



AIR

Airline Industry **Retailing**

WHITE PAPER



Dynamic Offer Creation

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This paper proposes Dynamic Offer Creation, a concept that leverages emerging distribution standards and enhances the relevance of offers made to consumers.

Dynamic Offer Creation involves removing the current separation between inventory and price.

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The information contained in this document is subject to regular review in the light of changing business needs of the industry, government requirements and regulations. The views expressed in this guide are based on the views and opinions of the IATA team.

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Foreword

The most favorable and efficient outcome for both consumers and suppliers in any commercial environment occurs where willingness to pay aligns with a relevant offer – where supply matches demand. In most mature industries, digital innovations have ensured that this harmony occurs, using rich data and sophisticated pricing systems. This follows a general trend in customer interactions and data exchange. Increasingly real time and automated responses to requests (using open API processes) are replacing static data, batch files and intermediary processing.

Within the airline industry, this is not the case. Airlines pioneered differential pricing and revenue management from the 1980s, and were at the forefront of using technology and data to determine and distribute dynamic price levels to the market. Today however, in the era of the internet and big data, with almost infinite processing capacity, airlines continue to create customer offers by applying predetermined static price points to limited allocations of inventory. These two separate concepts of inventory and price have been a fundamental element of the airline business for decades, and are described at length in academic literature. These inefficient legacy airline pricing processes create significant duplication of effort, and result in lost value. This impacts both airlines and their customers. Put simply, the current environment is lose-lose. For customers, pricing lacks transparency and relevance, and very often results in outcomes that do not match willingness to pay. For airlines, the current model is inefficient and complex. Often, a broad disconnect is created between the airline's intention and the pricing result.

These challenges are even more frustrating when considering the sophistication of airline forecast and optimization systems. In today's environment the dynamic outputs of these

systems are often reduced to the opening or closing of an inventory class.

These outdated legacy pricing processes are also routinely used by airlines within their direct channels (e.g., tickets sold directly by the airline on its website). This typically relates to system architecture where the 'lowest common denominator' of indirect distribution processes is utilized across all channels, even when there is conceptually no reason for this to occur.

This paper seeks to raise awareness of this issue in an objective way, and suggests that revenue management will become more effective when airlines stop separately managing inventory and price. Optimization of revenue will always be constrained until revenue management systems respond directly to requests with priced Offers for requested services. This is the concept of Dynamic Offer Creation.

This paper also outlines the aspects of Dynamic Offer Creation and describes how this can become a reality. The implementation of Dynamic Offer Creation involves a parallel transformation within distribution and internal systems that will require mindset change in the industry and significant investment in the coming years.

IATA welcomes any feedback on this white paper and hopes it will stimulate healthy industry debate.



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IATA Airline Industry Retailing (AIR) Portfolio

In 2015, IATA presented the vision of its members to enable consumers to “shop-order-pay” for air products across all retail channels. Since then, IATA member have initiated many projects, actions, events aiming at helping the airline industry to build stronger retailing processes. The objective of the AIR portfolio is to consolidate all those activities under a unique name to strongly communicate IATA’s retailing vision. AIR will become a reference providing the big picture of the industry roadmap. It is also a catalyst for innovation and speed. Industry stakeholders will refer to the AIR portfolio to support their investment and implementation decisions.

The AIR Portfolio is currently composed of 4 projects and a set of activities:

AIR projects

SHOP

NDC

Transform the way air products are retailed to corporations, leisure and business travelers.

ORDER

ONE Order

Simplify airline distribution, by modernizing the order management process.

PAY

NewGen ISS

Transform the current Industry Settlement Service model which facilitates the distribution and settlement of funds between travel agents and airlines.

Transparency in payment (TIP)

Provide airlines with increased transparency and control in the collection of their sales through the travel agency channel.

Main activities

AIR Symposium	AIR Publications	AIR Hackatons	AIR Think Tank	AIR Competition
In 2018, IATA launched the 1st ever Airline Industry Retailing (AIR) Symposium. The AIR Symposium main focus is distribution and payment from a customer perspective. The AIR Symposium provides an opportunity to showcase the results of all AIR events such as the AIR Hackathon, and the AIR Competition.	The AIR publications (White Papers, Strategy paper, Case studies, etc.) contribute to building the AIR innovation profile and ensure a consistent message across all AIR-related activities.	Building on the success of previous NDC Hackathons, the AIR Hackathons gather developers to work on innovative solutions enhancing airline retailing based on IATA standards.	The Aviation Industry Retail (AIR) Think Tank provides a platform for participants to ideate with key stakeholders across the industry. The scope covers aviation industry retail and new technology related to retailing. The objective is to identify key areas of innovation for retailing, define new concepts, deliver proofs of concepts and bring strategic partners on board at the earliest possible stage of the new AIR initiatives.	The AIR Competition aims at igniting new ideas across the travel industry. Finalists will win a range of prizes and get a chance to enter the IATA incubation program. The best ideas will be showcased on stage at the AIR Symposium.

Executive Summary

As a perishable asset, each individual airline's seats require meticulous inventory control. The airline industry pioneered Pricing and Revenue Management techniques as early as the 1980s. However, within our industry, the amount that a consumer pays for a flight is still calculated by applying predetermined static price points to limited allocations of inventory using a small number of booking classes. What was innovative and new in the 1980s has long been overtaken by the digital revolution. Running separate inventory and pricing processes creates significant duplication of effort, and lost value for airlines and consumers. In today's environment where airlines want to offer more relevant bundled products, effective revenue management cannot occur until airlines stop separately managing inventory and price, and start employing the concept of Dynamic Offer Creation.

This paper defines Dynamic Offer Creation as the construction by an airline of an Offer for a defined set of products and services, with a defined set of conditions. A Dynamic Offer is provided in real time, in response to a one-time request. Dynamic Offer Creation can unlock benefits for both airlines and consumers, relating to three key elements:

1. Contextualized and relevant Offers, referencing who is making the request
2. Total Offer Management of both flights and ancillary products
3. Continuous price points

Many aspects of existing Revenue Management systems (such as the forecaster and optimizers that calculate bid prices) may already be fit for purpose to drive Dynamic Offer Creation. For the remaining aspects of the revenue management equation, a vast new array of data sources and sophisticated algorithms can be used to optimize results: Dynamic Offer Creation allows for an enhancement of airline revenue management functions. Perceived obstacles to achieve this concept, such as regulatory or commercial requirements, can be resolved with business-rules in a Dynamic Offers engine. As in any transformation project, the main challenge will involve managing the transition, demonstrating the return on investment, and effecting a mindset change. All of these points need to be further analyzed by the industry.

While there may be opportunities to enhance existing inventory and published fare based systems and processes, to make these more "dynamic", this paper suggests that airlines should look further ahead. The future is closer than it may appear. In the context of the massive industry modernization driven by IATA's New Distribution Capability (NDC) and ONE Order programs, the airline industry is at a cross road. Investment in current systems and processes that entrench inventory and published fare based processes may divert industry resources and attention from the desired end-state.

1. Dynamic Offer Creation – Removing the Separation of Inventory Control and Price

1.1 To RBD or not to RBD?

In today's distribution environment, an airline provides sellers with availability in specific booking classes for each flight segment. These booking classes can be any one of the 26 letters of the alphabet, and are also referred to as Reservation Booking Designators or RBDs. They are used by Sellers to request inventory for one or more flight legs, in the construction of an itinerary. Some experimentation into using two-character RBDs (to increase the number of booking classes) has occurred, but the fundamental problem remains the same.

The reliance on RBDs is made even more problematic, as the industry relies on a limited set of 'cabins', (Economy, Business, First and more recently Premium Economy) to describe and display content. Every airline maintains a relatively static mapping of RBDs to cabins. This rigid cabin structure is increasingly irrelevant today as airlines continue to innovate product offerings and bundle or unbundle service offerings.

The concept of Dynamic Offer Creation is crucial to airlines' success in the digital age. It requires translation of new distribution opportunities into offering capabilities, conscientiously differentiating between legacy redundancies and proven success factors of airline commercial processes. This holds especially true for Revenue Management and can't be achieved by incremental developments.

Christian Popp – Vice President
Distribution & Revenue Management
Strategy
Lufthansa Group

In parallel, airlines also publish fares, with each fare being connected with one RBD. Fares are predetermined price points with associated rules and conditions that the airline creates, considering every possible flight or combination of flights that they may sell, and every possible customer segment that they wish to target. Airlines currently publish fares to specialized organizations managing fare and rule data, who then sell this data to third party subscribers (such as Global Distribution Systems). These subscribers use this data to drive pricing outcomes. Fare data follows a structure defined in IATA Resolutions, with further enhancements to data specifications and application defined by the fare data aggregators.

One or more published fares are applied to the customer's chosen itinerary (in addition to taxes, fees and charges) creating a total Offer to

the customer. Airlines are able to publish fares several times a day, and many airlines have tens of millions of separate fares published at any time, many of which may never be sold. Managing this data, and attempting to ensure the combination of fare data and inventory is in some way aligned and reflects commercial intent, is extremely resource intensive for airlines.

From a revenue management perspective, this gives airlines two methods of optimizing revenue. Firstly, the airline can determine which booking classes to make available on flight segments, separately or in combination with other flight segments. Secondly, the airline can determine the price point and rules to include in fares that they publish.

Moving away from booking classes presents a significant transformation, as there are many business processes that currently rely on this construct. Today's indirect distribution systems rely entirely on booking classes and published fares. Booking classes also appear throughout many surrounding processes - in corporate travel contracts, agency agreements, and interline and codeshare agreements. Internal reporting and data inputs for Revenue Management often also make use of booking classes.

Because of these dependencies, many providers in the industry often propose more incremental changes to existing processes. These proposals may involve partial improvements to revenue optimization, while still entrenching the existing framework of booking classes and published fares. Accordingly, these proposals may divert resource away from real industry transformation.

1.2 Three key aspects of Dynamic Offer Creation, and the benefits for airlines and consumers

This paper defines Dynamic Offer Creation as construction by an airline of an Offer for a defined set of products and services, with a defined set of conditions. A Dynamic Offer is provided in real time, on a one-time basis, and, in response to a request. The Offer may be constructed by any means, but should be able to be provided and referenced independently of any external inventory or fare and rule data.

Dynamic Offer Creation allows the benefits relating to three key aspects of revenue management to be completely leveraged. These benefits impact both airlines and consumers.

1.2.1 Contextualized and relevant Offers

By knowing 'who is asking' at the time of each shopping request, the airline has the full information necessary to consider all the parameters required to match supply with demand, and provide the most optimal offer.

These techniques are commonly used in many ecommerce retailing models in other industries, in conjunction with traditional Revenue Management science. These industries maintain strict compliance with data privacy regulations, and allow also "anonymous shopping", just as airlines do, where these processes are employed.

From an airline perspective, this allows the airline to encourage loyalty and ensure the customer's lifetime value is recognized. It also allows willingness to pay and demand forecasting to be more accurately determined than it is today. Willingness to pay is estimated today by techniques such as identifying Saturday night stays or advance purchase limitations, which are often sub-optimal.

The consumer also benefits by being recognized, and being rewarded for their loyalty. This already occurs at a rudimentary level today (with mechanisms such as Frequent Flyer promotional offers and corporate discounting), but can occur to an even greater extent with Dynamic Offer Creation. The consumer also benefits through better matching of supply and demand in that an airline may be willing to make a Dynamic Offer at a much lower price point than a published fare, given that they have complete control over who the Offer is being made to.

Dynamic Offer Creation shifts the dynamic from a push system to a pull system where customers make decisions on exactly what they want, and the airline has greater freedom to provide this in 'made to suit' offer.

*Russell Shaw – Vice President Network , Revenue Management & Alliances
Virgin Australia*

1.2.2 Total Offer Management

Ancillary revenue streams were not considered in the original design of today's airline distribution environment. Availability and pricing processes were designed around flight segments, at a time when all available services were entirely bundled within fares. Ancillaries are now an important revenue stream for airlines, and an important value proposition for customers. However, the current state of ancillary product distribution in the industry is an incomplete patchwork, because many of the old booking and ticketing processes were extended to ancillary products as well.

Dynamic Offer Creation allows airlines to dynamically adjust the Offer based on ancillary services, and even to return Offers exclusively for ancillary services. It allows airlines to dynamically adapt the content of the Offer. This allows supply and demand to be better managed, benefiting the airline and the consumer.

In parallel, revenue management and merchandising system providers are also constrained in managing the revenue of ancillaries, due largely to the distribution challenges. Moving towards a Dynamic Offer Creation approach allows revenue management systems to consider a Total Revenue Optimization approach, and removes the significant limitations to ancillaries that present a fundamental weakness with today's environment of flight-centric inventory and price.

Today, ancillaries on specific flights (or even across the airline's entire network) often have a single price point. Dynamic Offer Creation allows true revenue management of ancillaries. It also allows for almost limitless bundling and unbundling of ancillaries with core flight products, without the constraints of published fares.

For consumers, this ensures much more relevant Offers, and Offers which include only the products and services that they require. This may address many of the situations in today's environment where ancillaries are not available for purchase when the consumer demands them, or are included in the fare when the consumer does not.

It also allows far greater transparency for the consumer when comparing Offers across multiple airlines. For example, by making a shopping request with all the required ancillary services as part of the request, the consumer can have confidence that each airline's Offer will be relevant. There is no requirement to separately research offline pricing structures of different ancillaries, or make further requests to each airline.

The value-selling of Dynamic Offer creation will only be successful if the offer is considered fair by the consumer.

*Dieter Westermann – Vice President Revenue Management
Etihad Airways*

1.2.3 Continuous price points

Having infinite prices points (as opposed to step-by-step prices) enables near perfect matching of supply and demand, and removes inefficiencies.

An additional opportunity offered by continuous price points is the possibility to segment customers more effectively. In the current distribution environment, important dimensions like days before departure or length of stay are treated in a discrete or binary way, and are used as proxy's to determine market segmentation. With the ability to create Offers dynamically, the underlying customer model or demand function may contain length of stay or days prior as a continuous parameter. The resulting price would not change abruptly at a threshold but could vary continuously thus achieving what one may call "continuous segmentation", limited only by the airlines' commercial intent and the anticipated best result to meet the customers' willingness to pay.

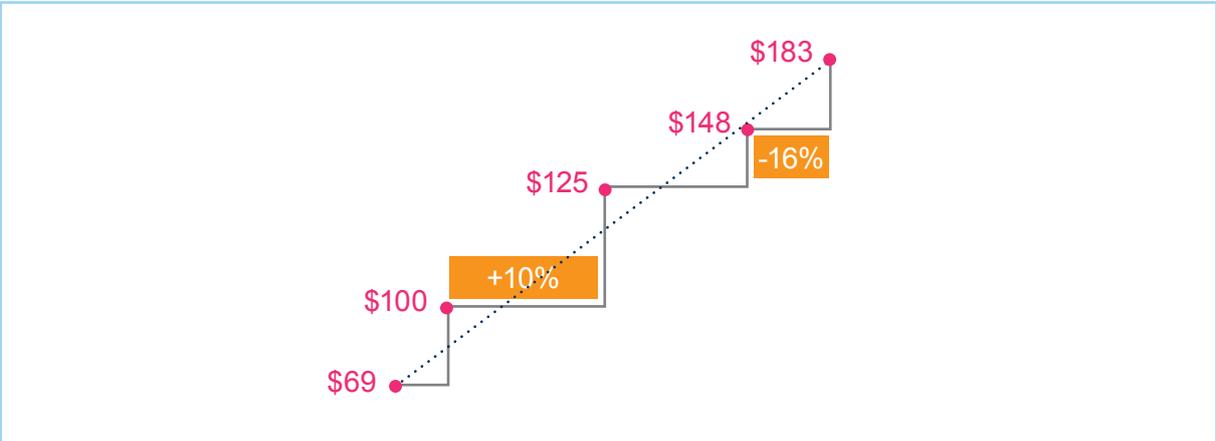


Fig. 1 – Discreet vs. Continuous price points

While airlines could possibly enable this today by implementing dynamic availability or discount calculators, or by vastly increasing fare filings, both of these pathways involve significant additional complexity and cost. Both also entrench existing distribution models.

Better matching of supply and demand involves benefits for both airlines and consumers. (AGIFORS - Chen and Gallego, 2016). Airlines that are able to calculate the opportunity costs and willingness to pay of each consumer will be more likely to return an Offer which is attractive to the consumer. Airlines offering a 'one size fits all' pricing structure attempt to cover widely varying opportunity costs with one single price. This price may often be higher than the consumer is willing to pay.

Digital transformation requires Airlines to propose rich and relevant offers to their customers. It is time for the airlines to reinvent best-in-class Pricing and Revenue Management. This means making it customer-centric, hence real-time and dynamic, and leveraging all known aspects of pricing science, like behavioral pricing.

Valérie Viale – Head of Offer Pricing
Amadeus

Passenger airlines and travel companies are undergoing massive digital transformations, driven by customers who are looking for personalized, frictionless buying experiences. In this digital era, airlines are looking to control how their content is offered and dynamically priced. Dynamic Offer Creation, where a single Offer Optimization Engine distributes content across both direct and indirect channels, is a key to this future.

Surain Adyanthaya – Senior Vice President
PROS

2 What Does Dynamic Offer Creation Mean for Airline Revenue Management?

Moving towards this end-state of Dynamic Offer Creation involves significant change to existing legacy systems, and parallel changes to processes supporting distribution, accounting and reporting. There are, however opportunities to explore and pilot changes within existing system architectures. It is important for airlines to internally assess the opportunity for Dynamic Offer Creation as soon as possible, and to discuss these opportunities with existing and potential technology partners. While changes seem daunting, it's important to take the first steps and build a roadmap.

2.1 The Revenue Management Equation

Offering the optimal price for any collection of services involves obtaining relevant data to determine the opportunity cost of selling the service, the optimal margin for each customer, future opportunities to sell ancillaries, and the application of any strategic adjustment representing the lifetime value of the customer. These are applied to the marginal cost of carriage (including taxes and interline settlements), forming the Offer to the customer.

This basic economic model of Revenue Management is agnostic to what process is used (Gallego, 1994):

$$f^* = m_s + \Delta J + c_{var} + c_{tax} - E_{anc} - V_{start}$$

Definitions

m_s	The optimal margin for each customer segment for which a different price can be asked.
ΔJ	Opportunity cost, the difference in future revenue that is expected by committing the inventory.
$c_{var} + c_{tax}$	Marginal cost of carriage, and taxes.
E_{anc}	Expected revenue from future sales of ancillaries.
V_{start}	A strategic discount, motivated either by customer lifetime value or other long term considerations.

For the purposes of this discussion this can be further simplified as

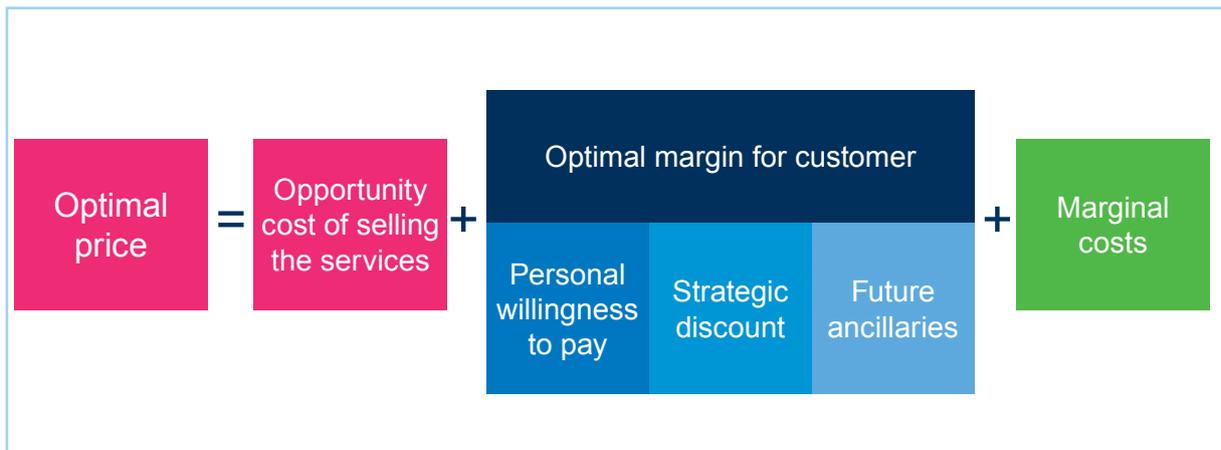


Fig. 2 – The Revenue Management Equation

2.2 How does Revenue Management work today?

Forecasting and Optimization

In today's environment of published fares and RBD based inventory, most airlines use highly effective tools and systems to calculate the opportunity cost of selling services. A forecast of future demand is used to estimate this.

The main input into this forecasting process is historical booking data (which is also RBD based). This is used to estimate unconstrained demand. Adjustments from analysts are applied, providing strategic constraints to drive short and long term goals.

The unconstrained demand estimates are further optimized to determine the minimum acceptable amount that would be accepted to satisfy any inventory request. This is often referred to as a "bid price." Origin and Destination "Steering" is used to optimize network-level results. However, in today's ecosystem, rather than being used directly to drive an Offer, this value is instead used internally to determine which inventory classes should be opened or closed. In traditional Revenue Management, booking classes are available if their expected revenue exceeds the bid price. This means that a highly complex calculation with many inputs is translated into one of 26 binary outputs of 'open' or 'closed'.

Customer Aspects of Revenue Management Equation

In more advanced availability management systems, parameters beyond the bid price may be used to determine which inventory class to open or close. This may include (where available) inputs such as the time to departure, the identity or location of the booking source, or the identity of the customer where a frequent flier membership is identified in the request. Generally these parameters are used in very basic ways, with business rules being established at a very simple level. For example, a rule may be established to overbook a particular RBD by two seats where an elite frequent flier is identified, to reward a loyal customer with a more generous availability of inventory.

Generally, however, the mechanisms used in today's environment to best calculate the customer aspects of the equation (personal willingness to pay, but also strategic discounts) involve published fares and rules. Every conceivable combination of service, price, conditions and customer restrictions are published by the airline before any requests are even made. These are then combined and applied at the time an offer is priced. Parameters within the existing published fare data structures are used to guess the customer's reason for travel and personal willingness to pay.

Coordinating the management of fares and inventory

Within today's environment there is often a lack of coordination between the teams managing fares and rules, and the teams managing inventory. Even in airlines where this is well coordinated, the structure creates natural duplication of effort. This leads to a high risk of subverting the commercial intent of the airline. As inventory rules and millions of published fares are overlaid, the actual outcomes are often unexpected, and become difficult to manage.

Within this environment, it is also difficult for airlines to dynamically respond to movements in the marginal cost of carriage. Cost data is often not considered, or is reviewed extremely infrequently. This means that an airline's ability to recover costs of operation (specifically for volatile cost lines such as fuel, or foreign currency denominated costs) is extremely limited. While a 'purist' approach to revenue management would suggest that revenue optimization should occur independently to cost, in reality when uncontrollable costs change rapidly, airlines often seek to address these changes directly in customer pricing. An example of this is fuel and insurance surcharging. In times of rapid changes to these cost lines, existing processes based on inventory and published fares provided airlines with inadequate mechanisms to adjust fares with sufficient agility. This led to many airlines simply imposing a variable surcharge managed independently to the fare, which increased complexity and often created confusion. Dynamic Offer Creation allows all input costs to be incorporated directly into a Offer made directly to a consumer.

The framework of Revenue Management

The application of the revenue management equation in today's environment can be illustrated as follows. Each element of the revenue management equation involves some limited inputs, different systems, and teams of analysts. Separate inventory and pricing processes are only combined to form a pricing result once inventory has already been committed.

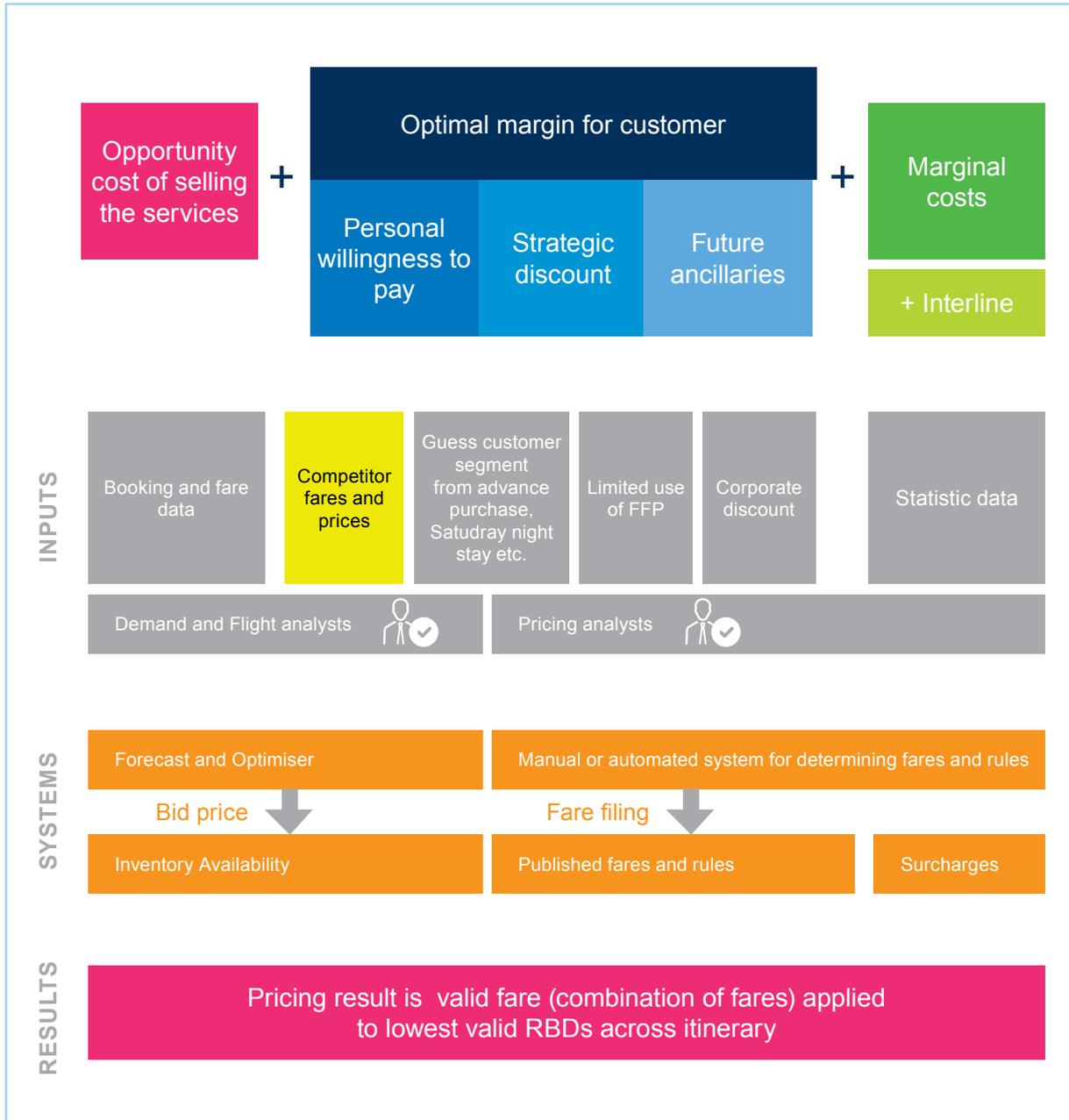


Fig. 3 – Today's framework of Pricing & Revenue Management

2.3 Today's limitations of Revenue Management work

In today's environment, the full benefits arising from the three key aspects of Dynamic Offer Creation outlined in this paper can never be fully realized.

1. Contextual Offers are not possible. Pricing outcomes are based on the very limited information consumed by existing pricing engines, and applied using limited controls on availability and fares. For example, a Saturday night stay rule might attempt to identify a leisure traveler to offer a lower price, which is entirely ineffective in responding to a price sensitive leisure consumer who happens to be travelling during the week. Similarly an advance purchase rule might attempt to match the higher willingness to pay of a corporate consumer by assuming they will book late, leading to dilution when they happen to book outside of the advance purchase restriction. More complete information (even if it is collected at a time of booking), will not drive a different pricing outcome, due to the inherent limitation of applying static published fare and rule data.

2. Total Offer Management is also not possible, because today's environment is built entirely around pricing and selling homogenous flights. Revenue management of any ancillaries is essentially impossible beyond basic bundling of fare entitlements or applying optional service fees. IATA's ONE Order initiative aims to simplify these processes with new standards that move away from separate reservation processes and accountable documents and consolidate records for flights and ancillary products.

3. Continuous price points are not possible, as airlines are constrained by a limited number of booking classes associated to 'cabins.' Inventory and pricing are entirely separate, creating significant duplication of effort within Revenue Management teams, and even subversion of commercial intent.

2.4 How will Revenue Management work with Dynamic Offer Creation?

By moving away from separate inventory and pricing processes, airlines have the ability to use vastly more data sources as inputs, and to explore new processing capabilities including Artificial Intelligence.

With Dynamic Offer Creation, airlines could use an internal business process and algorithmic intelligence, using all possible data to create the offer. The mechanism does not have to be agreed in public and implemented by external systems.

*Karl Isler – Consultant
Former Director Operations Research at
Swiss International Airline*

While Dynamic Offer Creation involves significant transformation, the core systems driving today's processes may provide a starting point. For the calculation of the opportunity cost, an existing Forecast and Optimizer system is essentially fit for purpose. The only difference is that the bid price does not need to be reverse engineered into a single booking class, and instead forms a direct input into the calculation of the Dynamic Offer.

For the remaining aspects of the calculation, a vast new array of data sources can be used. This may include for example CRM and frequent flier data, and external data capturing aspects of desirability of destinations impacting willingness to pay. Perhaps new data sources will utilise data describing the weather, exchange rates, or social media trends. In particular, competitive offers also influence customers' willingness to pay at a given point. Finally, a better integration of dynamic cost data can ensure that real movements in direct operating costs can be recovered by revenue.

Powered by machine learning and cognitive-based artificial intelligence, I see an exciting future where airlines will be able to deliver personalized and expanded offers that drive both loyalty and revenue growth. The best part is this technology is available today and is being rolled out by a few of the world's leading airlines. With Dynamic Offer Creation, the future is now.

Strategic business rules from analysts will still drive short and long term goals. At each shopping requests, the system together with business rules established by analysts, would determine Offer prices.

This involves a significant simplification in architecture, a streamlined revenue management team, and a much closer relationship between commercial strategy and Offers being returned.

*Surain Adyanthaya- Senior Vice President
PROS*

This is illustrated as follows.

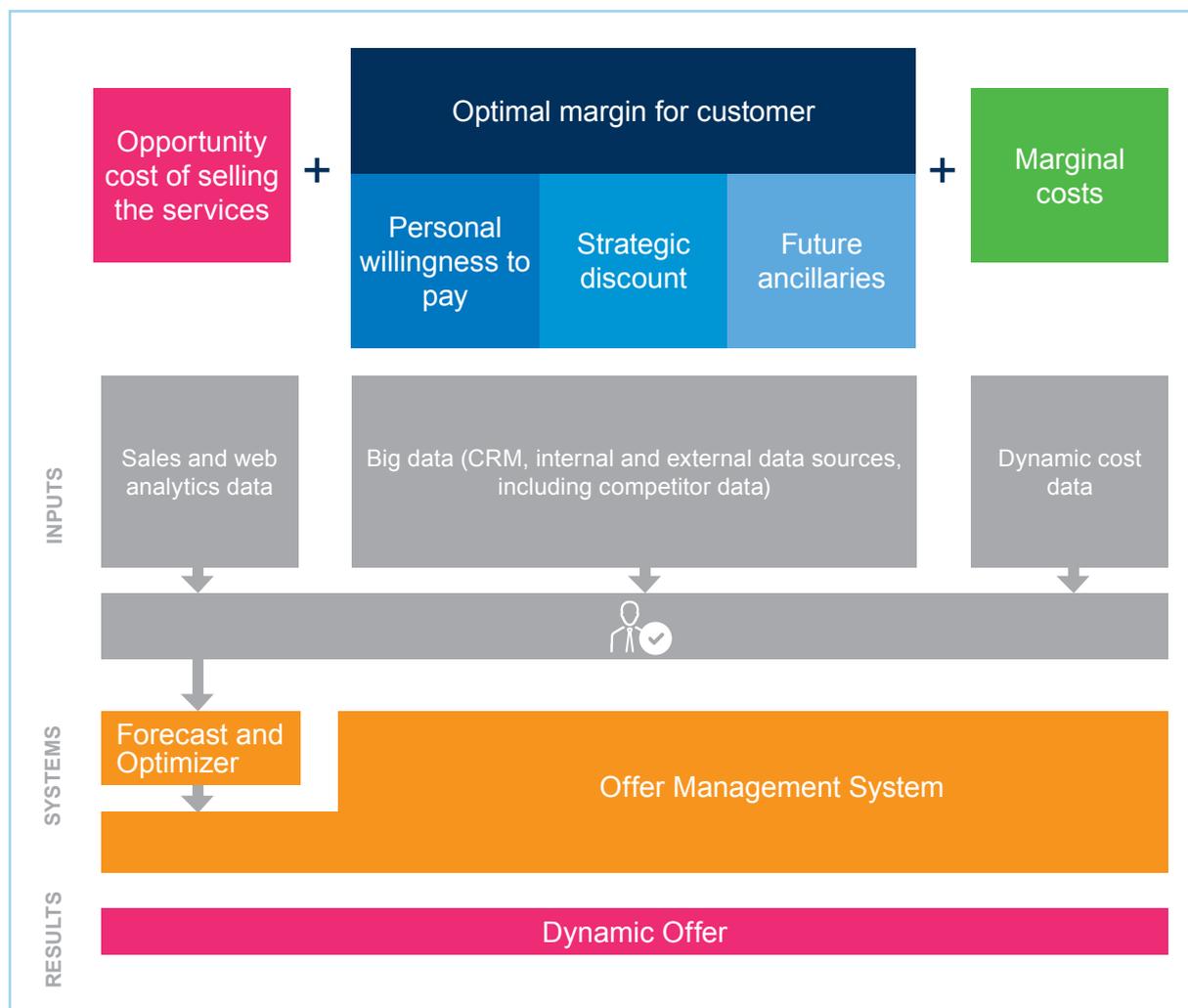


Fig. 4 – Dynamic Offer Creation Framework

3 Making Dynamic Offer Creation a Reality

Moving towards this end-state of Dynamic Offer Creation involves significant change to existing legacy systems, and parallel changes to processes supporting distribution, accounting and reporting. There are, however opportunities to explore and pilot changes within existing system architectures. It is important for airlines to internally assess the opportunity for Dynamic Offer Creation as soon as possible, and to discuss these opportunities with existing and potential technology partners. While changes seem daunting, it's important to take the first steps and build a roadmap.

3.1 Changes to Distribution and Revenue Accounting

Even if the concept of Dynamic Offer Creation is implemented, today's distribution environment is built around obtaining inventory and applying published fares. Truly leveraging Dynamic Offer Creation requires a seamless method of communicating more data within a shopping request, and providing a dynamic offer within a shopping response. For indirect channels, this capability is enabled by industry transformation programs such as New Distribution Capability (NDC). A set of data exchange standards have been adopted facilitating interactions between sellers and airlines using real-time Offer and Order Management concepts instead of availability and published fares.

Creating this new ecosystem, all the while maintaining the current one, and preparing the transition, that is what Amadeus Dynamic Pricing does. Its concept embraces the 'no RBD' future world, and its first implementation is non-disruptive on top of the RBD world.

Valérie Viale– Head of Offer Pricing
Amadeus

Dynamic Offer Creation requires a method of identifying where Dynamic Offers have been sold and paid for, and processing these transactions differently. This requires a robust Offer and Order Management system, allowing financial processes (such as the recognition of receivables and liabilities at time of sale, and recognition of revenue at the time of service delivery) to be driven directly from accepted Orders in real time, leveraging the ONE Order standard.

Traditional fare and rule based sales audits can be bypassed given that sellers are unable to modify Dynamic Offers.

Traditional distribution system providers are now embarking on implementing NDC solutions to allow airline Offers to be presented to sellers and consumers. Even while this implementation occurs, there are significant opportunities for implementing Dynamic Offer Creation for use in other channels such as the airline's website, and indirect channels using the NDC standard.

Dynamic Offer Creation also enables huge simplification for existing financial processes including sales audit, interline billing and revenue accounting. Leveraging Dynamic Offer

3.2 Interline opportunities

Interline back-office simplification

The IATA Agency and Interline systems provide common processes allowing over 100,000 travel agents to offer itineraries involving over 300 airlines, and provide the customer with a single Offer in a single currency for an itinerary that may be delivered by several airlines. Dynamic Offer Creation supports these systems and provides even more capability for one airline to provide an offer involving other airlines or service providers.

One of the peculiarities of interline settlement today is that the price offered to the consumer in many circumstances drives the interline settlement between airlines involved in the itinerary. Most airlines are signatories to the Multilateral Proration Agreement, which provides a default mechanism for establishing billing values based on dividing the price paid by the passenger between participating airlines. Accordingly, there is often the perception that until the entire industry moves away from published fares, the interline system will breakdown.

In reality, most airlines use the Multilateral Agreement infrequently. The majority of interline billing occurs either under individually negotiated Special Prorate Agreements, or within immunized joint venture agreements. A New Prorate Methodology based on fixed billing values within the Multilateral Agreement (which is being proposed in 2018) will provide an alternative to the current dependency between the offer made to the customer, and the amount an interline partner will bill. Incidentally this also removes much of the complexity and room for disputes around revenue proration. This provides a transitional platform supporting multilateral interlining during industry transition from inventory and fares to Dynamic Offers, both from airline to consumer and from airline to airline.

The business rules and system capability of Dynamic Offer Creation can equally be utilized in exchanging dynamic offers with interline partners that will form the basis of interline settlement, independent of the offer that has been made to the customer. Traditional proration and interline billing rules can be ignored, as billing can simply occur on the basis of the settlement value that has been exchanged between the interline parties at the time of Offer creation.

Interline Baggage Provisions

IATA Resolution 302 defines a default selection logic that may be used to determine which carriers baggage provisions (including the free baggage allowance, excess baggage charges and other charges) should be selected to apply in an interline journey. This logic applies in the absence of an agreement between carriers.

Some governments also require airlines to file or publish their baggage policies and charges along with their tariffs, making these provisions difficult to change dynamically. A small number of governments also mandate a baggage provision selection regime within interline itineraries, and do not allow carriers to determine which services will be made available to customers. In these markets, carriers must comply with these requirements, whether the price is determined by Dynamic Offer Creation or by using published fares.

In markets where carriers have the freedom to offer consumers baggage provisions without filing these, Dynamic Offer Creation allows baggage to form a more flexible part of the value proposition. Where interline settlement values are exchanged between airlines as part of the Dynamic Offer Creation process, the baggage provisions may also be established, allowing a dynamic solution to bilaterally agreeing provisions (as described in IATA Resolution 302).

The requirement to file baggage provisions (particularly where filing must occur with a significant lead time prior to sale) disadvantages consumers and airlines. Carriers are encouraged to actively progress these discussions with regulators and IATA.

3.3 The obstacles aren't as big as they seem

Because the concept of pricing in airline distribution has been linked to published fares and inventory levels for so long, the entire ecosystem relies heavily on these processes. This leads to many perceived obstacles in moving away from legacy pricing processes. In reality, many of these obstacles are very simple to overcome, and are not considered obstacles in other industries. A few examples are explored below.

3.3.1 Legal and regulatory

Consumer protection around 'bait' advertising

In many jurisdictions, regulators work to ensure that a reasonable quantity of services are offered at any price points that is advertised, especially if the price point is promotional or heavily discounted. In some jurisdictions, regulators may even provide guidance on a proportion of departures where the price point is available, or a proportion of seats that must be available at the given price point.

In most customer facing display points, only a single price point is returned on any specific departure. Even within travel-agent facing distribution systems, the availability of individual RBDs is generally only displayed up to a pre-determined quota sale limit. Nevertheless, many airlines use published fares together with known inventory allocations to ensure that they manage compliance with these requirements.

With Dynamic Offer Creation, such consideration simply have to be included as a system and business requirement within an airline Offer Management System, and in fact allows much closer control of where such requirements differ by market or channel.

Consumer protection around personalization

In many jurisdictions, regulators may also protect consumers from pricing differentiation based on personal characteristics. While Dynamic Offer Creation allows an airline to use an almost infinite set of data points in establishing an Offer for any consumer, in reality this simply expands upon basic personalization that already occurs today (eg. preferential baggage allowance by frequent flier tier). Airlines must comply with applicable regulations in any market in which they operate, regardless of how they offer content. The provision, retention, and use of data will always be subject to regulation. Moreover, consumers will always be able to make an anonymous request, just as they are able to today. Dynamic Offer Creation offers consumers many benefits, including recognition of loyalty, recognition of total spend, more dynamic responses to market conditions, and access to lower Offers where supply meets demand.

Government filing

Despite a continuing shift towards de-regulation, certain governments still require airlines to file fares and rules. This often relates to air services agreements between governments, many of which address tariffs.

This requirement is increasingly being waived, and most of today's air services agreements no longer require airlines to file fares and rules for review. However, in certain limited cases, there may still be a requirement to establish a public tariff which include many terms and conditions beyond just price levels, such as conditions known as General Rules.

The requirement to file price levels (particularly where filing must occur with a significant lead time prior to sale) distorts the market, and disadvantages consumers. The requirement to file fares may impact airlines' ability to pursue Dynamic Offer Creation, and carriers are encouraged to actively progress these discussions with regulators and with IATA's support.

There may also be many opportunities to implement Dynamic Offer Creation even in the markets in which government filing is required, just as there are currently opportunities in these markets to file a tariff and then offer closed user-group discounts based on this tariff to specific customers or through specific channels. An analogy would be the requirement in the hotel industry in many markets, where hotels must publish an official room rate, which is often posted in the room itself.

3.3.2 Commercial and distribution

Net remit fares

In some markets, airlines may choose to remunerate travel agents by allowing them to distribute specific fares that the travel agent is able to mark up, remitting only a net amount to the airline. The net value of these fares is often then 'masked' to the consumer. The consumer receives an itinerary receipt from the travel agent which only outlines the total price paid, the net remit value plus the mark up. Fare filing rules are generally used to manage these processes today, with travel agents systems identifying which fares have been filed as net remit, managing mark ups and ensuring values are masked where required.

If airlines wish to continue this practice, this is entirely possible with Dynamic Offer Creation. An airline may provide an Offer that is allowed to be marked up, which would then allow travel agent systems to automate remaining processes. Moving to Dynamic Offer Creation does however allow airlines an opportunity to move away from these models of remuneration and move toward more direct methods of remunerating agents such as dynamically offering commission at a transaction level.

Price parity

Airlines may wish to maintain parity in pricing across different channels. This may be to comply with commercial agreements with agents or system providers; or to ensure direct channels are competitive at all times.

Published fares together with known inventory allocations are often used to manage these considerations today, with the same published fare being applied across direct and indirect channels both direct and indirect. With dynamic offer creation, such considerations can be managed as business rules within an airline's offer management system.

In a transitional environment where an airline may be managing Dynamic Offer Creation in parallel with published fares, the published fare pricing outcomes may also be used as an input into the Dynamic Offer Creation process where parity is being maintained. For example, a business rule may be established that the Dynamic Offer is at least as low as the published fare outcome, or in fact that the Dynamic Offer is calculated using the published fare outcome as a reference point. This may ease the transition period as airline will gain trust in the system, and be able to reduce their number of reference fares.

4. Conclusion

Both airlines and consumers benefit when supply matches demand. Within the airline industry, the current distribution environment, and the separation of inventory and pricing, are suboptimal and prevent a supply-demand optimization from occurring. Beyond this, the current environment makes it complex for airlines to translate their commercial strategy into positive outcomes for consumers. It is inefficient, slow, and costly compared to the proposed Dynamic Offer Creation model.

One of the biggest frustrations for consumers is pricing inconsistency. Different price points are often returned for the same flights in different channels, or pricing often follows a seemingly illogical structure. This often relates to inconsistencies in pricing results due to the volume of published fares. For example, where two one-way fares return a lower price point than a round trip, or where a baggage inclusive fare is priced below a no-bag fare when this is not the airlines commercial intention. These issues are confusing and impact consumer confidence. Dynamic Offer Creation ensures that all Offers are returned from a single source within the airline, allowing for real transparency on what has been offered and why. It also allows the airline to ensure that their commercial intent is directly translated into Offer content in every instance. This provides certainty for the consumer that the airline is returning the best available Offer.

Airlines' optimization of revenue will always be constrained until revenue management systems respond directly to requests with an Offer for requested services, an environment this paper refers to as Dynamic Offer Creation.

The implementation of Dynamic Offer Creation involves parallel transformation within distribution and internal systems. IATAs New Distribution Capability (NDC) and ONE Order programs provide capability that allows this model to be explored. This transformation is critical, and airlines should discuss opportunities internally and with technology providers as soon as possible.

It is time for the airline industry to assess this business opportunity against further investment in legacy processes and systems.

IATA welcomes industry debate on this topic.

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