



**Digitally driven  
multimodality  
can supercharge  
sustainable growth  
of European  
passenger mobility**

**KEARNEY**

Multimodal digital mobility services can rev up growth of Europe's intercity passenger transport market by 50 per cent, unlocking a new pool of 500 million travellers that can generate €30 billion in additional revenue through 2030—while making travel more sustainable.

<b>Executive summary</b>	<b>1</b>
<b>Europe needs multimodality to strengthen growth, competitiveness, resilience, and sustainability</b>	<b>2</b>
<b>MDMS-enabled multimodality can add €30 billion of sustainable growth to intercity passenger transport</b>	<b>5</b>
The seamless combination of air and high-speed rail would prove irresistible to new passengers	6
MDMS could increase passenger growth by 50 per cent	16
<b>Only concerted action will create the right conditions for true multimodal development</b>	<b>20</b>
Digital infrastructures: enabling data sharing	20
Physical infrastructures: investing in multimodal transit hubs	21
<b>Concluding thoughts</b>	<b>22</b>

## Executive summary

Passenger transport is fundamental to Europe's wealth and social cohesion, but it is also a major source of greenhouse gas (GHG) emissions. Multimodal transport—seamlessly combining travel by air, rail, or coach—holds out the promise of strengthening the transport sector's already significant contribution to European prosperity and well-being, while mitigating its impact on the environment. How? By breaking down barriers to create a more transparent, competitive, and integrated system that presents consumers with a full array of faster, cheaper, and cleaner options to get from point A to point B.

Infrastructure is the backbone of any transport system. To build an effective multimodal transport system, however, passenger transport facilities, rail lines, and roadways are not enough. Technology infrastructures are equally important. In this regard, digital platforms, in the form of multimodal digital mobility services (MDMS), hold out the promise of greater transparency and ease of use by allowing consumers to conduct mode-agnostic travel searches for information on schedules, availability, fares, and carbon emissions—and potentially even offering them convenient booking, ticketing, and payment on the very same platform. Green energy infrastructures, of course, must also play a major role in any multimodal system if we are to ensure a sustainable future for our planet.

Putting travellers at the centre of the transport system and connecting physical and digital infrastructures will create a significant growth opportunity for all industry players. Travel demand is highly responsive to selection, price, and convenience, and MDMS would improve all three dimensions for consumers. We estimate that an MDMS-focussed digital approach to multimodality can supercharge the growth in passenger traffic of Europe's intercity passenger transport system by 50 per cent through 2030, unlocking a new pool of 500 million travellers that can generate €30 billion in additional revenue—equivalent to 13 per cent of 2019 market size.

Moreover, we calculate that MDMS-driven multimodality can reduce CO<sub>2</sub> emissions per passenger kilometre by 5 per cent through the end of this decade by encouraging travellers to use public transport rather than private vehicles, and by shifting demand from air to rail on short- and medium-haul routes.

Because multimodality blurs long-standing boundaries, concerted action among all stakeholders—from industry players (regardless of mode) to regulators and policymakers—will be essential to secure the conditions needed to invest in the physical and digital infrastructures to support a truly multimodal ecosystem in Europe. The European Commission's Multimodal Digital Mobility Services regulatory initiative underlines the strategic importance of collaboration among all industry stakeholders, supported by a regulatory framework that facilitates system interoperability and access to transport content on fair, reasonable, and non-discriminatory terms.

By removing barriers between modes to provide its citizens and visitors with the world's first truly multimodal, pan-regional system, Europe can future-proof its intercity transport system, offering consumers a quantum leap in the traveller experience and fuelling a more decarbonised economy.

**Because  
multimodality blurs  
long-standing  
boundaries,  
concerted action  
among all  
stakeholders will  
be essential.**

## **Europe needs multimodality to strengthen growth, competitiveness, resilience, and sustainability**

Passenger transport is pivotal for Europe's economy and society. Without passenger mobility, modern life is impossible, personal and business relationships become brittle, and new relationships are more difficult to forge. But passenger mobility as we know it today exacts a heavy toll on the planet. That is why, for the sake of long-term prosperity and sustainability, Europe needs to act decisively to meet the growing demand for intercity travel in a more multimodal, multinational, and environmentally friendly way.

Multimodality refers to the use of different modes of transport on the same journey, indistinctly using air, rail, or coach to go from point A to point B. The concept has been evolving for nearly as long as transport itself, and it seeks to combine the strengths of the different modes to make the transport system as a whole more valuable than the sum of its parts: since no single transport mode is perfect, multimodality optimises the mix of air, rail, and coach to provide a more convenient, affordable, and environmentally friendly service.

Many people already combine segments by air, rail, and coach for intercity travel, but until now, the traveller experience has mostly been fragmented, with a lack of digital transparency and interoperability between booking and ticketing systems. A next-generation multimodal transport system, in contrast, will be more traveller-centric, providing passengers with better information on the full range of options and facilitating a door-to-door planning, booking, ticketing, and payment experience. And this, in turn, will require that passenger transfers and data exchanges among the different transport operators do not act as a barrier or an element of disruption.

Europe's extensive and dense intercity transportation network (air, conventional and high-speed rail, and coach), coupled with new digital technologies, opens an unparalleled opportunity to break down barriers and build the world's first truly multimodal ecosystem. In an ideal future, transport in Europe will be provided by a fully integrated multimodal system that gets people from point A to point B in the quickest, most convenient, and least expensive way possible, while minimising the impact on the environment—truly a quantum leap in the traveller experience, and the basis to power a more decarbonised economy.

Infrastructure is always vital to improve and transform a transport system. Ensuring that airports are directly served by rail, underground, and coach services will make them veritable multimodal connection hubs for travellers and encourage the adoption of multimodal transport. Additionally, physical energy infrastructures that power transport modes will play a growing role in the path towards net-zero emissions. But for transport, technology infrastructures are equally important, and digitalisation offers many opportunities to promote the shift towards a fully integrated, multimodal, and sustainable system. As in other sectors, digitalisation can enable large-scale, sweeping transformations across multiple aspects of the business, providing unparalleled opportunities for value creation and capture. And innovative digital services can accelerate the multimodal transition in Europe by making it possible to offer truly multimodal search, booking, ticketing, and payment services distributed through a wide variety of digital channels and platforms.

In this regard, technology infrastructure in the form of multimodal digital mobility services (MDMS) can play a central role in overcoming fragmentation, increasing competition, and making multimodality a reality, connecting and bundling different transport providers and services into a single traveller experience. MDMS can also help consumers adopt greener modes of transport by providing information on emissions and offering more sustainable travel combinations. In short, an MDMS can provide information on transportation content such as destinations, routes, schedules, availability, fares, emissions, or any other relevant criteria for a combination of one or more transport modes, and it can even offer the possibility to book and pay for tickets for point-to-point travel.

But for an MDMS to live up to its promise of effectively orchestrating multimodal supply and demand on behalf of passengers, it must have access to transport providers' content on fair, reasonable, and non-discriminatory (FRAND) terms (see figure 1).

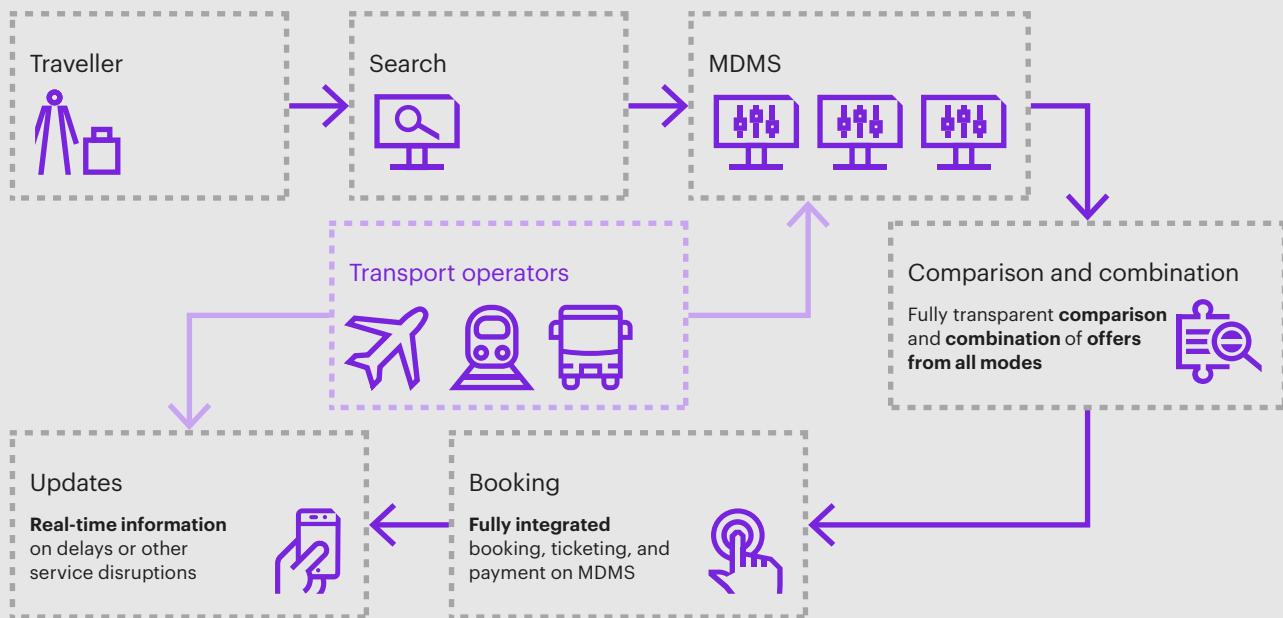
The vision, then, is that of a future-proof intercity transportation system: one that is more digital, more cohesive, more accessible, and more sustainable. One in which digitally enabled multimodality through MDMS allows transport companies and intermediaries to meet customer needs more quickly and cost-effectively. One where multimodality strengthens European social cohesion by bringing greater accessibility, connectivity, visibility, prosperity, and territorial integration to smaller or more peripheral destinations. And one where multimodality makes transport more sustainable by optimising GHG emissions under a comprehensive view of the system (see sidebar on page 4: Multimodality can reduce CO<sub>2</sub> emissions per passenger kilometre by 5 per cent).

Digitalisation, cohesion, and sustainability are three transformation objectives that are mutually reinforcing and are fully aligned with the European Commission's recovery plan to emerge stronger from the COVID-19 pandemic. Multimodality, in sum, is a key to strengthening the growth, competitiveness, and resilience of European economies.

## Digitalisation, cohesion, and sustainability are mutually reinforcing objectives that can strengthen and transform European economies.

Figure 1

**MDMS are digital platforms that can orchestrate multimodal supply and demand**



Note: MDMS is multimodal digital mobility services.

Source: Kearney analysis

## Multimodality can reduce CO<sub>2</sub> emissions per passenger kilometre by 5 per cent

A more digital and multimodal transport can make the whole system more energy efficient and environmentally friendly and contribute to accomplish the EU's emission targets. Our forecast for the multimodal scenario is that an increase in the modal share of rail will reduce average emissions per passenger kilometre by 5 per cent through 2030 (see figure A).

Within the EU27, passenger transport is responsible for approximately 23 per cent of GHG emissions, rendering it the second largest emitting sector after the energy industry (see figure B on page 5). In addition, despite the fact that emissions from other sectors such as energy and manufacturing have generally been declining, those from transport increased by 7 per cent between 1990 and 2020.<sup>1</sup>

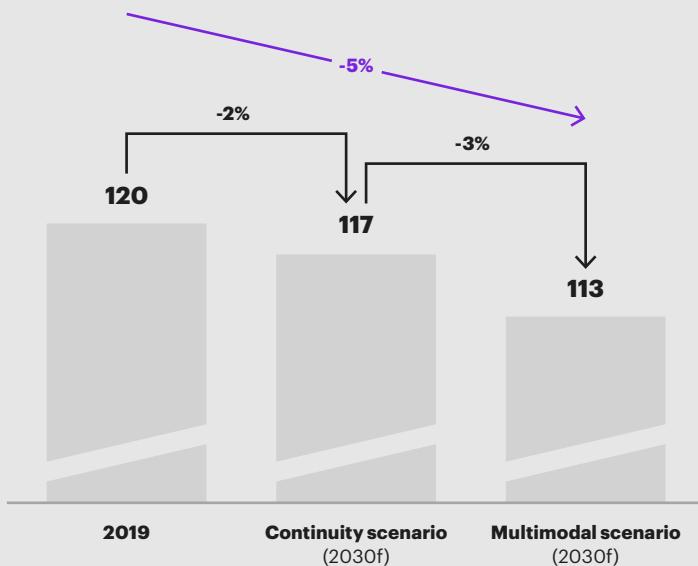
A digitally enriched customer experience that lets travellers know which is the fastest, most affordable, and greenest multimodal alternative will help shift demand to more sustainable modes of transport, especially from private vehicles to collective transport services by air, rail, or coach. This modal shift is essential to achieving the EU's target of climate neutrality by 2050, even with strong progress on vehicle electrification.

Given the current mix of modal shares and the potential for development and improvement of each mode of transport, we forecast that multimodality can increase rail's modal share as an appealing and green alternative to air and road transport, especially over medium distances. Rail is already one of the most sustainable modes of transport, with more than 90 per cent of passenger kilometres in many European countries being provided on electrified tracks. Depending on the length of the journey, rail generates approximately four to six times less CO<sub>2</sub> emissions per passenger kilometre than travel by car. Compared to air travel, rail is also the greener option, generating between four and seven times less CO<sub>2</sub> emissions per passenger kilometre.

Let's take an example: a single-mode trip by air from Brussels to Nice, connecting in Munich, takes three and a half hours and emits 133 kg of CO<sub>2</sub>. However, a multimodal trip combining rail (from Brussels to Paris) and air (from Paris to Nice) takes 20 minutes less and emits half the CO<sub>2</sub>. Emissions will be reduced even further as carriers modernise their fleets and adopt more efficient and environmentally friendly propulsion technologies.

Figure A  
**Multimodality can reduce CO<sub>2</sub> emissions per passenger kilometre by 5 per cent**

Grammes of CO<sub>2</sub> emitted per passenger kilometre



Note: The analysis assumes constant unit emissions by transport mode, excluding potential efficiencies that may be achieved before 2030.

Sources: Eurostat, International Union of Railways (UIC), IEA, UK Department for Business, Energy & Industrial Strategy (BEIS); Kearney analysis

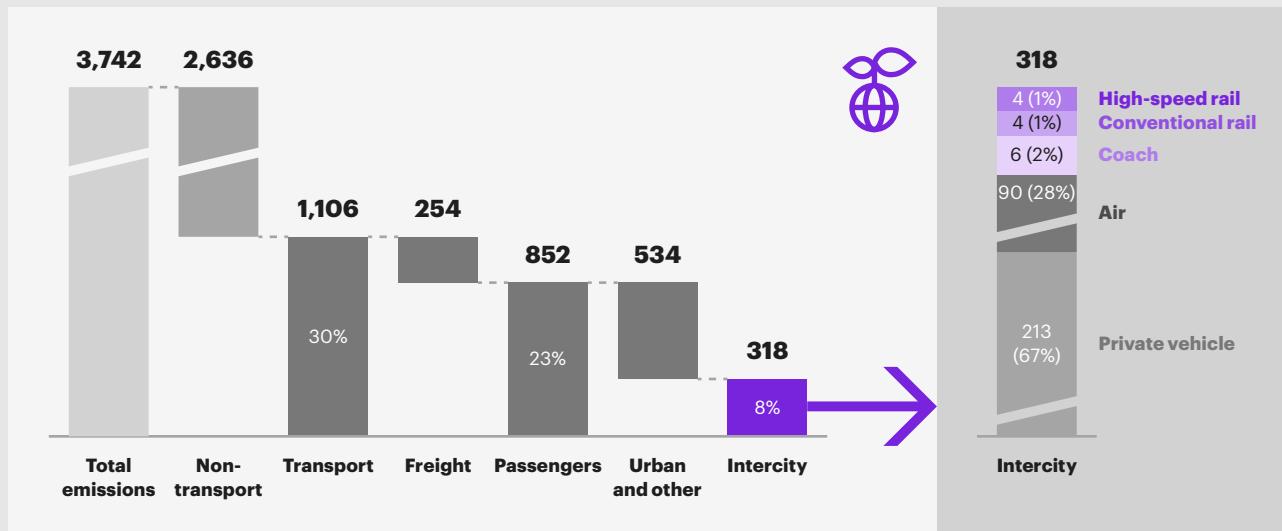
<sup>1</sup> "The European Union has cut greenhouse gas emissions in every sector - except this one," World Economic Forum, 29 September 2022

Figure B

## Passenger transport is responsible for roughly 23 per cent of CO<sub>2</sub> emissions in the EU27

Breakdown of CO<sub>2</sub> emissions in the EU27

(Million tonnes, 2019)



Note: "Other" includes maritime passenger transport.

Sources: Eurostat, European Environment Agency, EU Shipping's Climate Record, IEA; Kearney analysis

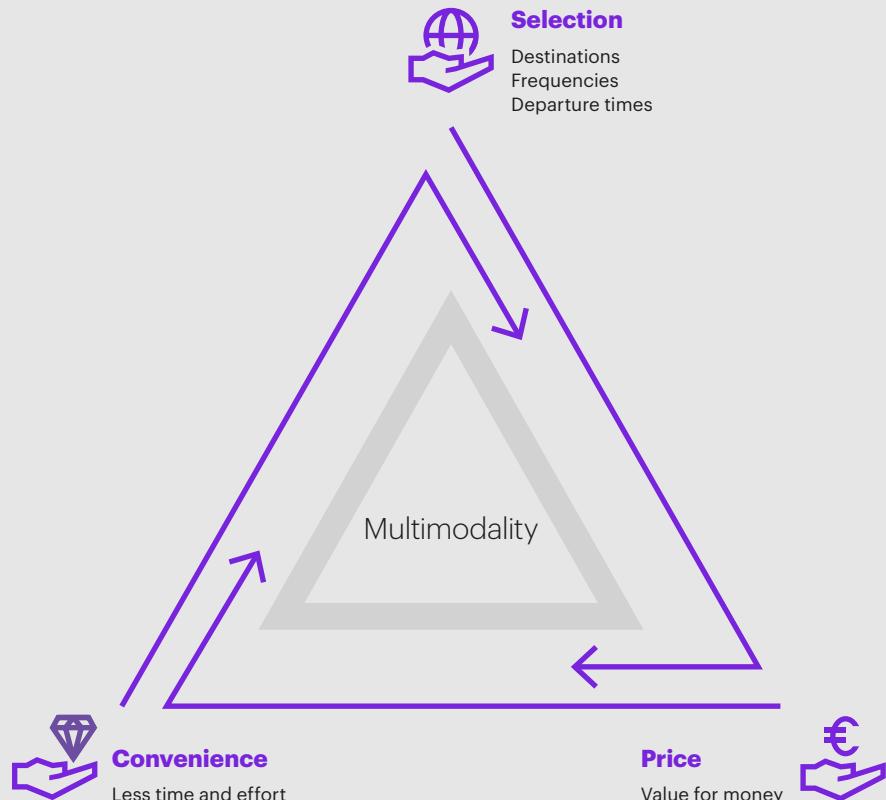
## MDMS-enabled multimodality can add €30 billion of sustainable growth to intercity passenger transport

Placing consumers at the centre of the transport system and connecting physical and digital infrastructures to deliver seamless multimodal journeys will create a significant growth opportunity for all industry players. Why? Because MDMS-enabled multimodality can deliver a greatly improved passenger experience along three dimensions—selection, price, and convenience—that, in turn, would lead to an uptick in demand (see figure 2 on page 6):

- **Selection** means the carrier offers the destinations, frequencies, and departure times the traveller wants.
- **Price** is self-evident: when comparing apples to apples, travellers will nearly always prefer the option that provides the best value for money.
- **Convenience** means that the searching, booking, ticketing, and payment experience is seamless and saves the traveller time and effort.

Our research confirms that travel demand is highly responsive to improvements across these three dimensions. Consequently, we estimate that an MDMS-enabled digital approach to multimodality could unlock a new pool of 500 million travellers and €30 billion in additional revenue for the intercity transport sector in Europe between now and 2030, equivalent to 13 per cent of the 2019 pre-COVID market size. This estimate is the result of comparing the traveller demand forecast in a scenario of continuity of the status quo versus a scenario in which multimodality is actively developed through a digital approach.

Figure 2  
**MDMS-enabled multimodality can improve the traveller's experience along three dimensions that drive demand**



Note: MDMS is multimodal digital mobility services.

Source: Kearney analysis

### The seamless combination of air and high-speed rail would prove irresistible to new passengers

We defined the addressable market for this study to include all air transport segments (domestic, intra-EU, outbound and inbound extra-EU) and all medium- and long-distance transport segments by rail and coach, excluding commuter rail and metropolitan buses. Taking 2019 as the baseline to avoid pandemic-related distortions, the European intercity transport market carries around 3.6 billion travellers per year and generates approximately €275 billion in revenue for transport service providers.

Between 2015 and 2019, the intercity transport market in Europe grew by an annual average of roughly 2 per cent, mainly thanks to passenger growth of 3 per cent—even as airfares shrank significantly due to increasing competition and ticket prices grew by barely 1 per cent in the other modes.

This moderate but steady growth in demand across all modes of intercity transport has been stimulated by improvements in the three levers that shape the traveller experience, namely selection, convenience, and price. It is worth noting that air and high-speed rail are the two modes where traveller demand has been most responsive to improvements in the experience levers, much more so than in conventional rail or coach (see figure 3 on page 7).

Figure 3

**Air and high-speed rail have been the most responsive transport modes to improvements in the traveller experience**

Total European intercity transport market  
(2019)



Sources: Eurostat, transport associations, national statistical institutes, industry reports, transport operators; Kearney analysis

So far, air has accounted for the lion's share of passenger kilometres of intercity travel in Europe, fuelled in no small measure by the proliferation of low-cost carriers that have opened new routes and made flights more affordable. Going forward, rail's role is likely to become more prominent than now, thanks to its greater comfort, especially on medium-haul routes. Additionally, demand for rail services will be further stimulated by government regulations that favour its use for environmental reasons, as well as by progressive liberalisation and the resulting competition. Research indicates that for 6 per cent of the journeys between main cities in the EU, the door-to-door travel time is shorter by rail than by air. In addition, rail is usually competitive with air for distances up to 450 kilometres, or up to 700 kilometres in the case of [high-speed rail](#).<sup>2</sup>

Air and high-speed rail, we therefore conclude, will be the cornerstones of further development of multimodality in the EU, grounded in the three pillars of improved selection, price, and convenience that will result from their seamless combination—pillars that have consistently raised demand in recent decades.

### **Selection: more destinations, frequencies, and departure times**

The broader the offer of destinations, frequencies, and departure times, the greater the demand. This golden rule has consistently proved to be true throughout the development of intercity transport in Europe, reaching its maximum expression in air transport following liberalisation in the 1990s.

Liberalisation of European air transport gave rise to many new carriers and low-cost business models. It also increased competition among airports, leading to lower airport charges and more efficient services. As a result, direct connections among the European regions increased dramatically and a period of unprecedented growth in air travel demand was ushered in. In short, liberalisation of European air transport transformed the industry, vastly increasing the number of destinations, frequencies, and departure times on offer.

To get a sense of the magnitude of this transformation, it is important to note that prior to the 1990s, in most cases only tier-1 airports—such as London's Heathrow Airport, Paris Charles de Gaulle Airport, Frankfurt Airport, or Amsterdam Airport Schiphol—were fully integrated in the European air transport system. Incumbent airlines largely followed a hub-and-spoke model to “feed” travellers through tier-1 airports, resulting in low capacity and passenger traffic at regional tier-2 airports.<sup>3</sup>

## **Air and high-speed rail will be the cornerstones of further multimodality development in the EU.**

<sup>2</sup> D. Lepage, European air and rail transport networks between main cities: a comparative analysis, Ecole Polytechnique de Louvain, Université Catholique de Louvain, 2020

<sup>3</sup> In this study, we define tier-1 airports as the 20 EU27 airports with the greatest passenger traffic in 2019. Tier-2 airports have lower passenger traffic, but the cities that they serve are located on high-speed rail corridors.

With deregulation came a large number of low-cost carriers, which generally employ a point-to-point model. These models have created new routes to and from tier-2 airports—routes that, in many cases, have become wildly popular. And so today, dozens of air carriers criss-cross a dense intra-EU network of routes connecting both tier-1 and tier-2 airports. Travellers, in other words, now have an extensive array of origin and destination airports, frequencies, airlines, and departure times at their disposal—and traffic has surged. Our analysis reveals that over the past 25 years, investment in additional routes and capacity at tier-2 airports by low-cost carriers has added on average 1.5 percentage points of growth each year to total European air passenger traffic (see figure 4).

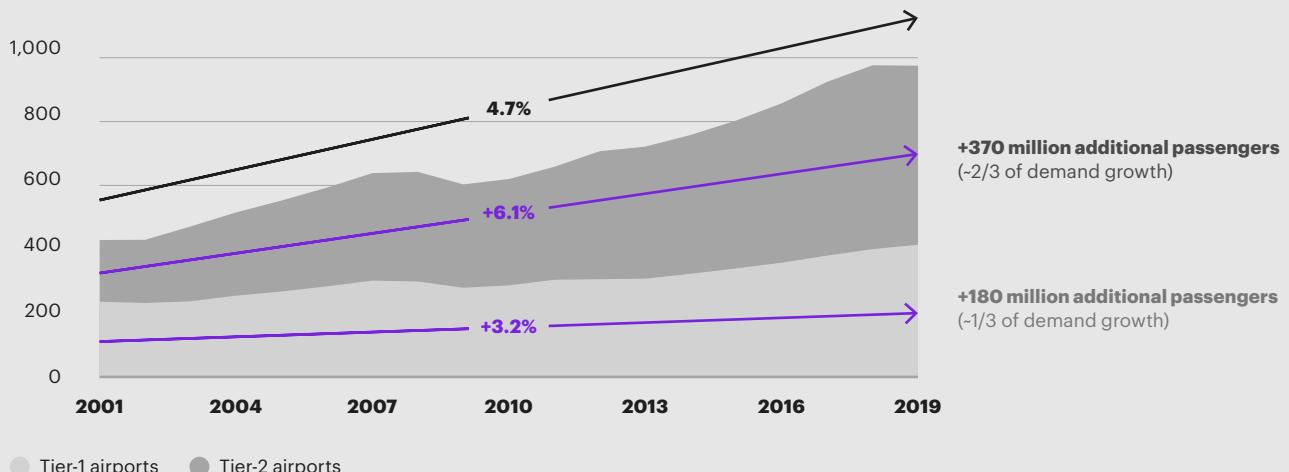
Similarly to air, high-speed rail passenger traffic in Europe has also consistently increased when new routes and destinations have come online, as the Spanish and German examples clearly demonstrate (see figure 5 on page 10).

**Travellers now have an extensive array of airports, frequencies, airlines, and departure times at their disposal.**

Figure 4

**Air travel demand has responded very positively to better selection from low-cost carriers, mainly at tier-2 airports**

Passenger traffic at EU27 airports  
(Million passengers, CAGR)



● Tier-1 airports   ● Tier-2 airports

Note: Tier-1 airports are the 20 EU27 airports with the greatest passenger traffic in 2019. Tier-2 airports have lower passenger traffic, but the cities that they serve are located on high-speed rail corridors. The scope comprises 454 airports.

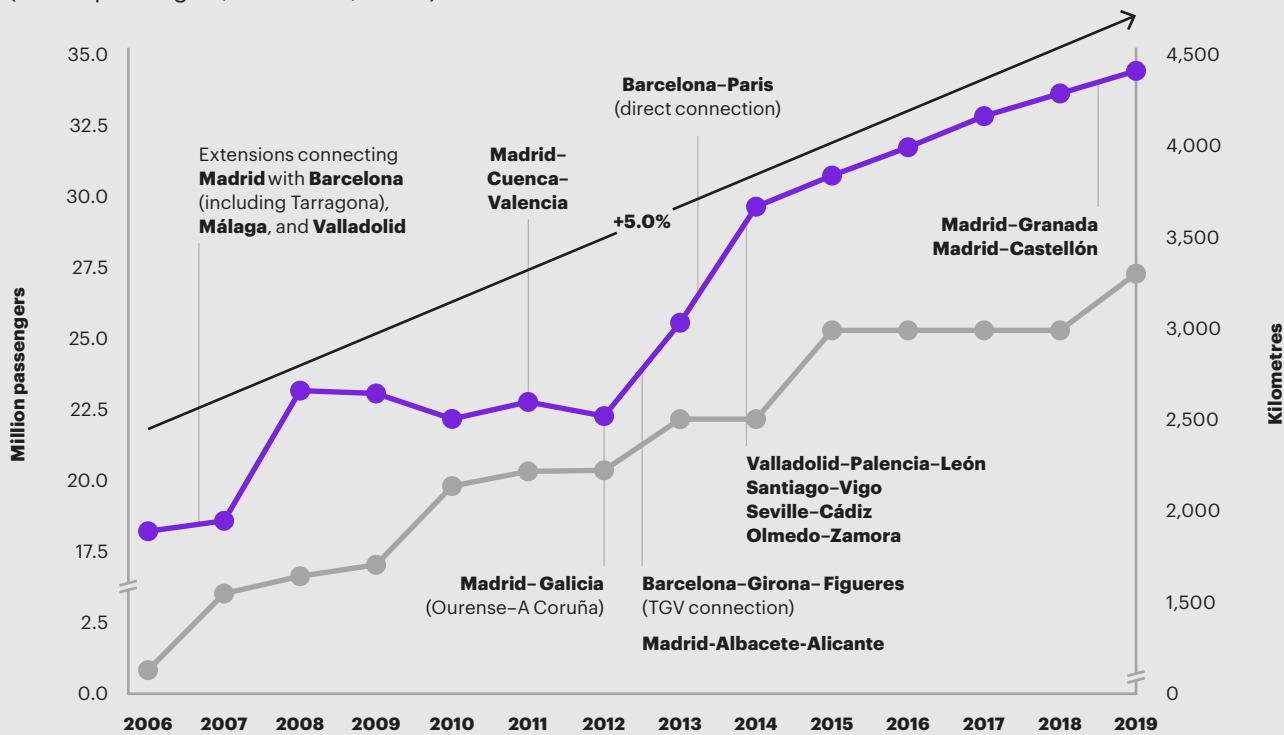
Sources: Eurostat; Kearney analysis

Figure 5

**High-speed rail demand has increased as new lines have opened**

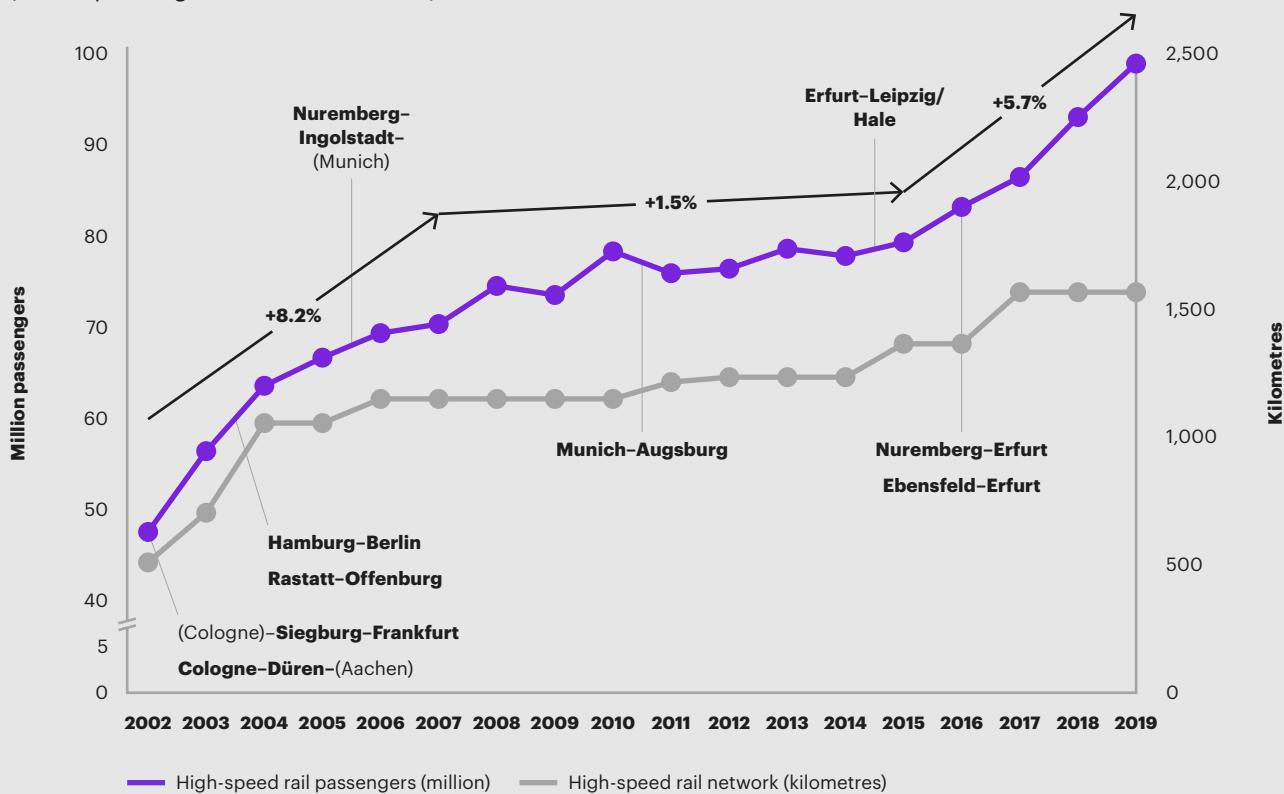
**Spain: high-speed rail traffic**

(Million passengers, kilometres, CAGR)



**Germany: high-speed rail traffic**

(Million passengers, kilometres, CAGR)



Note: The city combinations in this figure represent new high-speed rail lines.

Sources: RENFE, International Union of Railways (UIC); Kearney analysis

And what has happened when two modes of transport such as air and high-speed rail have both become available on the same route? The golden rule that associates broader selection with greater demand has continued to hold true. Although high-speed rail, thanks to its greater comfort and convenience, has cannibalised air passenger traffic on medium-haul routes, the total number of passengers on those routes has consistently increased (see figure 6).

What's more, at tier-2 locations the combination of low-cost airlines and high-speed rail capacity has turned cities into multimodal transit hubs, which has helped boost air passenger traffic (see figure 7 on page 12). Greater connectivity is a powerful stimulus to demand. For example, Naples Airport's ample offer of low-cost carriers, coupled with the city's high-speed rail connections to Rome and Milan, has enticed many Europeans to discover this amazing and authentic city before travelling to other destinations in Italy, while Neapolitans are learning that flying directly to many European cities is both convenient and affordable.

Looking ahead, MDMS that provides full visibility into all possible destinations, combining all available modes of transport, will offer potential travellers what is, in effect, a much greater selection. And experience tells us that this greater selection will lead to significantly higher passenger demand.

**Historically, the greater the selection of destinations, frequencies, and departure times, the higher the demand.**

Figure 6  
**Passenger traffic increases when both air and high-speed rail serve the same route**

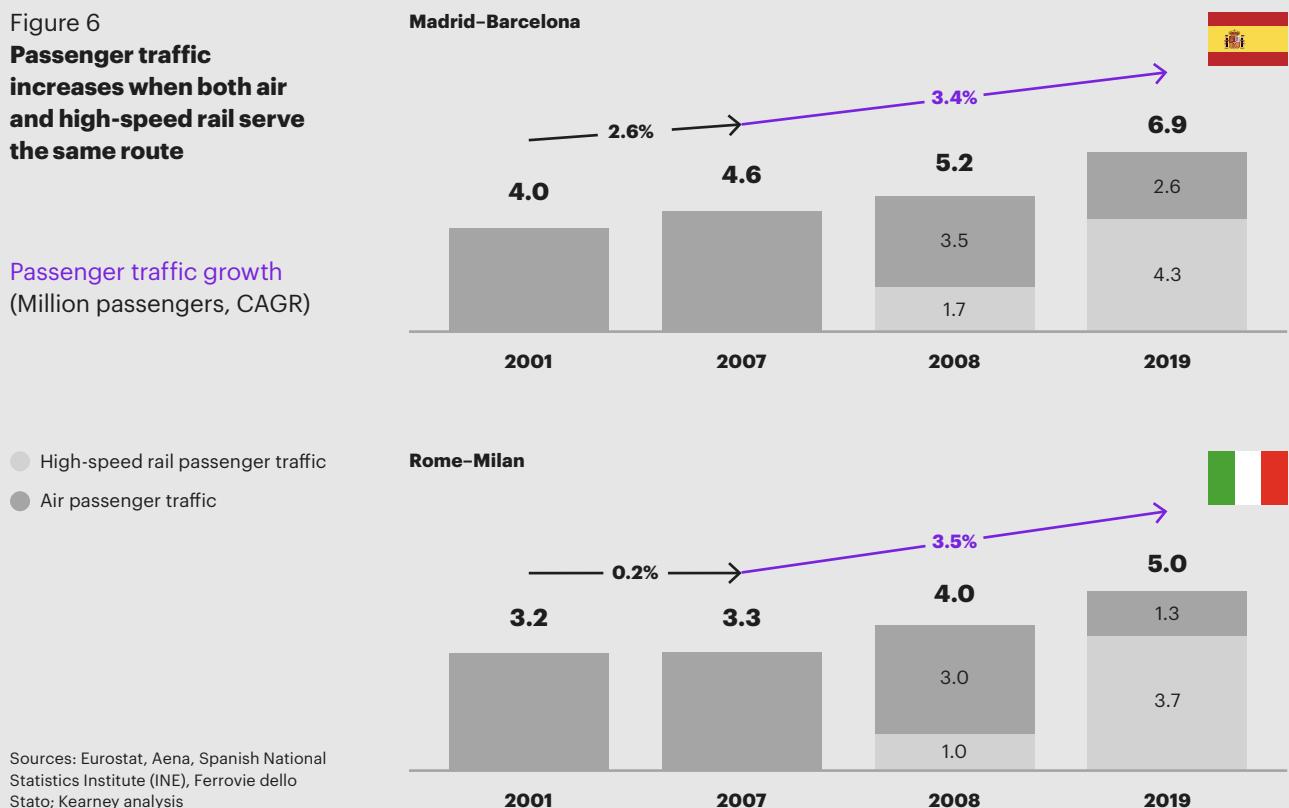
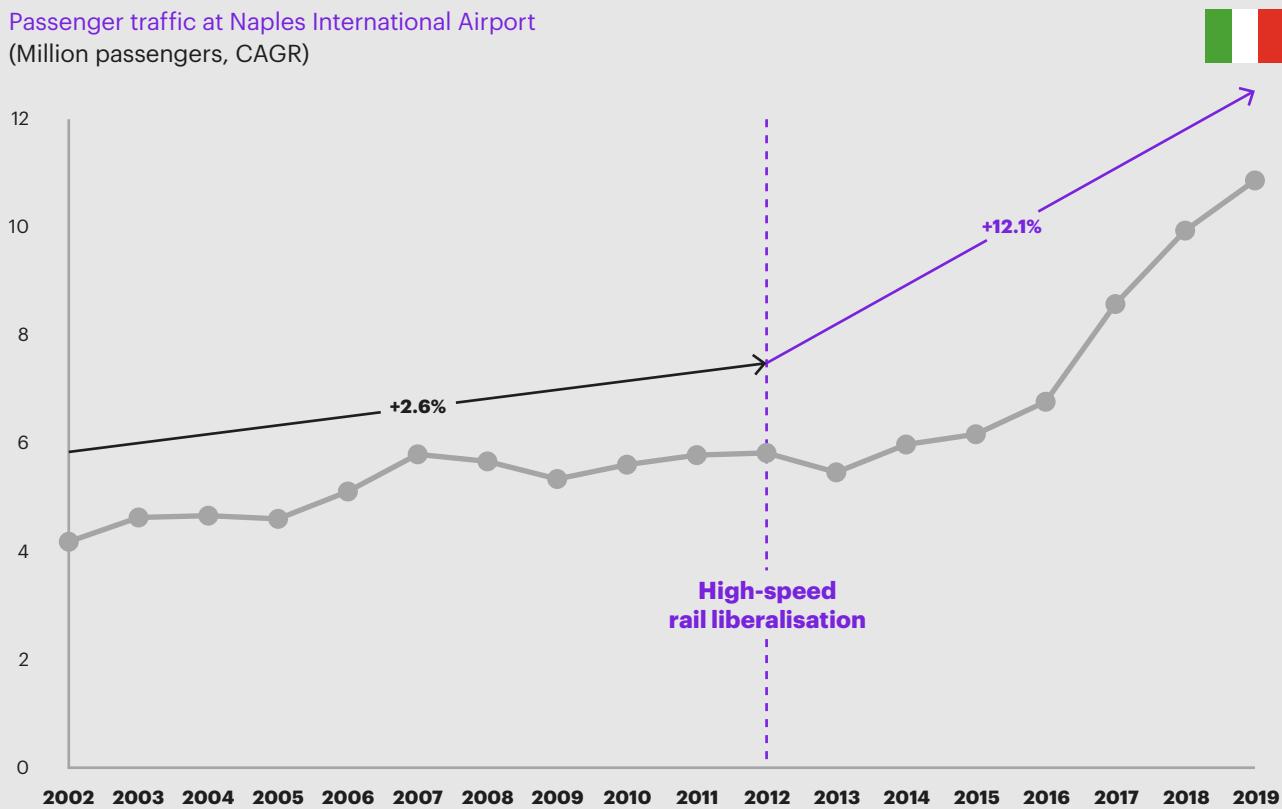


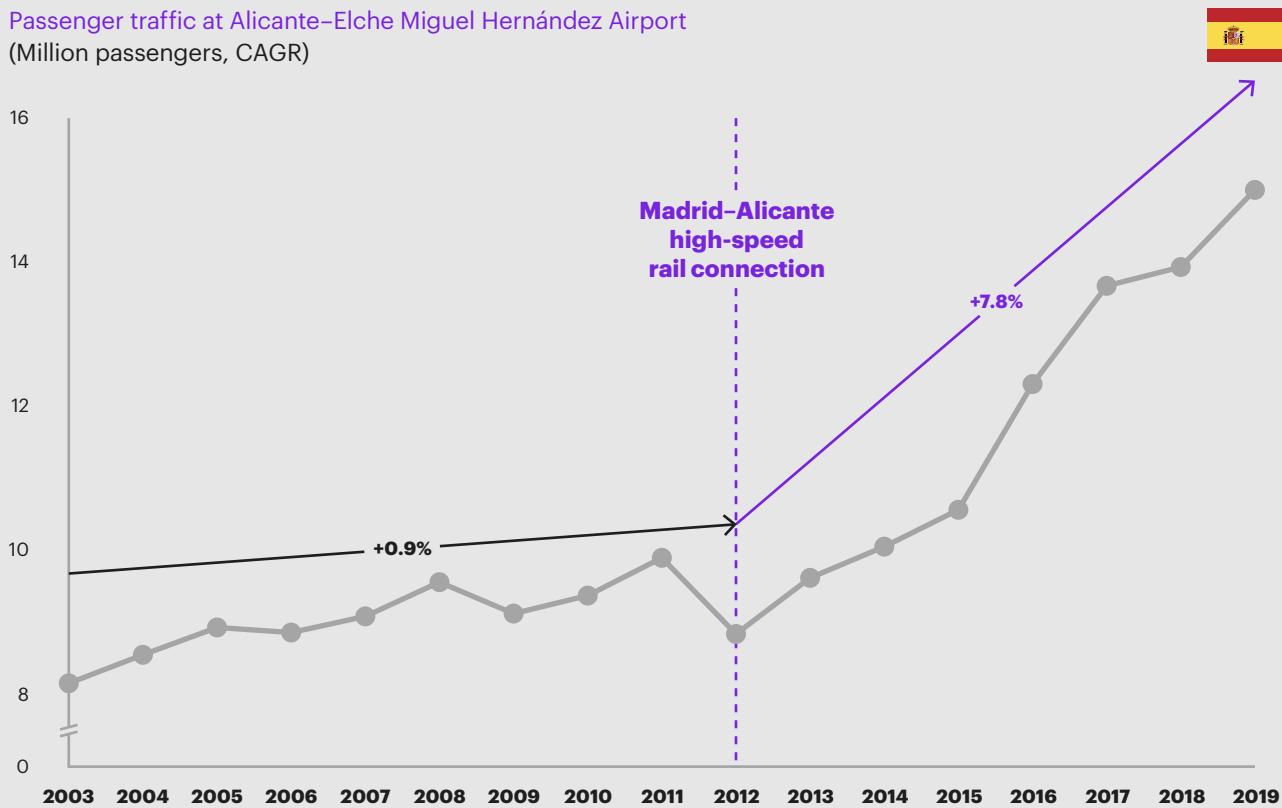
Figure 7

**The combination of low-cost airlines and high-speed rail has turned tier-2 cities into multimodal transit hubs**

Passenger traffic at Naples International Airport  
(Million passengers, CAGR)



Passenger traffic at Alicante–Elche Miguel Hernández Airport  
(Million passengers, CAGR)



Note: Tier-2 cities are those cities served by both air and high-speed rail, excluding those cities whose airports were among the top 20 in passenger traffic in 2019.  
Sources: Eurostat; Kearney analysis

## Price: greater value for money

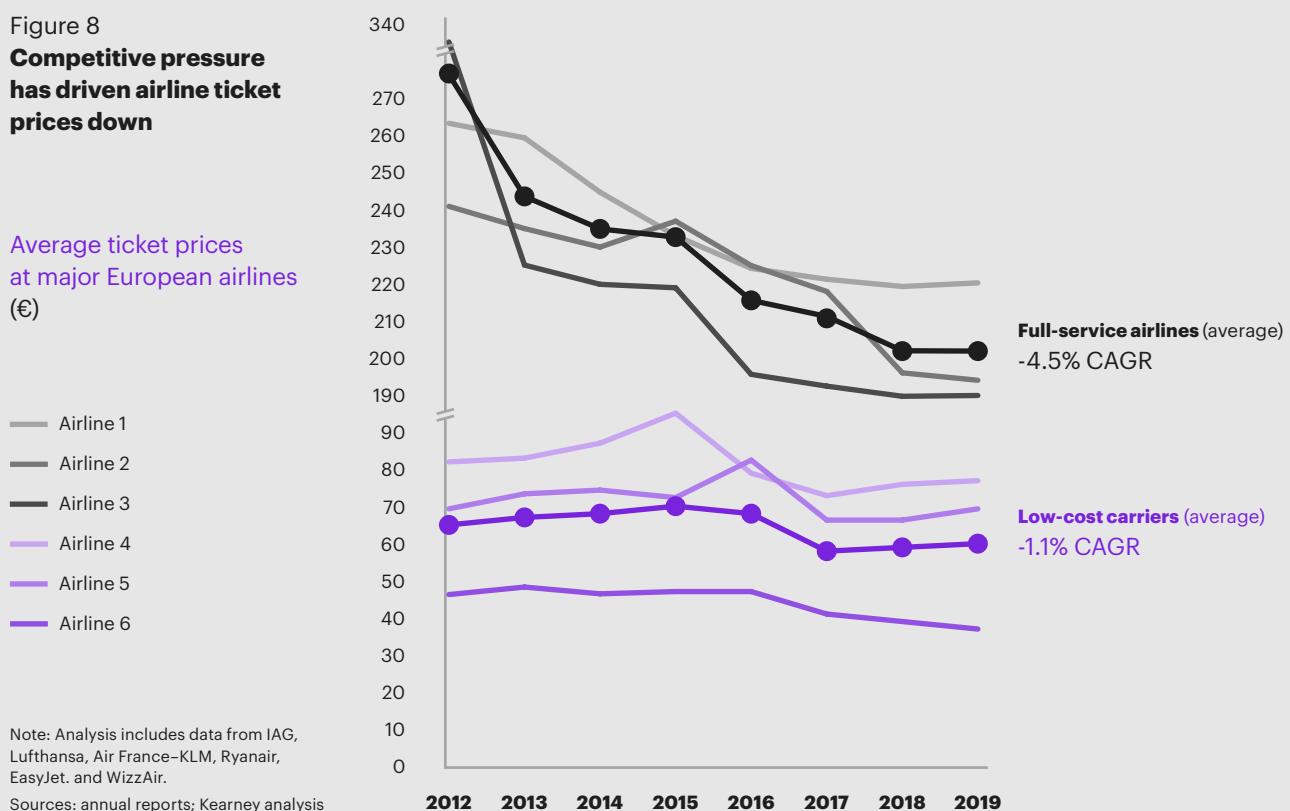
For passenger transport, as with all goods, customers' price sensitivity largely depends on the availability of viable substitutes. In the case of transport services, we can distinguish between two basic types of substitution: intermodal (for example, on medium-haul routes where both air and high-speed rail service are available) and intramodal (such as when two airlines or two rail operators serve the same route).

Liberalisation of passenger air traffic, and with it the proliferation of new entrants into markets unaccustomed to open competition, has made intramodal substitution a jarring reality. Strong competitive pressure—including from low-cost carriers, even on major trunk routes—has forced incumbent airlines to lower their fares in an attempt to defend their market share (see figure 8).

Figure 8

### Competitive pressure has driven airline ticket prices down

Average ticket prices at major European airlines (€)



The resulting fare reductions have stimulated significant demand and attracted a completely new segment of consumers. Market studies indicate that many people who fly with low-cost carriers—which now account for about 45 per cent of market share in Europe—have never flown before or would not have travelled by air if it were not for low fares. Short-haul flights, in turn, have become completely commoditised, with travellers citing price as the core experience driver and decision factor.

As for rail, intramodal competition is, with very few exceptions, extremely limited on medium- and long-distance routes. The current European regulatory framework, however, will soon change that situation. Although the full implications of passenger rail liberalisation are far from predictable, the experience from air can provide valuable insights.

Passenger rail, like air, has traditionally been dominated by national incumbent players with significant fixed costs; unlike air, however, low-cost carrier competition is still a relatively rare phenomenon. Nonetheless, in markets where real competition does exist (such as Austria and Italy), national incumbent players have lost as much as 40 per cent of market share on core routes, and high untapped market growth has been unleashed. In Italy, for example, the competition on high-speed rail routes has caused revenue to climb by 6 per cent annually between 2011 and 2019, as declining fares (2 per cent annual decrease) have driven a significant uptick in passenger demand (8 per cent on average each year), as we see in figure 9. Our analysis indicates that much of the increased rail demand can be attributed to the modal shift from air (very noticeable on trunk routes such as Milan-Rome) and the flourishing of strong latent demand.

The promise of ongoing liberalisation of the medium- and long-distance rail market in the EU, together with ongoing investment in new high-speed rail corridors, can therefore be expected not only to make competition in the EU's railway market more dynamic and drive demand and revenue growth, but also to invigorate intermodal competition with air all across Europe (see figure 10 on page 15).

MDMS that digitally connects Europe's entire multimodal transport system will supercharge both intermodal and intramodal competition, which, all things being equal, should drive fares down. And that would make the use of collective intercity transport both more attractive and more affordable—something that is especially important in today's inflationary environment.

**MDMS that digitally connects Europe's entire multimodal system will supercharge competition and likely drive fares down.**

Figure 9  
**In Italy, the liberalisation of high-speed rail has increased revenue as lower prices have stimulated passenger demand**

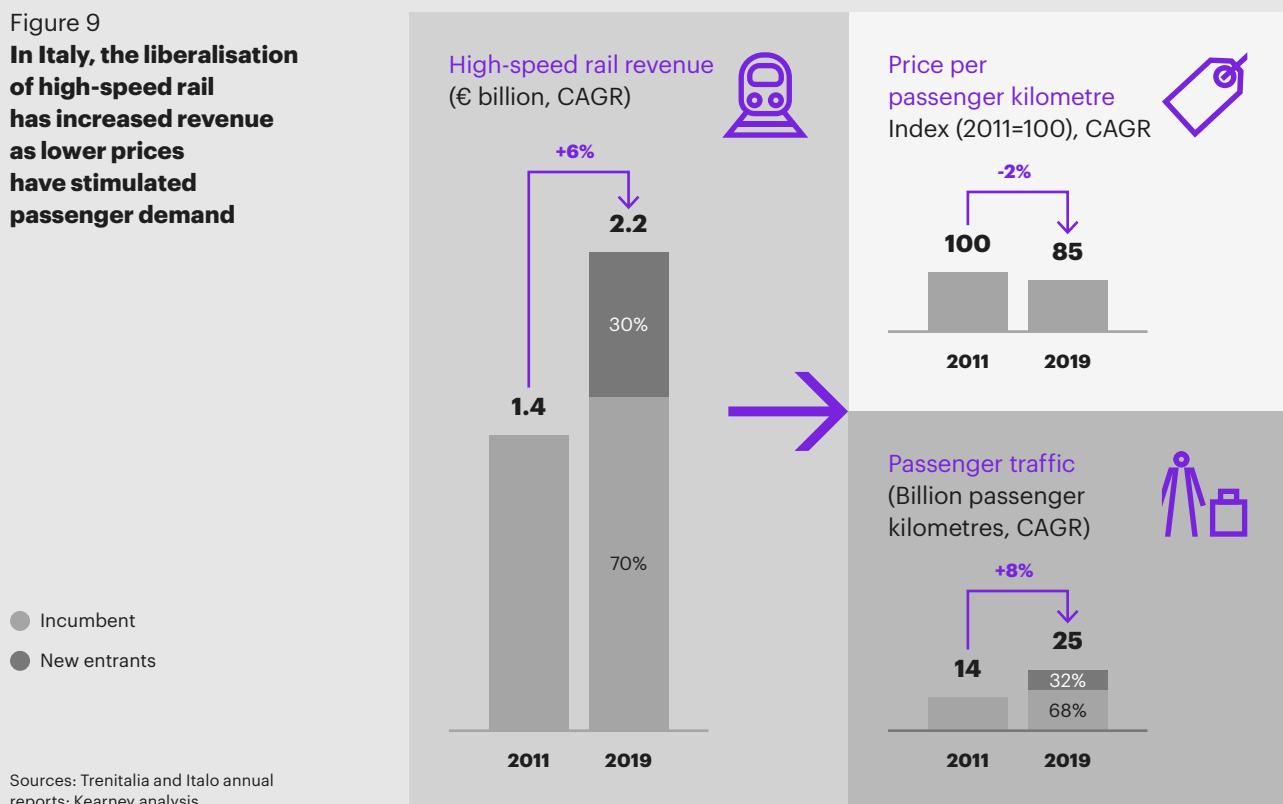
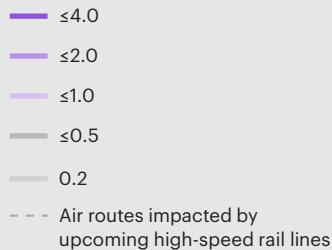


Figure 10

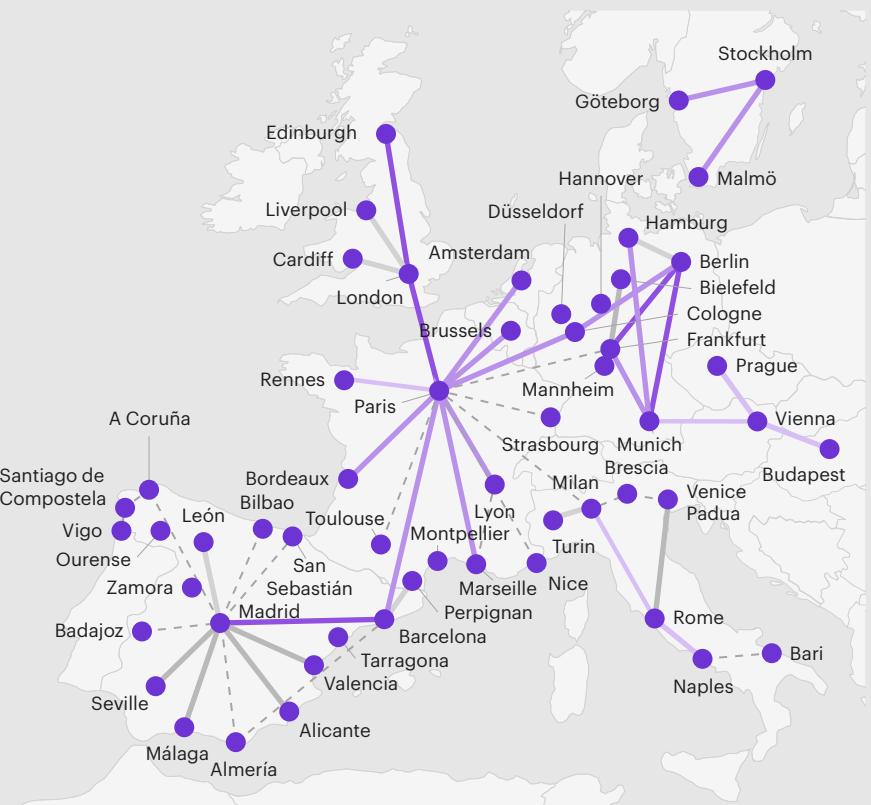
**The European Union's railway market is likely to become more competitive**

Main routes with intermodal competition between air and high-speed rail

**Estimated air passengers (millions)**



Sources: International Union of Railways (UIC): High Speed Lines in the World (September 2022 update), Eurostat; Kearney analysis



**Convenience: saving travellers time and effort**

Although travellers say that selection and price are the most important factors when buying a trip, convenience is also important for “time-poor” citizens. It is no coincidence that e-commerce has grown by leaps and bounds in our hyper-busy, always-on age, and the travel sector is no exception. Online travel planning and purchasing not only saves time and effort, but also makes it easy to compare and choose from among hundreds of destinations and offers.

The travel industry has gone to great lengths to cultivate its online presence, and travellers today are online and more mobile-savvy than ever before. In fact, [online sales](#) in the global travel and tourism market in 2021 accounted for 66 per cent of revenue, less than three decades after the first online travel agencies appeared in the United States.<sup>4</sup> Why has the online channel been so successful? Because digital visibility and online booking have made the experience a lot easier for travellers worldwide.

Under a multimodal perspective, when people use different modes of transport, they often struggle with the multiple payment and ticketing processes and apps involved. Indeed, taking and switching between various transport modes and finding relevant information can be overwhelming for passengers when they are confronted with a plethora of options and sources.

Looking ahead to the future of transport, the development of digital multimodal platforms in the form of MDMS would make the travel experience much more convenient by providing consumers with access to a multitude of options via the platform of their choice, thus helping to evolve the multimodal travel concept from a game of “hopscotch” to a much more straightforward, point-to-point experience.

<sup>4</sup> Statista, “Online travel market - statistics & facts”

## MDMS could increase passenger growth by 50 per cent

We estimate that MDMS could add 1 percentage point of growth annually between 2019 and 2030 on top of the expected 2 per cent annual growth rate in the continuity (base case) scenario—a 50 per cent increase in the rate of passenger growth (see figure 11).

- The continuity scenario is based on projections published by different stakeholders in each mode of transport, both in terms of investment in transport capacity and infrastructure, as well as the expected evolution of demand and prices.
- The multimodal scenario takes into account the historical elasticities of demand to improvements in the traveller experience in rail and air, possible capacity restrictions that may limit demand growth (such as overcrowding at certain airports and the lack of multimodal infrastructures), as well as likely additional growth stimuli (such as greater competition in high-speed rail and among transport modes).

Transferring these additional growth rates to passenger volumes for each mode of transport, and assuming that prices remain constant (except for a 2 per cent annual drop in high-speed rail fares due to liberalisation—and excluding the possible effect of inflation on the estimates), the potential value that MDMS can bring to the transport system in Europe over the next decade is estimated at 500 million travellers and €30 billion in revenue, equivalent to 13 per cent of the pre-pandemic market size (see figure 12 on page 17).

Figure 11

### Multimodality could increase annual passenger growth by 50 per cent—from 2 per cent to 3 per cent

Passenger demand growth forecasts: continuity vs. multimodal scenario  
(CAGR 2019–2030f)

Segment	Continuity scenario	Multimodal scenario	Delta of growth in demand
Air	+2.3%	+2.8%	+0.5 p.p.
High-speed rail	+3.8%	+6.3%	+2.5 p.p.
Conventional rail	+1.9%	+3.4%	+1.5 p.p.
Coach	+1.3%	+1.8%	+0.5 p.p.
<b>Total</b>	<b>+2.0%</b>	<b>+3.0%</b>	<b>+1.0 p.p.</b>

Sources: Eurostat, transport associations, national statistical institutes, transport operators; Kearney analysis

Figure 12

**Multimodality can potentially unlock an additional pool of 500 million passengers and €30 billion in revenue through 2030**

Total European intercity transport market  
(2030f)



Note: Modal share percentages are calculated under the multimodal scenario.

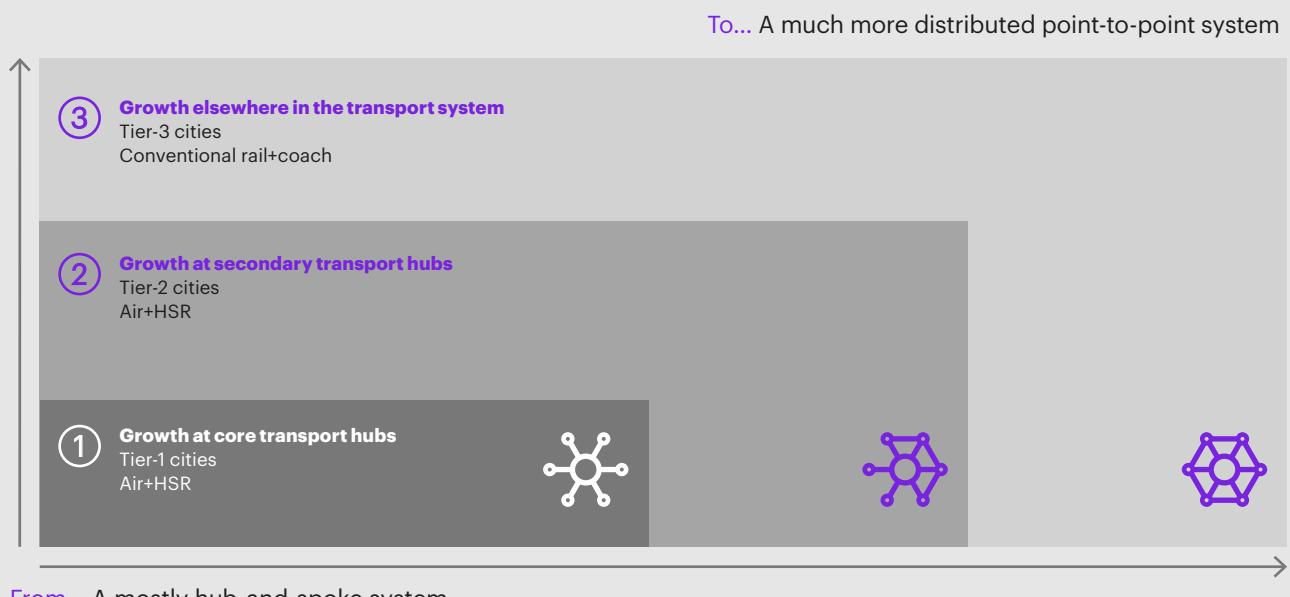
Sources: Eurostat, transport associations, national statistical institutes, transport operators; Kearney analysis

This promise of growth and transformation can be realised at European cities and towns of nearly any size or significance (see figure 13). First, multimodality can further fuel traveller demand growth at existing tier-1 transport hubs served by air and high-speed rail. Second, multimodality can replicate this growth at tier-2 hubs connected by air and high-speed rail, either now or in the not-too-distant future. And third, multimodality can also drive growth in transport to and from more peripheral locations served by conventional rail and coach (see sidebar: MDMS offers carriers an alternative model to drive growth and build scale on page 19).

**The promise of growth and transformation can be realised at European cities and towns of nearly any size or significance.**

Figure 13

**The promise of growth and transformation can be realised at European cities and towns of nearly any size or significance**



Notes: Tier-1 cities are those served by the 20 EU27 airports with the greatest passenger traffic in 2019. Tier-2 cities are served by airports with lower passenger traffic, but they are located on high-speed rail corridors. HSR is high-speed rail. Source: Kearney analysis

## **MDMS offers carriers an alternative model to drive growth and build scale**

This future vision for the European intercity transport system maintains the economies of scale and cost-effectiveness of having powerful hubs as the backbone of the system. But on top, it adds the advantages of a more distributed point-to-point model, such as greater visibility and accessibility of secondary destinations, increased intermodal and intramodal competition, greater multimodal flexibility, shorter travel time (by eliminating transfer points), fewer delays and missed connections, and a reduced risk of lost baggage.

Such an architecture would allow players to coexist and freely compete with different strategies and value propositions. Why? Because to efficiently cover a territory as large as the EU, hybrid configurations—where some operators choose a hub-and-spoke model and others choose a point-to-point strategy—are the only stable equilibrium.

Transport has always been a highly fragmented industry. Liberalisation is ending monopolies and introducing horizontal and vertical fragmentation in the different transport value chains. In recent years, players have pursued efficiency gains mostly by increasing scale on the supply side, in a bid to offer competitive prices. But at the end of the day, scaling in each transport mode has not solved the structural challenge of co-ordinating the different transport modes and providing point-to-point experiences.

A digital approach to multimodality offers an alternative model to drive growth and build scale. MDMS would do so on the demand side by pooling together large numbers of destinations, routes, and travellers, and using technology to facilitate multimodal point-to-point experiences. Digital-driven multimodality has the capacity to activate a “flywheel effect” that generates a better, less expensive, and more convenient experience for the traveller, thereby fuelling industry growth. A seamless, point-to-point experience would attract increasing numbers of users to MDMS, thus driving the supply of transport service providers that put their capacity on these digital platforms. This effect, in turn, will create a larger selection of travel options, which will further improve the traveller experience. At the same time, increased competition between transport modes will drive fares down, further contributing to generate demand. And so MDMS will create a virtuous circle that boosts the demand for services and the income of companies, as has already occurred in other industries orchestrated by this type of platform such as marketplaces, digital music, video and gaming services, and online learning.

Additionally, MDMS can help optimise supply by increasing the utilisation and yield of existing transport capacity and infrastructure, reducing operating costs while minimising the need to invest in new assets. Digital is a game-changer in identifying and exploiting complementarities between industry players, and in this regard, MDMS would enable collaboration, data exchange, and asset-sharing among companies to reduce marginal costs, rotate assets, and optimise capital investments.

The ultimate frontier for multimodality is to transform the transport system in Europe into a multilateral market, a system of systems, with digital platforms orchestrating transport modes to provide a ubiquitous, seamless, affordable door-to-door experience for travellers, no matter where they live.

## **Digital-driven multimodality can activate a “flywheel effect” that improves the traveller experience and fuels industry growth.**



# Only concerted action will create the right conditions for true multimodal development

Multimodality blurs the boundaries among transport modes, so that travellers have a variety of affordable, convenient, and clean ways to get from point A to point B. Maximising the potential value of multimodal intercity transport in Europe, therefore, will require concerted action among all stakeholders, from industry players to regulators and policymakers, to secure the right conditions for investment in the underlying infrastructures, both digital and physical, to support a truly multimodal ecosystem in Europe.

## Digital infrastructures: enabling data sharing

Digital infrastructures will underpin the success of multimodality because they connect transport modes and break down the traditional silos in searching, booking, ticketing, and paying for travel. But digital infrastructures do not work without data. Data is the fuel that will power the digital transformation of the European transport system. Multimodal solutions require access to relevant information and content from transport providers on schedules, availability, fares, ancillary services, and environmental footprint to provide travellers the means to conveniently make an informed decision. Building a policy framework that establishes the right to access to that relevant content will significantly expand the digital visibility of the multimodal offer across all distribution channels, reinforce competition, and enhance consumer transparency.

## A policy framework that establishes the right to access relevant content will reinforce competition and enhance consumer transparency.

The European Commission's Multimodal Digital Mobility Services regulatory initiative underlines the strategic importance of collaboration across all industry stakeholders, supported by a regulatory framework that facilitates systems interoperability and access to transport content on fair, reasonable, and non-discriminatory terms.

Additionally, the liability and passenger rights framework should be designed from a multimodal perspective. The establishment of passenger rights is considered one of the EU's crowning achievements. They already provide a high level of passenger protection, but unfortunately, the growing number of multimodal passengers are unable to take full advantage of this protection. At the moment, consumers who decide to combine different modes of transport, even if they bought a single ticket for their entire trip, are covered for each segment of their trip separately by different EU instruments. In practice, this can often lead to serious [disadvantages](#) for the consumer.<sup>5</sup>

Today, passengers typically are unaware of their rights if a disruption, such as a long delay or cancellation, affects a specific segment of a multimodal journey. Moreover, they often incur a monetary loss—for example if they miss a flight because of a delayed train—because of the legal ambiguity surrounding service providers' respective obligations in cases such as these. Data sharing will therefore be crucial to ensure that passengers' rights are protected and that integrated multimodal ticketing is viable.

But the reality today is that transport data and content is highly fragmented and often quite opaque, making it very difficult to compare and combine travel options to provide a single, seamless point-to-point offer. It is true that, in recent years, the EU has issued increasingly detailed regulations and legislation concerning access to data, including the European strategy for data, the recently enacted European Data Governance Act, and the proposal for a European Data Act. Much more remains to be done, however, to ensure that industry players share data with one another under fair, reasonable, and non-discriminatory conditions—without which multimodal systems are unlikely to achieve their full functionality and impact.

A good example is the Finnish Act on Transport Services, which sets out three obligations to open up APIs. It mandates access to essential data concerning mobility services, the granting of access to a sales interface for [single tickets](#) or a reservation interface for transport, and access to a sales interface when acting on someone else's behalf.<sup>6</sup>

<sup>5</sup> Bureau européen des unions de consommateurs (BEUC), *Multimodal journeys: How to make sure passengers are better protected?*, 2017

<sup>6</sup> Finger, Matthias, Juan J. Montero-Pascual, and Teodora Serafimova, *Towards EU-wide multimodal ticketing and payment systems*, European University Institute, 2019

Other industries such as banking already have specific regulatory frameworks to ensure that when a user wishes to transfer data services to other service providers, the data holder must provide that data under fair, reasonable, and non-discriminatory conditions. The Second Payment Services Directive (PSD2) obligates banks to transfer data to third-party providers through an open API, subject to customer consent.

Today, most service providers within the transport system use digital platforms to engage with their own customers in a more convenient and personalised way. A seamless, multimodal journey created through greater digitalisation, collaboration, and data sharing among travel service providers must be the next development. How the transport system will develop over the next decade is uncertain, but maximising the value at stake of multimodality—for both travellers and the industry—rests on the transport system's ability to break its silos and connect the dots around the multimodal experience. In sum, the success of multimodality will depend on establishing a common transport data space to promote data-driven innovation and transformation in the European transport system.

In this regard, as technology is also pivotal for Europe's competitiveness and resilience, European companies, regulators, policymakers, and all other relevant decisionmakers must be proactive and agile to secure Europe's competitiveness and sovereignty in the digital infrastructures that will drive multimodal transport. The principles and infrastructures behind MDMS will potentially lay the groundwork for innovative services and business models in other industries as well, stimulating growth of the EU's entire technological ecosystem.

In a winner-takes-most technology business world, most European players lack the technology leadership and scale they need to compete with their US and Chinese counterparts. The World Economic Forum estimates that 70 per cent of new economic value over the next decade will be digitally enabled, so it is urgent that Europe improves its competitive position in multimodal solutions as transversal technology infrastructures and enablers of sustainable economic and social development.

## **Physical infrastructures: investing in multimodal transit hubs**

Another key factor for the success of the multimodality in Europe will be investment in multimodal transit hubs that enable travellers to seamlessly connect between different modes of transport. In the current transport system, multimodal transit hubs are commonly seen as physical places that connect a variety of transport modes.

Physical co-location provides a primary opportunity for seamless transfer between transport services and modes. Airports, for example, can serve as efficient multimodal transit hubs, essential for conveniently providing onward transport links for visitors upon arrival. In this regard, airports should link directly to intercity transportation systems (high-speed rail, express coach) as well as urban mass transport services.

Planning, investment, development, operation, and regulation in transport infrastructures are today mostly undertaken in isolation. For multimodality to be successful, policymakers and public administrations at all levels (from municipal to pan-European) must consider transport as a whole rather than in unimodal segments. Therefore, the availability of a next generation of multimodal transport infrastructures requires a new mindset when it comes to shaping and managing investments, moving from local to European, and from monomodal to multimodal thinking.

**Maximising the value of multimodality rests on the transport system's ability to break its silos and connect the dots.**

## Concluding thoughts

A European multimodal transport system will optimise the comparative advantages of each transport mode involved to achieve more sustainable transport within and between countries. But to provide seamless multimodal services, it will be necessary to connect individual transport operators and services through efficient transport infrastructures, both digital and physical, at the national and international levels.

Moreover, multimodal transport will also contribute significantly to equity and economic development. Properly done, a more digital and multimodal transport system can provide more equal access to jobs, education, services, and other economic opportunities, particularly in remote and underserved rural areas—all at a lower cost to consumers. The modernisation of transport also directly and indirectly generates new jobs in local economies.

Leaders from both the public and private sectors will need to work together to achieve this better future. The European Commission can play a key role in guiding and financing these activities to assist the industry as it develops the world's first truly multimodal transport ecosystem on a multinational scale—and in carefully managing the potential externalities generated during the transition. Our study aims to facilitate this process by channelling public and private efforts towards key value creation opportunities and the high-priority, structural enablers of transformation required to make the multimodality vision an everyday reality.

## Authors



**Pablo Escutia**

Partner, Madrid

pablo.escutia@kearney.com



**José Cantera**

Partner, Madrid

jose.cantera@kearney.com

The authors would like to thank Javier González and Álvaro Horstmann for their valuable contributions to this report. They also express their gratitude to the many scholars and industry experts who generously shared their insights during the conduct of the study.

This study was commissioned by Amadeus IT Group and conducted in the fall of 2022. Kearney performed this study independently and are solely responsible for all analyses and conclusions.

Kearney is a leading global management consulting firm. For nearly 100 years, we have been the trusted advisor to C-suites, government bodies, and nonprofit organizations. Our people make us who we are. Driven to be the difference between a big idea and making it happen, we help our clients break through.

**kearney.com**

For more information, permission to reprint or translate this work, and all other correspondence, please email [insight@kearney.com](mailto:insight@kearney.com). A.T. Kearney Korea LLC is a separate and independent legal entity operating under the Kearney name in Korea. A.T. Kearney operates in India as A.T. Kearney Limited (Branch Office), a branch office of A.T. Kearney Limited, a company organized under the laws of England and Wales. © 2022, A.T. Kearney, Inc. All rights reserved.

