerstone of airlines' financial health. They represent an invaluable revenue stream in an industry characterized by **tight margins** and intense competition.

In light of more airlines selling their flights through their direct (airline.com) channels and NDC's potential to present personalized offerings, the landscape of ancillaries

stands at the precipice of exponential growth, instigating a profound paradigm shift in customer service and experience within the airline industry. To navigate this terrain, airlines are increasingly inclined towards holistic decision-making, considering total passenger revenue for each flight as a comprehensive metric.

A primary strategy for achieving this augmentation in total revenue - beyond merely raising fares - is the pursuit of enhanced ancillary revenue. This approach provides an exciting avenue for diversification and personalized service, further contributing to the evolution of the industry.

Framework

From OLD to NEW – The Transition in the Airline Business



Ancillaries

From up-selling to right-selling



GRASPING THE SIGNIFICANCE OF ANCILLARY REVENUES

In order to truly understand the transformational impact of ancillaries in the airline industry, it is important to evaluate their quantitative significance.

Ancillary revenues are not just a supplemental income source for airlines but have evolved into a critical driver of financial robustness.

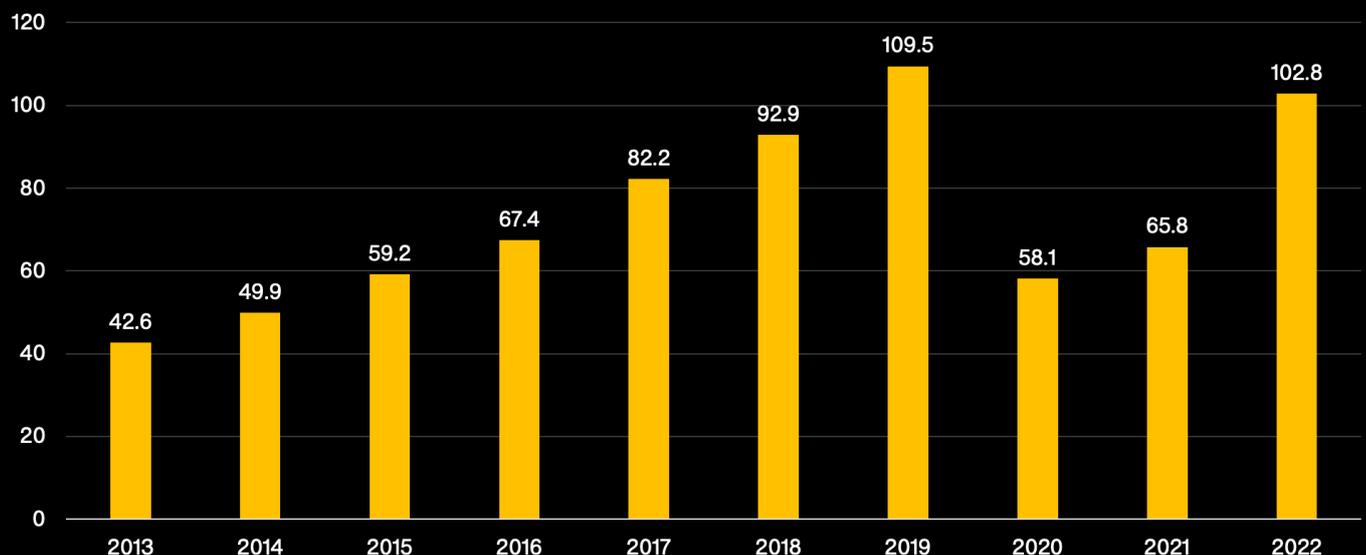
Comprehensive research conducted by **IdeaWorks and CarTrawler** illustrates this shift.

Over the span of less than a decade, global ancillary revenues dramatically rose from \$42.6 billion USD in 2013 to over \$102 billion USD in 2022. Even more impressive, 2022's figures almost matched 2019's record of \$109.5 billion USD, despite the disruptions caused by the global pandemic.

Overview

Total Ancillary Revenue in the Airline Industry

In billion U.S. dollars



Source: IdeaWorks and CarTrawler

www.oag.com

Following this chart, it becomes evident that the impressive growth trajectory has elevated ancillaries to a crucial pillar supporting airlines' financial stability.

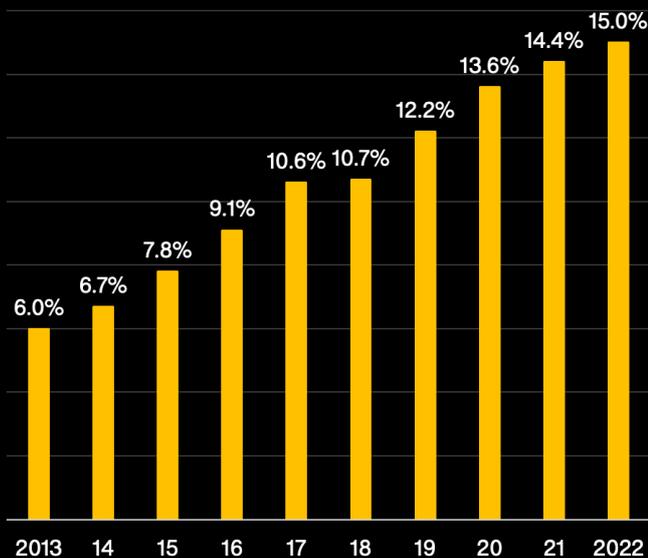
This dependency on a strong ancillary segment becomes clear when we delve into the proportion of total airline revenue that is derived from ancillaries. In 2022, a historic high was reached, with ancillary revenues accounting for a staggering 15% of total airline revenue.

Such a significant share underscores the strategic importance of ancillary revenues

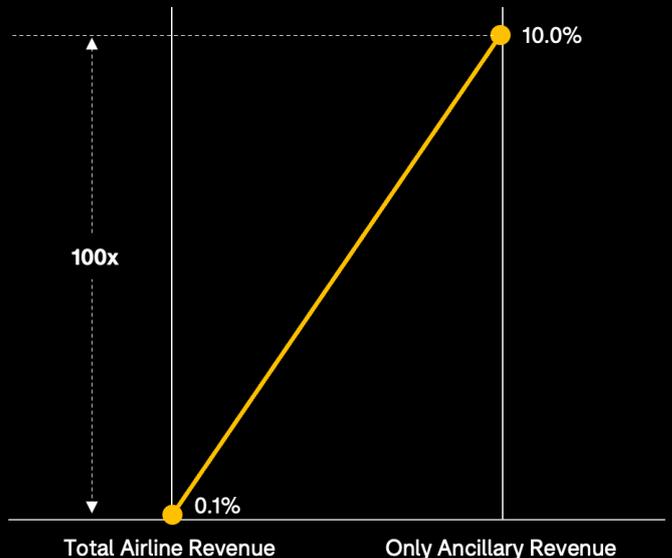
and highlights the need for airlines to effectively manage this ever-expanding category. This is evidenced by the likes of Qatar Airways, Lufthansa Group, and Air France-KLM, which have achieved ancillary revenue contributions of about 5.2%, 8.5%, and 8.7% respectively as **calculated by CarTrawler**.

These figures further underline the role of technological advancements and new distribution models, like NDC, in unlocking the full potential of ancillary revenue streams.

Trend
Ancillary Share of Global Airline Revenue



Benchmark
CAGR Comparison (2013–2022)



Source: OAG Analysis, IdeaWorks and CarTrawler, IATA

THE DRIVING FORCES BEHIND THE ONGOING ANCILLARY SURGE

The significant growth of the ancillary segment didn't happen in a vacuum. It was driven by a convergence of airline industry trends and consumer behavior shifts.

The Rise of Low-Cost Carriers (LCCs) and Ultra-Low-Cost Carriers (ULCCs):

These airlines revolutionized the industry with their business models, offering incredibly low base fares and generating profit through additional services. By placing the spotlight on ancillary revenue, these carriers have made it a key lever for profitability and sparked a wider industry trend. This has led to the unbundling of airline products among premium carriers (although not to the same extent). Since then, the unbundling revolution, which began onboard budget airlines, has slowly but steadily spread across **every aspect of the travel industry**.

Easier Distribution of Ancillaries:

Airlines have been exploring a diverse mix of channels to sell ancillaries, including direct channels and third-party Online Travel Agencies (OTAs). The emergence of NDC

and its subsequent evolution has supplemented the existing distribution system, smoothing the sale of ancillaries across all channels. This trend is underpinned by advancements in revenue management systems, which not only facilitate dynamic pricing of ancillary products but also support continuous pricing outside a rigid set of rules.

A Shift in Consumer Mindset:

The market trends we've seen in the airline industry have also had a knock-on effect on consumer attitudes. Modern travelers **seem more willing than ever** to pay for (certain) ancillary products. They've become accustomed to, and even expect, the ability to customize their travel experience according to their preferences. These findings are supported by **McKinsey research**, which found that customers no longer shop for flights solely based on price and schedule. Attributes like Wi-Fi availability, in-flight entertainment, seat details and maps, **on-time performance**, and even environmental impact increasingly affect a customer's decision to purchase a ticket (although it's unclear if travelers would be willing to pay for them).

1

Rise of LCCs and ULCCs



Budget airlines revolutionized the industry with their low base fares and have generated profit through additional services. This has led to the unbundling of airline products across the industry.

2

Easier Distribution of Ancillaries



With airlines prioritizing direct distribution channels, selling ancillaries has become more streamlined. The introduction and evolution of NDC has further reduced friction in distributing ancillary services.

3

A Shift in Consumer Mindsets



Consumer attitudes have changed as modern travelers are more willing to pay for ancillary products. They've become accustomed to, and even expect, the ability to customize their travel experience.

Taken together, these driving forces have set the stage for the ascendancy of the ancillary movement, signaling an exciting shift in the way airlines approach revenue generation.

Given the momentum of these trends, most analysts foresee a bright future for ancillary revenues.

As illustrated in the chart below, expert predictions suggest that growth in this sector is far from slowing down. Rather, we can anticipate a double-digit expansion over the next few years, solidifying the critical role of ancillaries in airlines' revenue streams.

This continued growth underscores the importance for airlines to strategically invest in, and optimize, their ancillary offerings.

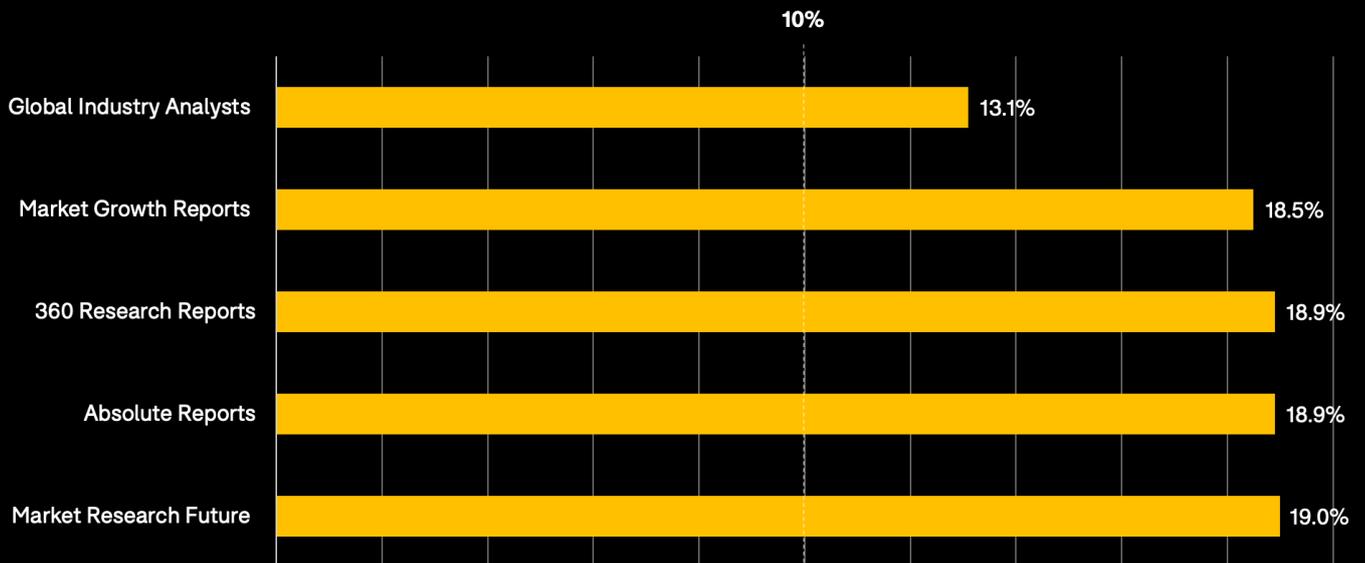
Technological progress, particularly in the realm of deep learning and artificial intelligence (AI), is primed to give ancillary revenues a further boost.

AI enables airlines to optimize revenue by predicting customer behavior and personalizing ancillary offerings.

As these technologies continue to evolve, they will play an increasingly pivotal role in driving airline profitability through ancillary sales.

Outlook

Projected CAGRs (2022 – 2030) for Airline Ancillary Revenues



Source: OAG Research based on reports from various report providers

THE DOUBLE BENEFIT OF ANCILLARIES

Ancillaries, far beyond being mere add-ons to the ticket price, have become an integral part of the travel experience and airline economics. They have reshaped the interaction between airlines and their customers over the years, providing (mostly) tangible benefits to both parties.

Benefits for Airlines:

The ancillary revenue model presents a robust retail system for airlines. With fares fluctuating due to supply and demand, the ancillary components add a layer of financial stability, somewhat insulating airlines from the ups and downs of the global business environment. In 2023, it's increasingly common to see airlines, particularly in key markets like North America and Europe, adopting this "à la carte" retail approach in some form. It's become a strategic tool, helping to build resilience and boost profitability amidst market uncertainties.

Benefits for Travelers:

The advent of ancillaries has also enhanced the passenger experience, offering a more personalized and flexible travel journey. By unbundling services and providing add-ons like preferred seating, upgraded Wi-Fi, or lounge access, airlines can cater to a diverse range of customer preferences. Not only does this mean a more tailored journey for passengers, but it also allows them to take control of their expenses, paying for only what they value. As a result, more and more travelers see unbundled fares as a viable way to save money [according to Morning Consult](#). In fact, this à la carte approach has helped to democratize air travel.

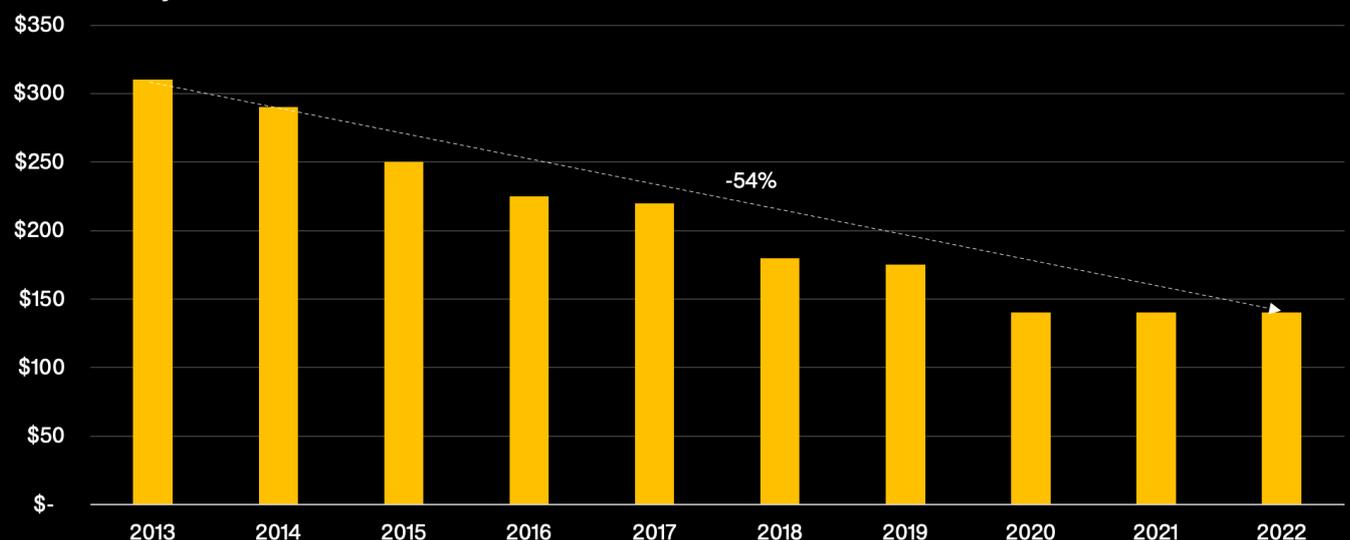
The latter can be seen when taking a look at numbers by [CarTrawler](#) again.

In 2013, the global average one-way fare was \$306.20 USD (adjusted to 2022 dollars for inflation). Fast forward to 2022, the one-way fare projected by IATA is a significantly reduced \$140.69 USD.

Trend

The Unbundling in the Airline Industry Has Contributed to Lower Travel Prices

Global One Way Airline Fares in U.S. dollars



This translates to an astonishing 54% inflation-adjusted reduction over the past ten years.

Yet, this trend invites a caveat. As we sail into 2023, airfare prices are projected to inflate by approximately 35-50% compared to the pre-pandemic era, spurred by a confluence of factors such as inflation and macroeconomic shifts. It's also worth noting that the data from 2022 as a reference point may offer a somewhat distorted perspective, given that numerous markets were inaccessible to more profitable long-haul travel for the majority of the year, potentially suppressing the average fare.

DECODING ANCILLARIES: REVENUE DRIVERS AND MISSTEPS

In the dynamic world of airline ancillaries, it's crucial to appreciate the nuances

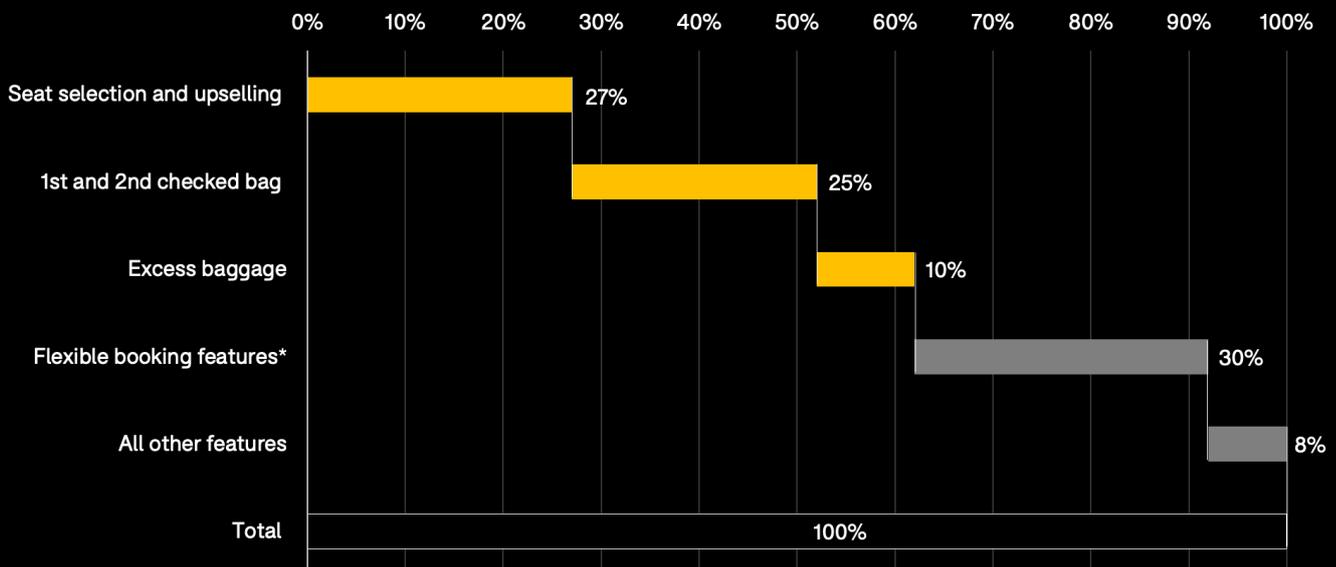
shaping this sector. While ancillaries are a rising trend, a closer look at their makeup reveals a skewed dependency on certain types.

- ➔ Seat selection fees and baggage fees emerged as the frontrunners in the ancillary revenue race, accounting for over half of the total ancillary revenue, according to **McKinsey**.
- ➔ Baggage fees alone (including checked baggage, heavy and extra-large bags, and additional carry-on bags) comprised more than one-third of all ancillary revenue.

Interestingly, these findings align with a **Skyscanner survey** indicating that seat selection and extra baggage are among the top three ancillary products travelers are willing to pay for this year.

Breakdown

Typical Share of Ancillary Revenue Among Full-Service Carriers

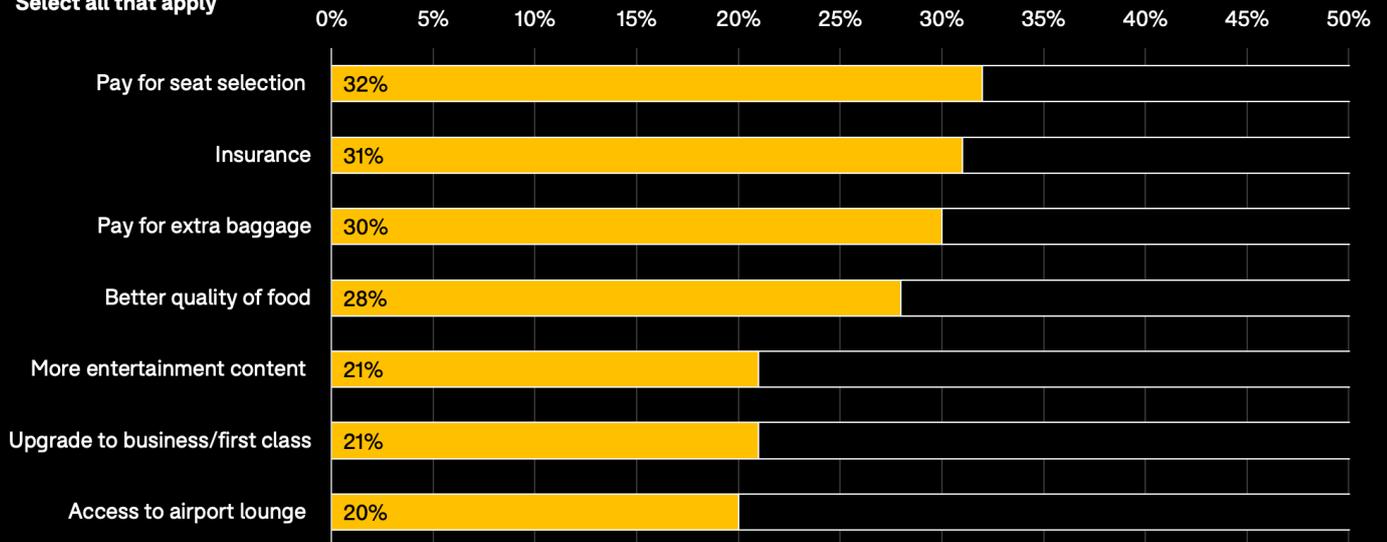


Source: McKinsey
 *Not universally recognized as ancillary by all carriers

Survey

“In 2023, how likely are you to spend money on any of the following flight upgrades?”

Select all that apply



Source: Skyscanner

www.oag.com

From these figures, two critical insights emerge:

Low-Cost Carriers and Ancillaries:

The significance of ancillaries is mission-critical for low-cost carriers. Some budget airlines may allocate seats **randomly to passengers** who don't pay to pre-select their spots. For families or large groups wanting to sit together, this can generate substantial revenue. The same applies to extra baggage. For example, airlines like easyJet, Ryanair, and Wizz Air only permit one under-seat bag for free as **exposed by Simple Flying**, turning additional

baggage into a lucrative extra. As a result, it's no wonder that all of the top ten airlines in the world with the highest dependency on ancillary revenue are low-cost carriers.

Underutilized Ancillary Services:

Despite the dominance of baggage and seat selection, few other services have successfully entered the ancillary top tier. Why is this the case? History suggests that simply attaching a separate price tag to each product or service doesn't guarantee customers' willingness to pay, as Skift **rightfully concludes**. Driving ancillary revenue depends on creating the right

Ranking

Leading Airlines Based on Ancillary Contribution to Total Revenue

Rank	Name	Ancillary Share in 2021 (%)
1	Wizz Air	56.0
2	Frontier	54.9
3	Spirit	54.3
4	Allegiant	51.3
5	Viva Aerobus	44.8
6	Ryanair Group	44.7
7	Volaris	42.9
8	GOL	33.0
9	easyJet	31.4
10	Pegasus	30.8

Source: CarTrawler

www.oag.com

opportunities and messages that resonate with customers in the right moments of their booking journeys. In fact, several experiments with unique (but excessive) ancillary services **have not proven fruitful**:

- In 2012, Spirit Airlines attempted to charge customers for basic services beyond carry-on bags and checked bags, like **printing boarding passes**. This strategy triggered a customer backlash and negative publicity, forcing Spirit to reconsider its approach.
- In 2010, Ryanair's plan to **introduce pay-to-use toilets** on its planes was met with a similar reception, and the airline had to abandon the plan.

While these findings offer some thought-provoking insights, it's clear that the development of ancillary revenue streams has

predominantly focused on seat selection and baggage fees.

Beyond these areas, the progress in generating substantial revenue through other ancillary services appears somewhat limited, suggesting that there is a wealth of untapped potential waiting to be harnessed.

In the final section of this series, we'll shed light on some innovative Travel Tech startups that are pushing the boundaries of conventional ancillary services.

These pioneering firms are revolutionizing the way ancillaries are conceptualized and sold, underlining that there are still vast and unexplored territories in this segment brimming with potential.

REDEFINING ANCILLARIES: THE POWER OF THE “HOW” AND “WHEN”

In a world where unbundled services are the new norm, simply offering more doesn't always equate to improved bottom-line results. The equation for a successful ancillary strategy involves a judicious blend of human creativity and machine-based learning, as **Allianz Partners explains**.

It's about delivering the right message about the right product at the right time. This holds particularly true in the airline industry, an area that witnesses startlingly high online shopping cart abandonment rates - **reaching as high as 90%**.

The issue here is that simply providing a wider range of choices can backfire. When presented with an overwhelming number of options, customers may opt to make no choice at all. This underlines the importance of not just WHAT we offer as ancillaries, but also HOW and WHEN these products are presented to the customer.

A crucial component of this approach involves visual presentation. Customers, quite understandably, wish to **visualize what they're buying** before they make a purchase decision. Being able to show (rather than tell) a flight shopper about their potential flight experience is a transformative concept that is rapidly gaining traction in the airline industry. One such example is former startup **Routehappy** (now part of ATPCO), which allows shoppers to visually understand the differences between airline offers.

In light of this, the spotlight turns to a new breed of startups that are making

significant strides in the ancillary landscape. These firms are focused on perfecting the “how” and “when” of presenting ancillary products to customers. They are leveraging technology and innovative approaches to redefine the way these additional services are conceptualized, presented, and sold.

➔ Take, for instance, **Renacen**, which has developed an innovative 3D Seat Map. This unique tool provides a 360-degree immersive view from the specific position of the chosen seat during the booking process. It offers travelers an enhanced visual understanding of the different cabin classes, thus fundamentally improving the ‘how’ of presenting this ancillary option.

➔ Another firm at the forefront of ancillary innovation is **Omnevo**. Omnevo is paving the way for next-level digital ancillary revenue and operations empowerment. Their product suite enables airlines (and airports) to regain full control of their omnichannel retail customer engagement, leveraging the strength of e-commerce marketplaces. This is a prime illustration of rethinking the ‘when’ and ‘where’ of offering ancillary options, tailoring the delivery to the customer's journey for maximum convenience and revenue generation.

Building upon these exciting examples of innovation, we have compiled a ranking of further pioneering Travel Tech startups.

In the ranking below, we present a list of ten emerging ancillary Travel Tech startups that are making waves in the industry.

Ranking

Emerging Airline Ancillary Tech Players

Rank	Name	Year Founded	HQ	Website
1	Plusgrade	2009	Montreal, Canada	plusgrade.com
2	Gordian Software	2017	Seattle, USA	gordiansoftware.com
3	Omnevo	2021	Wiesbaden, Germany	omnevo.net
4	Guestlogix	2002	Toronto, Canada	guestlogix.com
5	AtYourGate	2015	San Diego, USA	atyourgate.com
6	Aeronology	2019	Melbourne, Australia	aeronology.travel
7	Renacen (3D SeatMap)	2011	Badajoz, Spain	3dseatmapvr.com
8	SeatBoost	2012	Los Angeles, USA	seatboost.com
9	Airfree	2016	Paris, France	Airfree.aero
10	ModiFly	2021	Berlin, Germany	modify.shop

Source: OAG Analysis
*According to LinkedIn as of May 31, 2023

www.oag.com

Disclaimer: As in our previous company rankings, we excluded long-established technology companies like ATP-CO, Switchfly, and similar firms that have been around for several decades. Instead, we focused on the most recent wave of technology disruptors that are working to transform the tradition-bound business of ancillary sales. Also note that the ranking is primarily based on a qualitative assessment, incorporating key factors such as innovativeness, product maturity, scalability, market traction, and potential long-term impact.

While this top-ten ranking showcases the most promising startups poised to redefine the ancillary landscape, it's essential to acknowledge that they are not the only players influencing this space.

Many established companies, with years of experience in the airline industry, are also making significant strides in ancillary innovation.

- ➔ For instance, United Airlines and American Airlines have introduced a **luggage delivery service** that delivers your luggage directly to your final destination or home, starting at \$39.95 per bag, eliminating the need to wait at baggage claim.
- ➔ Lufthansa offers a **sleeper's row option** for long-haul flights, which reserves an entire row of three seats for passengers, accompanied by a mattress cover, blanket, and pillow of business-class quality.
- ➔ AirAsia launched **Xpress Baggage** which is available via the carrier's Super App at selected destinations for those who want their bags to be delivered among the first at baggage claim.

These examples demonstrate the innovation within established airline players. Notably, global distribution systems like Amadeus, Sabre, and Travelport are also

playing an instrumental role in this process. They have modernized their platforms to manage the more complex selling of ancillaries, thereby helping airlines and travel agencies better merchandise their products. Simultaneously, tech-aggregator firms and larger airline groups have made significant strides, launching direct distribution channels in partnership with technology vendors such as Accelya and Travelfusion. These collaborations represent a concerted effort across the industry to enhance and personalize the traveler experience with a wider range of ancillaries.

However, the past has often demonstrated that industry outsiders, like technology startups, can introduce novel perspectives and disruptive solutions that have the potential to reshape traditional systems. By bringing a fresh viewpoint and leveraging modern technologies, these startups often push the boundaries of what's possible, driving the industry forward.

So, while we continue to watch and admire the progress made by all players in the ancillary space, it's worth giving these innovative startups an extra close look.



4 RESHAPING AIRLINE JOURNEYS: THE UNFOLDING SAGA OF VIRTUAL INTERLINING



Framework

From OLD to NEW – The Transition in the Airline Business



Source: OAG Analysis

www.oag.com

Inventory

From network agreements to Virtual Interlining



DOHOB



In this chapter, we will dive into a transformative shift within the airline industry that is set to have far-reaching impacts not only on airlines but also on travelers: the move from traditional code-sharing and network agreements to Virtual Interlining.

This transformation is reshaping the boundaries of the airline industry and re-defining how airlines manage and monetize their inventories. Importantly, it also massively expands the range of options available to travelers.

Our exploration will navigate through three main areas:

➔ **The Evolution of Airline Agreements:**

We will trace the journey from initial code-sharing agreements to formal network agreements, culminating in the advent of Virtual Interlining over the past decade.

➔ **The State of the Virtual Interlining Market Today:** We will assess the

current market size and its potential for future growth. As well, we will provide an overview of the pioneering Virtual Interlining initiatives by major airlines and airports.

➔ **Tech Ecosystem Surrounding Virtual Interlining:** We will highlight the most innovative Travel Tech startups in the Virtual Interlining space, illustrating the evolving tech landscape underpinning this trend.

This transformation represents both a challenge and an opportunity for airline managers, necessitating a careful strategy formulation.

The reactions to the Virtual Interlining movement have varied significantly among airlines over the past ten years, with some carriers demonstrating more reluctance than others. As we delve deeper into this trend, we aim to shed light on its potential implications and opportunities for the airline sector.

UNRAVELING THE LAYERS OF AIRLINE COLLABORATION

In the complex world of aviation, airlines have established different layers of **alliances** to maximize operational efficiency, extend networks, and improve the passenger experience. These partnerships evolved in stages, with each layer building upon the one before, from the fundamental interline agreements to more integrated codeshare alliances, and ultimately, the tech-enabled Virtual Interlining.

INTERLINE AGREEMENTS: INITIATING GLOBAL AIRLINE COOPERATION

Interline agreements have served as the basic foundation for airline cooperation, with the International Air Transport Association (IATA) introducing the concept **as early as 1947**.

These agreements kicked off the collaborative nature of the airline industry.

Interlining agreements essentially represent a passenger service agreement for flights between two different airlines. They effectively smooth out the customer experience by including provisions for baggage handling, check-in agreements, and even offering the possibility of re-booking through another airline if a flight is canceled.

Interlining agreements have grown increasingly complex over the past few decades. These have gone on to regulate different aspects of a partnership and entail a number of expenses including GDS distribution fees, IATA agency commissions, e-ticket agreements and charges, and much more.

CODESHARE AGREEMENTS: EXPANDING AIRLINE NETWORKS

Building upon the foundational interline agreements, the 1960s saw the advent of **codeshare agreements**. The inception occurred in the US when Allegheny Airlines (which would later become USAir) agreed to **the first codeshare** with a commuter airline in 1967.

Following the deregulation of the US domestic market in the 1970s, this practice started gaining popularity.

Codeshare agreements represent a collaborative strategy between carriers to extend their networks. Such agreements allow airlines to market a seat on another airline's flight as if it were their own, thereby broadening their coverage. Although these agreements are common among airline alliances like Star Alliance, OneWorld, or SkyTeam, they are not exclusive to them. Many alliance members also establish codeshares with airlines outside their respective alliances. This strategy enhances the variety of offerings airlines can present to their customers and aids in optimizing the load factor, creating a mutually beneficial situation.

The term codeshare agreement **was officially introduced** with Qantas and American Airlines in 1989. They jointly offered a hub-and-spoke-style service using their home bases at the airports in Los Angeles, Sydney, and Melbourne. Europe saw a surge in codesharing agreements in the 1990s, driven by EU deregulation. The codeshare system gave airlines access to more routes without having to operate flights to those destinations themselves, thus broadening their reach and enhancing customer offerings.

VIRTUAL INTERLINING: BREAKING BOUNDARIES IN AIR TRAVEL

In a bold challenge to conventional practices, **Virtual Interlining** is reinventing the principles of airline inventory. Markedly departing from traditional interline and codeshare agreements, this model was first brought into the mainstream by **Kiwi.com** and **Dohop** in the early 2010s. Unlike preceding agreements, Virtual Interlining relies not on formal collaborations between airlines, but on innovative technology solutions and entrepreneurial acumen.

These trailblazers initially purchased single-flight segments through booking systems like Sabre and Amadeus. They then re-packaged them into comprehensive travel itineraries with added services, such as reimbursed hotel costs for missed connections and vouchers for alternative flights, while also providing phone helpline support.

Emboldened by Kiwi.com and Dohop's pioneering efforts, airlines themselves began to investigate the promising field of Virtual Interlining. A prime example of this is the Dohop-enabled **"Worldwide by easyJet"** initiative, which was launched in 2017. This marked a significant industry development as airlines began to proactively embrace and integrate Virtual Interlining into their business models, setting a new precedent for the sector, as highlighted in this **FocusWire profile**.

The concept of Virtual Interlining goes hand in hand with the emergence of self-connecting travel. Essentially, it strings together single flights, enabling a network of connections that would otherwise be unavailable under traditional interline or codeshare agreements.

However, with this innovative approach comes a unique set of challenges. As these flights operate independently, passengers must re-claim and re-check their baggage at each connection. Furthermore, without the benefit of established airline collaborations, travelers are not eligible to use the customs-free transit area typically available for traditional connecting flights.

The benefits of Virtual Interlining thus tend to be more pronounced within visa-free areas, such as the United States and Canada, or within Europe's Schengen area, where immigration procedures are streamlined.

Despite these hurdles, the concept of Virtual Interlining has rapidly evolved, driven by technology providers who have facilitated the booking process and created safeguards to address these issues. For example, many Virtual Interlining providers offer insurance packages to cover the potential costs of missed flights. This not only provides a safety net for travelers but also contributes to enhancing the overall user experience, thus accelerating the adoption of Virtual Interlining within the travel industry.



VIRTUAL INTERLINING TODAY: SEIZING OPPORTUNITIES AMID CHALLENGES

In the wake of Virtual Interlining’s emergence, the concept has gained considerable traction, despite its inherent challenges. The idea of providing more flexible, convenient, and, most importantly, cheaper routes for passengers resonates strongly in today’s fast-paced, consumer-driven world. The inconvenience of baggage handling and potential disruption of missed connecting flights are operational hurdles yet to be entirely overcome.

Nonetheless, the buzz surrounding Virtual Interlining is undeniable. It is transforming into a mainstream concept, with an increasing number of airlines and traveltech startups recognizing its potential to redefine the industry.

EXPLORING THE VIRTUAL INTERLINING MARKET: A BEACON OF RAPID GROWTH

Quantifying the exact size of the Virtual Interlining market is no small feat.

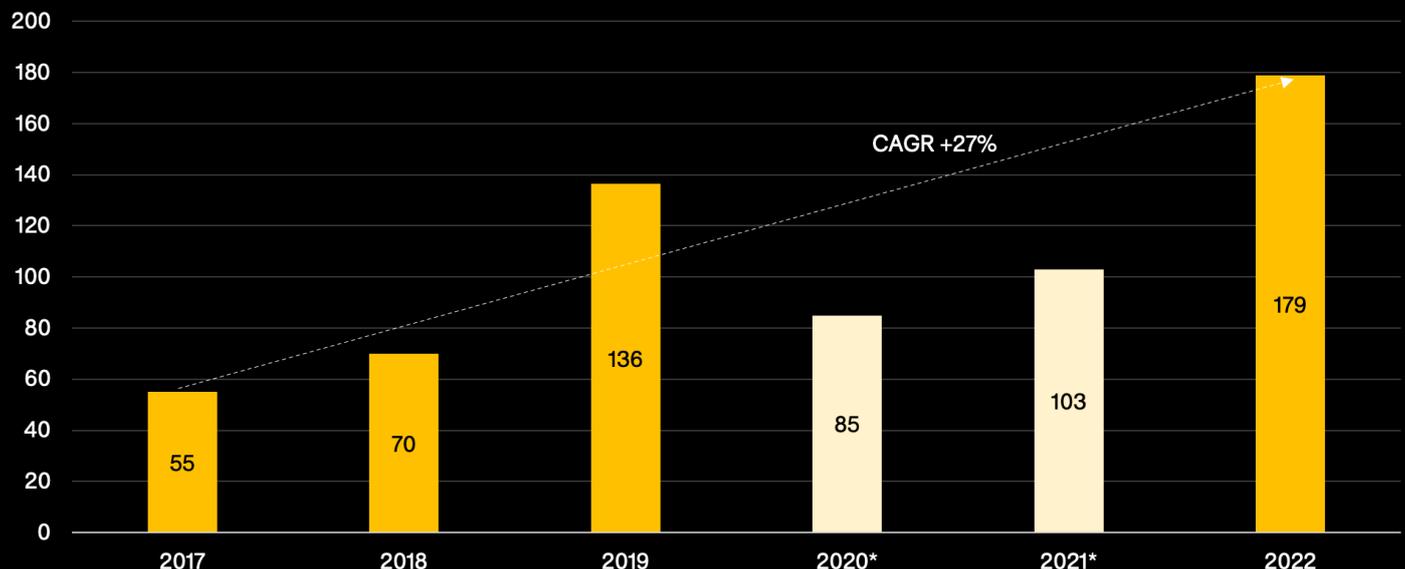
However, from collating estimations from industry-leading sources such as PhocusWire, Amadeus, and ICF Next, a compelling picture begins to emerge.

Our market model indicates that the number of self-connecting passengers – those booking connecting flights from different airlines without interlining agreements directly themselves or via dedicated Virtual Interlining platforms – has grown from 55 million travelers to an estimated 179 million in 2022.

Overview

The Growing Virtual Interlining Market

In millions of self-connecting passengers globally



*Pandemic impact
Source: OAG Analysis, PhocusWire, ICF Next, Amadeus

This substantial rise translates to an impressive compounded annual growth rate of 27% over the past six years, despite the massive drop in overall flights during the pandemic.

Some sources, **such as Airsiders**, are even more optimistic, estimating that the number of self-connecting flights has quadrupled within the past year alone. Adding to these promising projections, **TripStack**, a Virtual Interlining content provider, anticipates that Virtual Interlining could soon account for **12 to 15% of all flight bookings sold**. This would correspond to over 500 million passengers annually, based on the 4.7 billion annual passengers recorded pre-pandemic. **Amadeus confirms** that

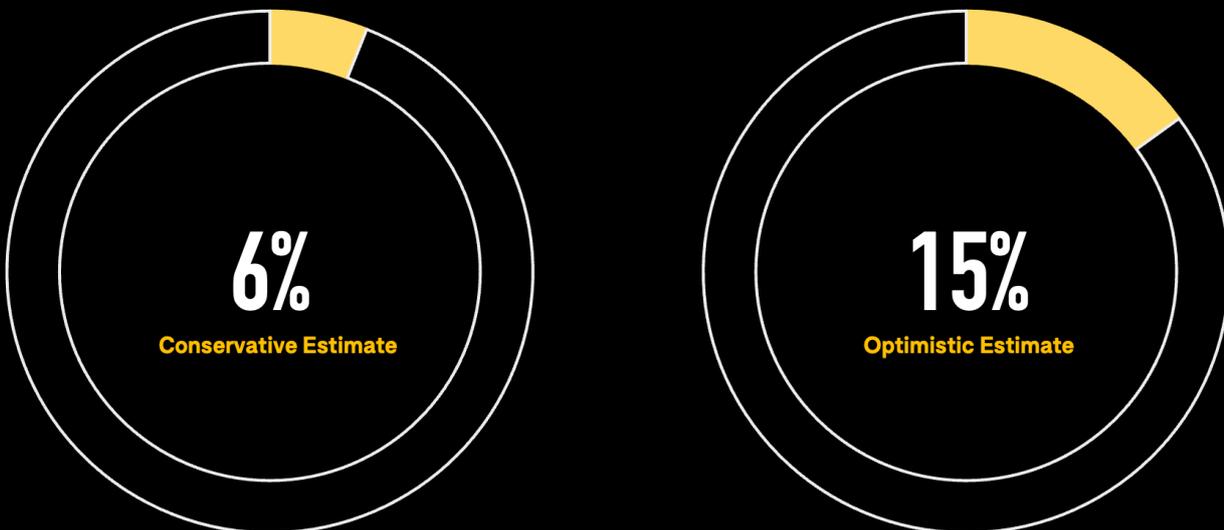
selected airlines have already reached a 12% Virtual Interlining threshold in 2021.

Regardless of the exact figures, the trend is clear and indisputable: the appeal of Virtual Interlining is on the rise.

An increasing number of travelers are choosing to self-connect, handpicking airline flights that meet their specific needs, and notably, helping them save money. In fact, **research by ICF** shows that almost all self-connecting trips include at least one segment flown by a low-cost carrier. This cost-saving motivation underpins the rapidly expanding allure of Virtual Interlining, and it's a trend we believe will continue to gather momentum in the years to come.

Comparison

Self-Connecting Share of Global Airline Passengers in 2023



THE UNSTOPPABLE MOMENTUM OF VIRTUAL INTERLINING

The burgeoning appeal of Virtual Interlining is undeniable, and its growth trajectory is poised to maintain its momentum. The key reason for this trend is the flexibility and cost savings it provides to passengers. If the technical obstacles currently associated with self-connecting, like baggage check-through, could be overcome, it's likely we would see a surge in travelers choosing to self-connect.

This was already evidenced by a comprehensive study we did in 2016. Surveying close to 3,000 travelers, **we found** that an astounding 92% stated they would be willing to self-connect under the right circumstances.

Significantly, younger generations like Millennials were twice as likely to opt for self-connecting, reinforcing the significance and future potential of Virtual

Interlining. With their increased comfort level around technology and self-service, these younger demographics are likely to drive the continued growth of Virtual Interlining as they mature into frequent flyers.

MAJOR HURDLES IN THE SELF-CONNECTING JOURNEY

The rise of Virtual Interlining has undeniably caught the attention of the global traveling community.

However, this innovative model is not without its share of obstacles.

Interestingly, these challenges haven't significantly shifted over the years. As identified in one of our **traveler surveys** among North American customers, there are three persistent concerns that keep travelers from widely embracing the self-connecting trend.

Overview

Today's Hurdles in the Self-Connecting Journey

1

Fear of Flight Irregularities



The fear of missing a connecting flight due to delays or cancellations and the subsequent rebooking difficulties.

2

Baggage Handling Concerns



The uncertainty of transferring bags between flights from different airlines often deters travelers from Virtual Interlining.

3

The Planning Paradox



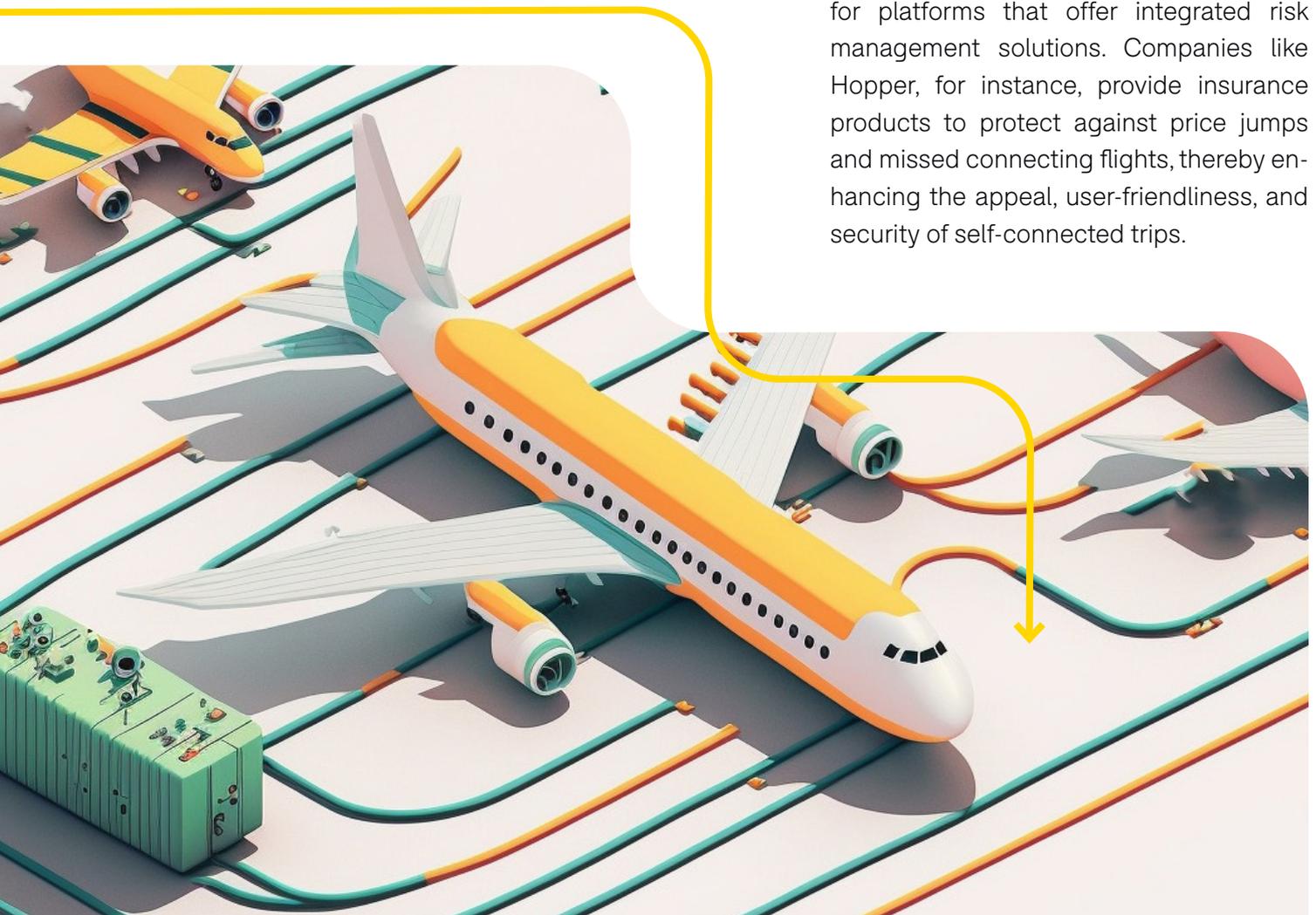
The time and effort required to plan a self-connected trip, including managing various airline bookings, can be overwhelming.

Fear of Flight Disruption: A major concern for passengers, heightened in recent times due to the persistent chaos induced by the pandemic, is the fear of missing a connecting flight due to unforeseen delays or cancellations. The ensuing difficulties of rebooking flights in the absence of network agreements between airlines compound these anxieties. The ongoing issues like system crashes, as illustrated by the **IT disaster**, have served to exacerbate these fears. Flight irregularities, far from being rare occurrences in the airline industry, are widely acknowledged *the major pain point* for passengers.

Baggage Handling Concerns: In light of labor shortages at airports and strikes, notably among baggage handlers, the concern about the successful transit of checked baggage to the final destination

has escalated. These circumstances have introduced an added layer of complexity and uncertainty to the process of transferring bags between flights, especially when those flights are operated by different airlines. This has become a significant deterrent for travelers considering self-connected journeys, adding to the mounting challenges in the travel industry..

The Planning Paradox: The final prominent hurdle is the daunting amount of time and effort required to meticulously plan a self-connected trip. Navigating different airlines' booking platforms and aligning flight schedules can become overwhelming for many, potentially overshadowing the cost benefits offered by self-connecting flights. This issue underscores not only the growing appeal for more intuitive, streamlined booking platforms capable of seamlessly coordinating multiple flight segments, but also the increasing demand for platforms that offer integrated risk management solutions. Companies like Hopper, for instance, provide insurance products to protect against price jumps and missed connecting flights, thereby enhancing the appeal, user-friendliness, and security of self-connected trips.



And Hopper is certainly not the only company addressing these challenges. The exponential growth of Virtual Interlining specialized booking platforms over the past few years perfectly exemplifies the Planning Paradox. For instance, **Kiwi.com** has seen a meteoric rise in its gross revenues, escalating from **€150 million in 2015** to an astounding **€2.1 billion in 2022**. Such growth underlines the market's desire for and recognition of efficient platforms that facilitate Virtual Interlining, signifying a solid foundation for the continued expansion of this trend.

VIRTUAL INTERLINING: THE FUTURE TRAJECTORY

As we navigate the dynamic landscape of airline inventory and alliance strategies, it becomes increasingly clear that Virtual

Interlining is more than a fleeting trend. This rapidly evolving model, enabled by innovative technology and changing consumer behaviors, is disrupting the established norms of the airline industry.

As it continues to permeate the sector, we now turn our attention to the potential future of Virtual Interlining. How might this trend continue to evolve?

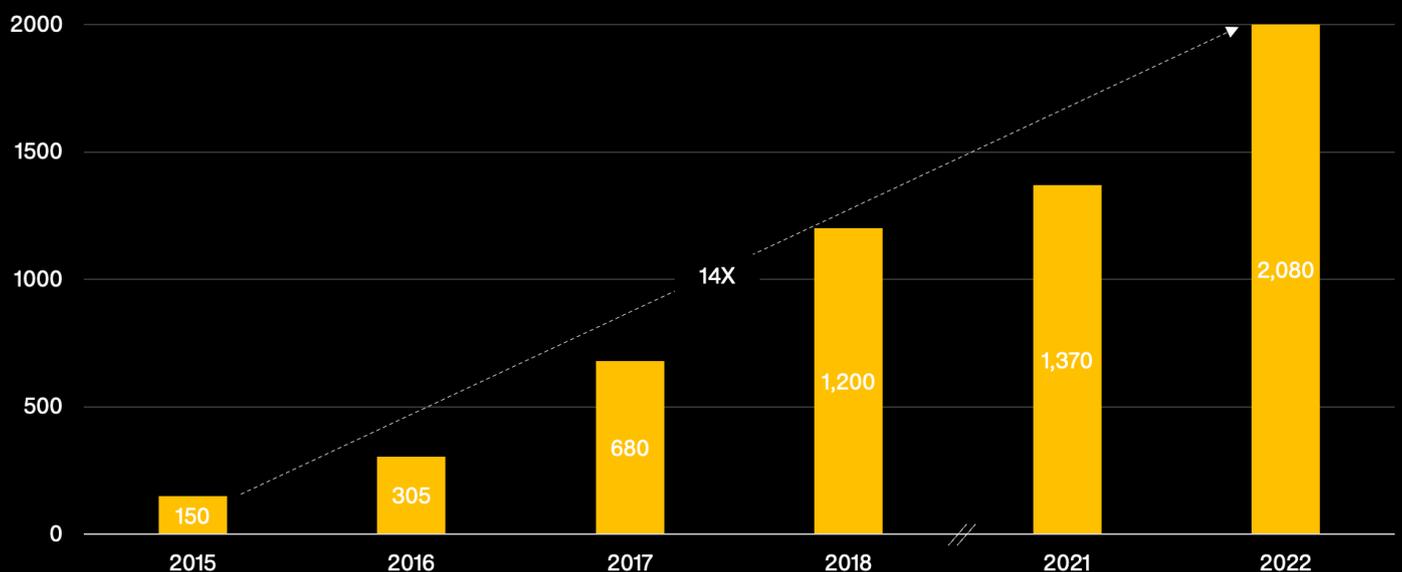
What new opportunities could emerge?

To gain a clearer picture, let's delve deeper into three significant sub-trends that are set to further shape the trajectory of Virtual Interlining in the years to come.

Overview

Kiwi.com's Impressive Revenue Trajectory

In million €



Source: OAG Analysis, Kiwi.com, Deloitte

Overview

The Future of Virtual Interlining

1

Airports Taking Over Control



In the future of Virtual Interlining, airports will take a more active role, streamlining self-connection processes and offering services to improve passenger experiences.

2

Virtual Interlining Going Multimodal



Virtual Interlining will embrace multi-modality, incorporating various travel forms such as trains and long-distance buses. This shift recognizes that journeys extend beyond the airport.

3

Airlines Embracing Virtual Interlining



Airlines are increasingly harnessing emerging tech to embrace Virtual Interlining, enhancing customer choice. Collaborations with tech players like OAG, whose data enables seamless interlining, underscore this dynamic shift.

Source: OAG Analysis

www.oag.com

AIRPORTS STEPPING IN: THE CHANGING ROLE IN FACILITATING SELF-CONNECTIONS

Airports play a crucial role in the airline industry's ecosystem, and their significance is not lost in the context of Virtual Interlining. Indeed, airports stand at the forefront of opportunities to streamline the self-connection process and mitigate existing pain points. By designing services to expedite passenger processes, airports can reduce the risk of missed connecting flights, assist with baggage recheck and reclaim procedures, and provide on-site help, thereby enhancing the self-connecting experience.

An example of such innovation is Budapest Ferenc Liszt International Airport (BUD), which, in collaboration with Kiwi.com, launched **a new service, "bud:connects."** The service, aimed at self-connecting passengers, seeks to minimize airport

connecting times by offering assistance directly within the airport. Kiwi.com operates self-transfer desks in each of Budapest Airport's terminals to facilitate seamless transfers between airlines.

Similarly, Marseille Provence Airport has introduced a **Smart Pass service**, providing self-connecting passengers with fast-track access through the airport, along with discount vouchers for duty-free shops and restaurants. The service's goal is to expedite connection times, optimize stop-over traffic, and ultimately, elevate the passenger experience.

Further stepping up to the self-connecting challenge, several airports like London Gatwick (LGW) and Hamburg Airport (HAM) are pioneering solutions for self-connecting challenges. Both have introduced dedicated baggage drop areas within the reclaim hall and have re-designed terminal layouts for a smoother transit experience.

All these initiatives are particularly relevant for airports experiencing a **high volume of self-connecting flights**. As Virtual Interlining continues to gain momentum, we can expect more airports to explore similar service offerings, embracing their evolving role in this dynamic landscape.

VIRTUAL INTERLINING BEYOND THE SKIES: EMBRACING MULTIMODAL TRANSPORTATION

The world of Virtual Interlining is not confined to the skies alone. An evolution towards connected travel journeys demands the incorporation of various forms of mobility, including trains, long-distance buses, and shared urban mobility options. This movement recognizes that travel does not begin and end at the airport but encompasses the entire journey to and from the airport, thereby necessitating intermodal travel.

Several significant strides have been made towards this integration:

- ➔ Kiwi.com, for instance, has already begun combining air travel with ground transportation options.
- ➔ Meanwhile, **in Italy**, passengers arriving at Rome Fiumicino airport by train with Trenitalia, and holding an onward ITA Airways ticket to any domestic or international destination, can conveniently check in and drop off their luggage directly at the station via dedicated FCO Connect desks serviced by Swissport.
- ➔ A pioneering initiative has been launched in Germany, where Deutsche Bahn (DB), the national railway company, has become the world's **first Intermodal Partner of Star Alliance**. This model ingeniously combines airlines with railways, linking loyalty systems and facilitating seamless transit between airports and train stations. Star Alliance aims to extend its intermodal partnerships in the future, marking a promising trend in the realm of Virtual Interlining and intermodal travel.



EMBRACING TECHNOLOGY: AIRLINES VENTURING INTO VIRTUAL INTERLINING

In a significant shift in the aviation landscape, airlines are increasingly embracing emerging technology to proactively engage with Virtual Interlining offerings. While they were initially hesitant, airlines are now recognizing the undeniable value in enhancing customer choice through Virtual Interlining.

This evolving dynamic has led to closer collaborations with key technology players and data integrators, including our team here at OAG. We handle vast volumes of data, stemming from multiple sources across diverse formats and technologies. Every day, we process millions of schedule changes and flight status updates from hundreds of airlines, delivering these changes to our customers in near real-time. Our ability to synchronize data into a single source through advanced technology is becoming increasingly essential for companies like Kiwi, Dohop, and Hopper ([see more details here](#)) to facilitate seamless interlining trips. Our offerings include robust schedules, comprehensive flight status data, and detailed minimum connecting time data. Additionally, we evaluate the “risk” of connections by analyzing historical cancellation rates and flight

delays. These data points play a critical role in the successful execution of Virtual Interlining, [see the case of Dohop](#).

Several airlines have recently embarked on initiatives to capitalize on Virtual Interlining.

- ➔ A year ago, a virtual interlining agreement was launched [between Jetstar and IndiGo](#), giving travelers in India and Southeast Asia more options to book low-cost fares with both airlines through one platform.
- ➔ Last September, [Thai Vietjet](#), as well as [Jazeera Airways](#), have both partnered with Dohop to allow their customers to book tickets across airlines that do not have traditional interline or code-sharing agreements.
- ➔ In December 2022, [Airasia partnered with Kiwi.com](#) to transform the carrier into the ASEAN super app for travel and lifestyle. Kiwi.com provides the app with flights to over 3,000 destinations worldwide.
- ➔ Another noteworthy initiative [was launched](#) last February when Aegean Airlines introduced the Dohop Virtual Interlining platform to expand connectivity.

These initiatives highlight the shift in airline strategies and the future of Virtual Interlining. Airlines and technology players are converging to create an integrated and flexible travel ecosystem.

The confluence of these emerging trends – active airport involvement, multimodal integration, and airlines’ embrace of technology and data – is creating a fertile ground for innovation.

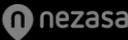
Recognizing the potential of Virtual Interlining, an array of companies has ventured

into this field, each bringing unique solutions to address the complexities of self-connecting flights. They range from dedicated startups centered around this technology to established OTAs and booking platforms incorporating Virtual Interlining as an additional feature.

To conclude our exploration of Virtual Interlining, let’s spotlight these two distinct groups – the Virtual Interlining Specialists and the Virtual Interlining Generalists – each contributing in their own way to reshape the future of the airline industry.

Overview

The Virtual Interlining Company Landscape

Virtual Interlining Specialists	
	
	
	

These trailblazers in the airline industry have built their platforms around the concept of Virtual Interlining. They specialize in enabling multi-airline, multi-ticket trips and take pride in their ability to navigate the intricacies of Virtual Interlining.

Virtual Interlining Generalists	
	
	
	

This group includes established OTAs and booking platforms. For them, Virtual Interlining is an added feature, complementing their diverse services. Recognizing the demand for self-connecting flights, they incorporate Virtual Interlining as one part of their multifaceted offerings.

5 MAXIMIZING FLEXIBILITY: THE INNOVATIVE TRANSFORMATION OF AIRLINE PAYMENTS



As the digital revolution continues to reshape the airline industry, new payment methodologies have emerged to cater to changing consumer behaviors and technological advancements.

This shift, much like the transformations brought about by next-gen Revenue Management, New Distribution Capability (NDC), Ancillaries, and Virtual Interlining, is propelled by the dual engines of innovative technology and evolving consumer needs for more flexibility and convenience in booking air travel.

Today’s air travelers are increasingly seeking the ease and immediacy of e-commerce experiences like Amazon when booking flights. To meet these expectations, airlines and Travel Tech providers are eagerly innovating to deliver smooth, seamless, and flexible payment experiences.

In this chapter, we aim to explore the fascinating intersection of travel and fintech, a melding of disciplines that are redefining payment methods in the airline industry.

Before diving into the specific innovative mechanisms, we first seek to provide a broad understanding of the importance and relevance of the payment sector within the context of airlines. This overview sets the stage for appreciating the magnitude and implications of the shift that’s currently underway.

With the foundations laid, we will subsequently delve into three transformative approaches, each with unique benefits and challenges, contributing to the exciting evolution of the air travel payment landscape:

- ➔ Air ticket price freezes
- ➔ Subscription plans
- ➔ Buy-now-pay-later or installment schemes

Framework

From OLD to NEW — The Transition in the Airline Business



Payment

From fixed to flexible payment schemes



THE HIDDEN VALUE IN AIRLINE PAYMENTS

Examining the airline industry through the lens of payment methods, it may initially seem as though this area lacks significant pain points for travelers and, thus, commercial importance for airlines. However, such a view tends to underestimate the enormous impact even slight improvements can have on an airline's bottom line.

Consider the vast scale of payment transactions in this context: every year, approximately 2.9 billion payment transactions for airline bookings occur globally, **according to McKinsey**, representing a value of around \$803 billion USD in 2023, **as projected by IATA**.

Such immense volumes of business transactions come with a hefty price tag. The airline industry shells out over \$20 billion USD annually on payment costs alone, as reported by the aforementioned McKinsey study. This equates to 2.5% of airlines' total revenue, and, even more astonishingly, more than 2x the industry's **expected net profit in 2023**.

A significant chunk of these expenses can be attributed to the extensive use of credit cards, which account for around 70% of retail transactions. While undeniably convenient for customers, credit card payments impose considerable costs on airlines. However, it's worth noting that this is not universally the case.



For certain airlines, having their own branded credit cards via strategic partnerships can be extremely profitable. These cards, often offering rewards and travel benefits, can generate significant revenue, offsetting the cost of transactions and creating a strong customer retention tool. Nonetheless, the broader issue of payment costs in the industry persists and necessitates innovative solutions.

But the implications of payment methods within the airline industry extend beyond the realm of cost reduction. Indeed, the evolution of payment methods offers new opportunities for airlines. By diversifying payment options and enhancing flexibility, airlines can sell a range of modular

protections for flights, hotels, car rentals, and even alternative accommodations—a subject closely related to our deep dive into Ancillaries.

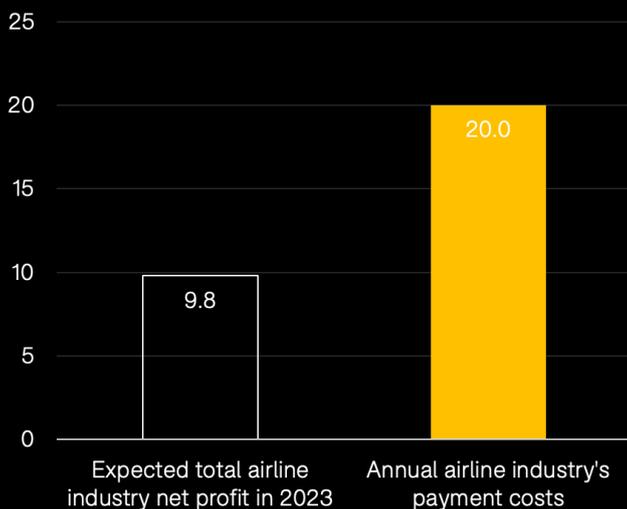
Above all, it's about delivering more flexibility in travel bookings. By providing an array of payment options, airlines could potentially expand their market reach and attract new customer segments. **McKinsey projects** that through strategic advancements in payment methods, airlines could generate an additional \$14 billion USD in value by 2030. This prediction underscores the fundamental role payment innovations will play in shaping the future of the airline industry.

Overview

More Innovative Payment Systems Benefit The Airline Industry In Two Ways

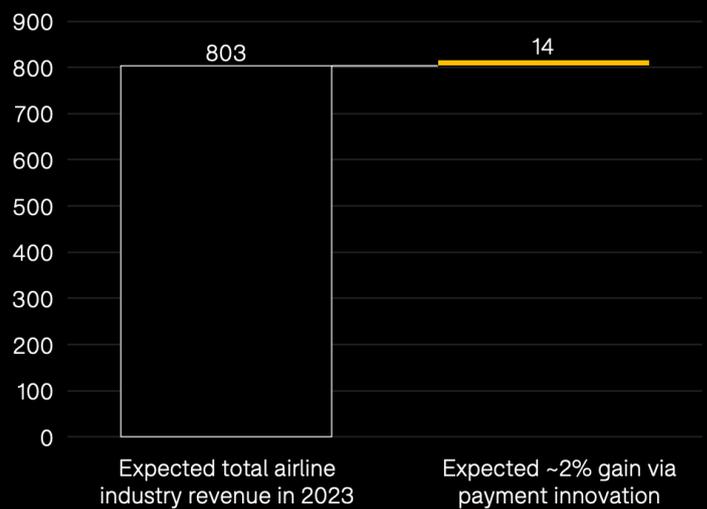
Save Costs

In \$ Billion



Increase Sales

In \$ Billion



THE UNDER-EXPLORED TERRAIN: AIRLINE PAYMENTS

Despite the significant value at stake, payments remain an oftentimes under-addressed strategic topic within the airline industry. Given its pivotal role as the connector between airlines and customers, payments form an essential part of future retailing strategies.

Surprisingly, the sector often lacks the requisite transparency and engagement. Airlines frequently overlook the importance of monitoring payment and transaction data. KPIs such as payment success rate, cost per transaction, chargeback rate, payment method mix, and customer retention rate through branded credit cards are often underutilized. The creation of dedicated roles to focus on these metrics could lead to substantial improvements in efficiency and profitability.

The inability to capitalize on the link between payments and customer experience is another shortfall, with these domains typically managed as separate entities within an airline organization. This segregation may contribute to the high shopping cart abandonment rates seen on airline websites, **which can soar up to 90%**.

However, payments are not just about financial transactions – they play an integral role in the customer journey, with each touchpoint presenting potential revenue-generating opportunities. **According to McKinsey**, there are up to ten payment-related touchpoints along the typical customer journey.

Thus, airlines are poised to enhance the retail customer payment experience, especially in direct channels, to reduce dropouts and unlock considerable value.

Comparison

Airlines Face Extremely High Booking Abandonment Rates

Online shopping cart abandonment rates



THE MELDING OF TRAVEL AND FINTECH

In recent years, the travel industry has made strides in the innovation of payments, recognizing the immense value inherent in this sphere.

According to the Amadeus **Travel Fintech Research Report**, the majority of travel businesses consider fintech and payments as a priority, with more than 80% intending to maintain or increase their pre-pandemic investment levels.

This has propelled intermediaries, including online booking platforms and travel agencies, to earmark payments as a key differentiation opportunity, with larger entities

investing in fintech solutions to streamline the end-to-end payment journey.

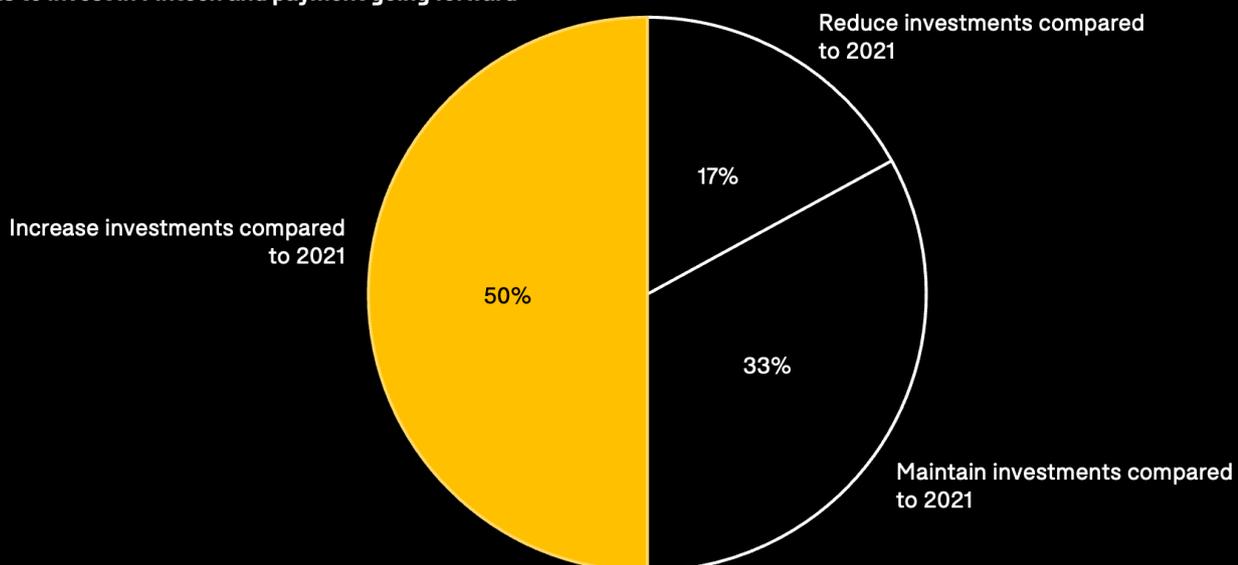
A discernible trend is the convergence of travel and fintech sectors, a phenomenon that gained momentum in the post-pandemic landscape, as **PhocusWire concludes**.

The race to provide an integrated travel, payment, and tech platform to capture the traveler’s journey has stimulated this development. Intriguingly, this convergence manifests bidirectionally: while financial behemoths and fintech providers venture into the travel domain, travel providers reciprocate by building or incorporating fintech offerings.

Survey

Payment Innovation Is Viewed As A High Priority

Share of travel companies in 2022 and their spending plans to invest in Fintech and payment going forward



Some noteworthy examples include banking giants like **Citi** (in collaboration with Booking) and **Capital One** (with the help of Hopper) launching travel platforms, while JP Morgan is spearheading a **full-service travel business** initiative.

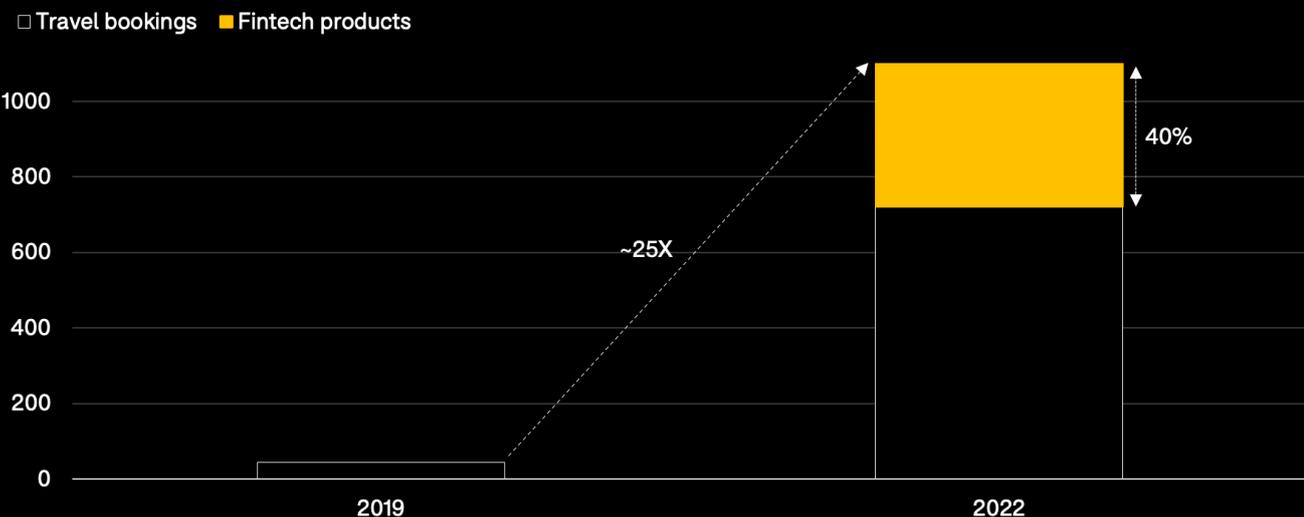
On the flip side, travel companies like Booking Holdings and Amadeus have created dedicated **fintech units** or separate **payments businesses**.

A standout case is Hopper, which significantly expanded its fintech product suite in 2019, leading to these products constituting about 40% of its total revenue in 2022, as **reported by Skift**. This underscores Hopper’s early identification and successful capitalization on this strategic area.

Overview

Hopper’s Strategic Bet On Fintech Has Literally Paid Off

Hopper’s revenue trajectory in million USD



Source: OAG Analysis, Skift, Hopper statements

Overview

Three Transformational Approaches To Redefine Airline Payments

1

Air Ticket Price Freezes



Price Freezes offer customers the ability to lock in fares for a defined period, effectively mitigating the widespread pain point of fluctuating ticket prices, and significantly reducing shopping cart abandonment rates.

2

Airline Subscription Plans



Subscription Plans offer regular flat-fee access to flights over a specific time period, adopting a familiar consumer model to the airline industry and potentially increasing customer loyalty and steady revenue streams.

3

Buy-Now-Pay-Later



Buy-Now-Pay-Later (BNPL) allows consumers to split travel costs into interest-free installments, enabling more financial flexibility and potentially increasing conversion rates and average order value.

Source: OAG Analysis

www.oag.com

As we traverse the evolving landscape of travel booking and payment methods, the digital transformation journey promises to alleviate payment friction, adding another layer of convenience for travelers.

To shed light on the tangible benefits of this trend for travelers, we will now delve into the three areas we mentioned earlier: air ticket price freezes, subscription plans, and buy-now-pay-later schemes.

PRICE FREEZES: TAMING THE FLUX IN AIRFARES

One of the enduring pain points for travelers has been the frustrating fluctuations in air ticket fares. This irritation has become increasingly relevant due to the airlines' shift towards dynamic and even continuous pricing.

While these pricing techniques help airlines maximize revenue and load factor,

they often lead to customers second-guessing their purchase decisions, wondering if they might secure a better deal later. This uncertainty likely contributes to the above-average shopping cart abandonment rates we discussed earlier.

Travel tech company Hopper was among the first travel booking platforms to address this concern by introducing so-called "Price Freezes." With this feature, customers can freeze a quoted price for a small surcharge, securing that price for up to 21 days while they finalize their plans. If the cost of the booking rises during this period, Hopper covers the difference up to \$100 USD. Conversely, if the price drops, the customer pays the lower rate. The average cost of a Price Freeze policy is around \$30 USD, but according to Hopper, travelers using this option have saved an average of \$80 USD on their tickets, with average savings rising to \$200 USD for flights booked during holiday times.

Although Hopper is a well-known pioneer of the price freeze feature, it is not alone in offering this service. Our research has identified more than 30 booking platforms that offer similar options under various names such as “Secure Price,” “Hold Price,” and “Keep Fare.”

Interestingly, WizzAir’s “Fare Lock” was introduced **as far back as 2017**, even before Hopper popularized its Price Freeze. The latter has now been white-labeled and is offered by numerous other travel providers, including **Trip.com**, **Agoda**, **Amadeus**, **JetBlue**, and **MakeMyTrip**.

FLIGHT SUBSCRIPTIONS: THE EMERGING TREND IN AVIATION

In recent years, the subscription economy has permeated every aspect of our lives. We pay flat fees for streaming services, expedited deliveries, online storage, and much more.

Interestingly, the airline industry, typically an early adopter of pricing innovations, is only now beginning to fully incorporate subscription models into its services. However, it’s worth noting that travel poses a unique challenge when it comes to subscription services. Unlike the frequent usage patterns seen in music streaming, for example, travel tends to be a “low volume, high value” activity. This means that making subscription models work effectively in this context might prove more challenging when compared to services consumed on a more regular basis.

Nonetheless, there are promising initiatives that are exploring and overcoming these challenges in exciting ways. The concept is simple: customers pay a regular flat fee granting them access to specific flight services for a predetermined period. Here are several promising airline initiatives emerging in recent times:

- ➔ WizzAir and Caravelo’s partnership **introduced the “Flight Pass,”** allowing subscribers two round trips per month for a monthly fee starting at \$49. The service has been particularly successful among millennials, Generation X, and Gen Z travelers.
- ➔ Alaska Airlines also **launched a flight subscription program** in partnership with **Caravelo**.
- ➔ Frontier Airlines rolled out its **GoWild all-you-can-fly pass** in May of this year.
- ➔ Volaris in Mexico and Air Asia in Malaysia have launched flight subscription products, reportedly with **promising results**.

As the subscription model continues to transform industries globally, airlines are waking up to the benefits of consistent revenue and customer loyalty these plans can deliver.

It’ll be fascinating to see how this trend develops and impacts the future of airline commerce.

THE BUY-NOW-PAY-LATER WAVE IN AIR TRAVEL

Buy-now-pay-later (BNPL), a burgeoning (and heavily debatable) trend in the online retail landscape, is now making its mark in the airline industry. This financial tool lets consumers split retail transactions into smaller, mostly interest-free installments that they can repay over time, making it an attractive option for those who value financial flexibility.

However, it's important to recognize the context within which BNPL schemes are growing. Their uptake is likely linked not just to their availability and convenience, but also to economic circumstances, levels of disposable income, inflation, and other economic factors limiting people's purchasing power. Some observers have raised concerns about these schemes, suggesting they utilize a tougher economic environment and may exploit people's desire to spend beyond their means. While BNPL can provide beneficial financial flexibility, it's crucial to bear in mind the potential risks and drawbacks of overextending financially.

Undoubtedly, the adoption of BNPL has seen a dramatic increase over the past five years. In the United States alone, it's estimated that nearly a quarter of the population – approximately 59 million people above the age of 14 with internet access – used BNPL at least once in the past year, **according to Insider Intelligence**. This is in stark contrast to 2018, when less than 2 million people (or 0.6% of Americans) had used this payment method.

This trend is not limited to the United States; the rapid adoption of BNPL is observable in most developed countries. Globally, forecasts on BNPL spending anticipate impressive Compound Annual Growth Rates (CAGR) of between **22%** and **26%** until 2030, depending on the source.

Traditionally, the travel sector was slower to embrace the BNPL trend.



In 2019, less than 1% of the total travel merchandise value was paid through deferred payments, according to research from the **Consumer Financial Protection Bureau**. However, this trend has rapidly evolved. BNPL in travel is now outpacing most other retail categories, demonstrating the vast potential for airlines and travel providers to leverage this increasingly popular payment method.

Yet, it's crucial to consider the underlying economic conditions driving this growth. For many, annual holidays and travel plans are non-negotiable – a “holy” part of their yearly summer routine. In tougher economic times, consumers may feel compelled to use installment payments to finance these trips. This necessity could be contributing significantly to the rapid adoption of BNPL in travel.

Critics, therefore, question whether the rise of BNPL is truly a sign of innovation or if it's more a response to economic necessity.

Regardless of these debates, the trend's momentum in the travel industry is

undeniable and suggests an avenue that airlines and travel providers can't afford to ignore.

Current survey data reinforces the huge potential of BNPL within the travel sector going forward.

- ➔ **According to Amadeus**, approximately 40% of travelers would consider using BNPL to book their next summer vacation.
- ➔ Even more strikingly, almost 70% of travelers revealed that they would be willing to spend more on a given trip if offered a BNPL payment option.

These attitudes are also reflected in real-world booking behavior.

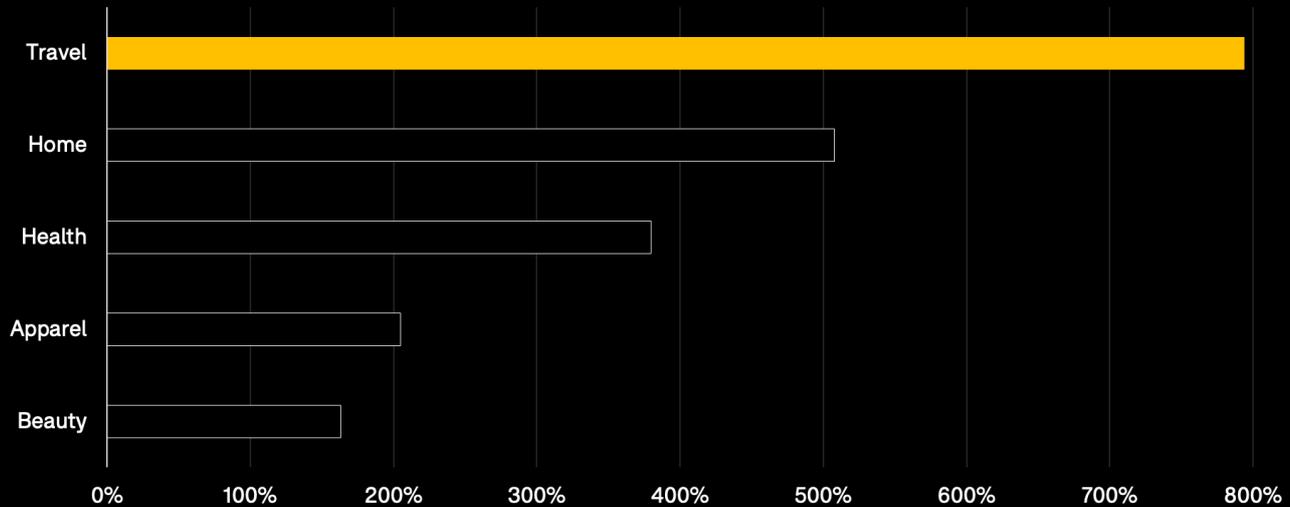
An **iSeatz report** found that offering a BNPL option at checkout can boost conversion rates by 20 to 30% and elevate average ticket sales by 30 to 50%.



Comparison

Travel Is Among The Fastest Growing Online Buy-Now-Pay-Later (BNPL) Categories

CAGR (2019-2021) for selected BNPL online categories



Source: OAG Analysis, cfbp data

www.oag.com

Uplift, a leading BNPL provider (recently **acquired by Upgrade**) that has partnered with more than 30 airlines, including United Airlines, Lufthansa, Air Canada, and AeroMexico, has observed a notable shift in customer behavior due to BNPL options. **According to their CEO**, consumers who would typically opt for economy seats are now more likely to purchase premium economy or even first-class tickets, demonstrating that BNPL empowers consumers to splurge on superior services.

Thus, BNPL doesn't merely facilitate payments; it actively encourages incremental sales, raises the average order value, and attracts a new customer demographic.

Yet, this potential upside for airlines may also stimulate consumers to overextend their budgets, a responsibility that providers must very carefully manage.

Nevertheless, the commercial benefits have led many airlines to experiment with BNPL features. Travel+Leisure has **compiled a list** of 16 airlines offering BNPL options, including the latest adopters like Eastern Airways, Iberia, and Jet2.

Our own OAG research indicates that more than 60 airlines are now offering BNPL in one form or another. To facilitate the implementation of BNPL, airlines commonly collaborate with a growing breed of BNPL Travel Tech startups like Uplift, **FlyNow-PayLater**, **Affirm**, **Klarna**, **Pay Later Travel**, and **Flymble**.

With the right implementation and ethical considerations, BNPL can indeed transform how consumers book and pay for their air travel, making it a key component in the digital transformation of the airline industry.

THE STRATEGIC IMPORTANCE OF PAYMENT INNOVATIONS

In conclusion, as the landscape of airline commerce continues to evolve, the intersection of travel and fintech is not just an exciting opportunity for innovation, but a strategic imperative.

By improving payment methods with approaches like Price Freezes, Subscription Models, and Buy-Now-Pay-Later schemes, airlines can prevent further disintermediation and truly tap into the full value of airline retailing.

These novel payment strategies are not only transforming the way we book and pay for travel. They are also helping to redefine the relationship between airlines and their customers.

The future of airline commerce will be shaped by airlines that embrace these

changes, seizing the opportunity to enhance the customer experience and optimize their own revenue streams.

In the visual below, we have gathered ten of the most promising Travel Tech startups leading this transformation. These startups, specifically focused on travel, represent the vanguard of this shift, reshaping the future of airline commerce one transaction at a time.

Please note that we have intentionally excluded non-travel-specific BNPL providers like Affirm and Klarna from this list. Additionally, we have included a select few Travel Membership providers, which are especially committed to enabling more affordable airline flight prices, despite the existence of many more in the wider market.

Ranking

Emerging Airline Payment Tech Players

Rank	Name	Category	Year Founded	Size	Website
1	Hopper	Price Freezes	2007	Large	hopper.com
2	Uplift	BNPL	2014	Medium	uplift.com
3	Going (Scott's Cheap Flights)	Membership	2013	Medium	Going.com
4	Kabuk Style	Subscription	2018	Medium	kabuk.com
5	Caravelo	Subscription	2015	Small	caravelo.com
6	Fly Now Pay Later	BNPL	2013	Small	flynowpaylater.com
7	Dollar Flight Club	Membership	2018	Small	dfcmedia.co
7	Airfordable	BNPL	2015	Tiny	airfordable.com
9	PayLater Travel	BNPL	2018	Tiny	paylatertravel.com
10	Flymble	BNPL	2017	Tiny	flymble.com

FINAL WORDS

In retrospect, our six-chapter report has set out to unveil the profound transition occurring in the airline industry, particularly focusing on technology's pivotal role. From revenue management, distribution, ancillaries to inventory management, and payments, the digital revolution is reshaping the industry's face.

Yet, it's crucial to note that these are just some of the dimensions of this broad and ever-evolving transition. There are countless more facets to uncover, and we are still at the beginning of understanding the full potential of technology's transformative power in the airline sector. It's a journey filled with innovation, creativity, and groundbreaking developments, one that doesn't cease with the last page of this report. This exploration serves as a substantial foundation for understanding the current state of the Airline Tech Transition, but it's only the first step.

We at OAG are committed to continually uncovering and examining the changes, challenges, and opportunities that lie ahead. Therefore, we invite you to join us on this journey and regularly visit the OAG website for further insights into the future of travel. Together, we will continue to navigate this rapidly evolving industry, always on the hunt for the next transformative trend.

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