

amadeus

Amadeus Insights

Navigating the Future:

How Generative Artificial
Intelligence is transforming
the travel industry



Foreword



Sylvain Roy
Chief Technology Officer
Amadeus

At Amadeus, we work to make the experience of travel better for everyone, everywhere. We continue to innovate, understanding how technology can transform our industry.

There is perhaps no better example of this mission coming to life right now than through the deployment of Generative Artificial Intelligence (Generative AI). This is a technology that has the potential to transform every facet of what we do across the travel ecosystem, significantly enhancing the passenger experience at every step of the journey.

Unlike other types of AI, which are focused on classification or prediction, Generative AI has uses in machine translation, recommendation and content creation, as well as a variety of other tasks yet to be defined.

To understand where we are with the roll-out of this new technology and, importantly, where we are heading, Amadeus commissioned ***Navigating the Future***. This report provides up-to-the-minute insight into the role of Generative AI in the travel sector, its use cases, challenges, deployment, and more. It shines a spotlight on this most innovative of technologies.

We are excited by the potential of Generative AI to make the experience of travel better. With a

proven track record of deploying innovative travel technology, we are well-placed to explore the potential of this developing field in our industry.

Being at the heart of the travel ecosystem, Amadeus is present across all travel segments, enabling new capabilities to maximize the potential of Generative AI. We are exploring ways in which we can maximize the value of data, expertise and insights to create a unique proposition for stakeholders across the industry – this is our true differentiator.

That is not to say we remain in the era of unbridled optimism.

Questions are rightly being asked whether Generative AI will deliver sufficient returns on investment, while talent shortages are also coming under the spotlight. It is crucial that we use this new technology responsibly and ethically, ensuring data security, privacy, and content reliability. Human oversight will also be paramount.

Our use of Generative AI must be appropriate, focused and efficient, as well as making a positive impact on our industry. These challenges are explored here.

I hope you enjoy ***Navigating the Future*** – and look forward to the journey ahead.

Introduction

While Artificial Intelligence (AI) has been a mainstay of travel technology for a decade or more, there has been an explosion of interest in Generative Artificial Intelligence (Generative AI) since ChatGPT brought the topic to wider public consciousness in late 2022. The subject has rarely been far from the headlines since.

But what is happening on a practical level? Where are the challenges being observed and tangible benefits delivered? **Navigating the Future** answers these questions.

Commissioned by [Amadeus](#) and conducted by [Mercury Analytics](#), the extensive survey engaged 306 senior travel technology leaders with

experience of Generative AI from ten key markets in North America (United States and Canada), Europe (UK, Italy, France, and Germany), and Asia Pacific (India, Australia, China, and Japan).

From the sample, 72% have experience adapting Generative AI models to meet specific requirements, while 24% have 'hands on experience' with the technology. A total of 71% have final authority over Generative AI decisions at their company, while the remaining 29% have 'significant influence' over such decisions.

72%

Have experience customizing Generative AI models

24%

Have 'hands on experience' with the technology

71%

Have final authority over Generative AI decisions at their company

29%

Have 'significant influence' over such decisions



Key observations from *Navigating the Future*

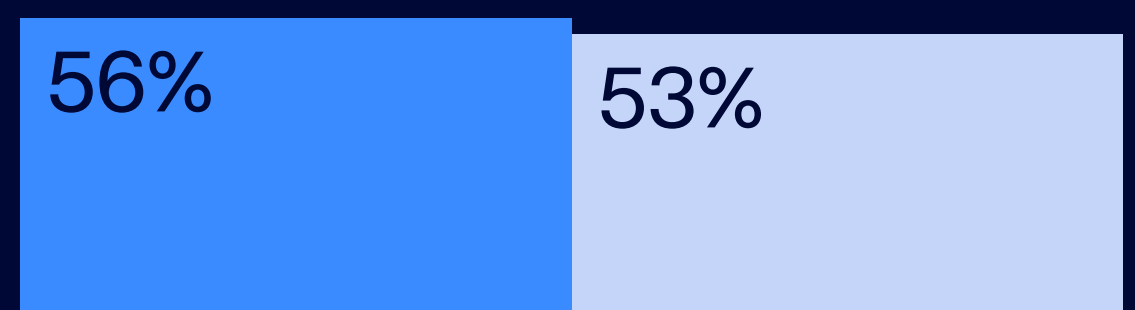
What this cohort told researchers was illuminating. Generative AI is already in widespread use across the travel industry. This is a technology whose time has arrived. Moreover, continued investment in Generative AI is the top technology priority for the industry over the coming year, suggesting the pace of change is set to accelerate.

Technology experts within the travel sector see a wide range of use cases for Generative AI, with relatively equal weighting given to each. These include personalized travel recommendations and itineraries, improved customer service through advanced chatbots, and targeted advertisements. It is notable the industry has begun with customer-facing use cases, while back-office applications are not currently a priority.

Today, 41% of *Navigating the Future* respondents already have budgets in place to deploy Generative AI, while half agree their company culture is ready for the change this new technology will create.

However, barriers to the deployment of Generative AI remain.

There are concerns around talent shortages and potential returns on investment, while 56% of the survey said their 'technology infrastructure' needs work before they can begin to deploy Generative AI. Some 53% also pointed to internal data management and organization as a concern.



Think their technology infrastructure needs work before the deployment of Generative AI

Is concerned about internal data management and organization

Part 1

Four-in-five travel technology leaders see Generative AI as a priority over next year

Generative AI undoubtedly has the potential to revolutionize the travel industry, enhancing personalization and improving the customer experience on every trip. This is not an iterative change, but a once-in-a-generation advance in the way the sector operates.

This excitement is borne out by the findings of ***Navigating the Future***.

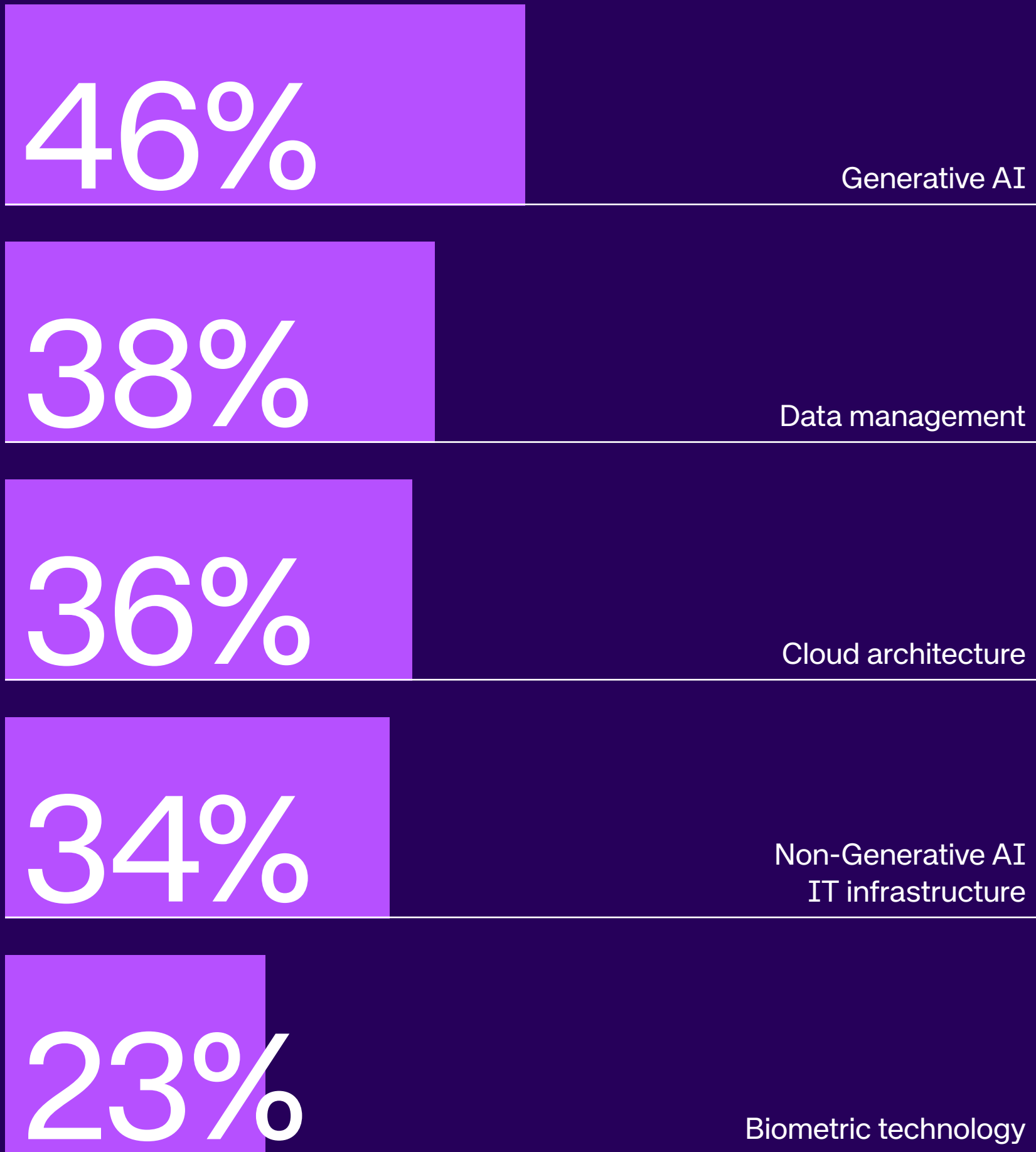
When asked how they would prioritize a variety of technologies for internal use over the coming year, Generative AI was cited as a 'top priority' by 46% of those questioned – ahead of any other technology.

Combined with the 35% of experts who rated Generative AI as a 'high priority', more than four-in-five travel technology leaders place significant weight on the development of this technology soon.

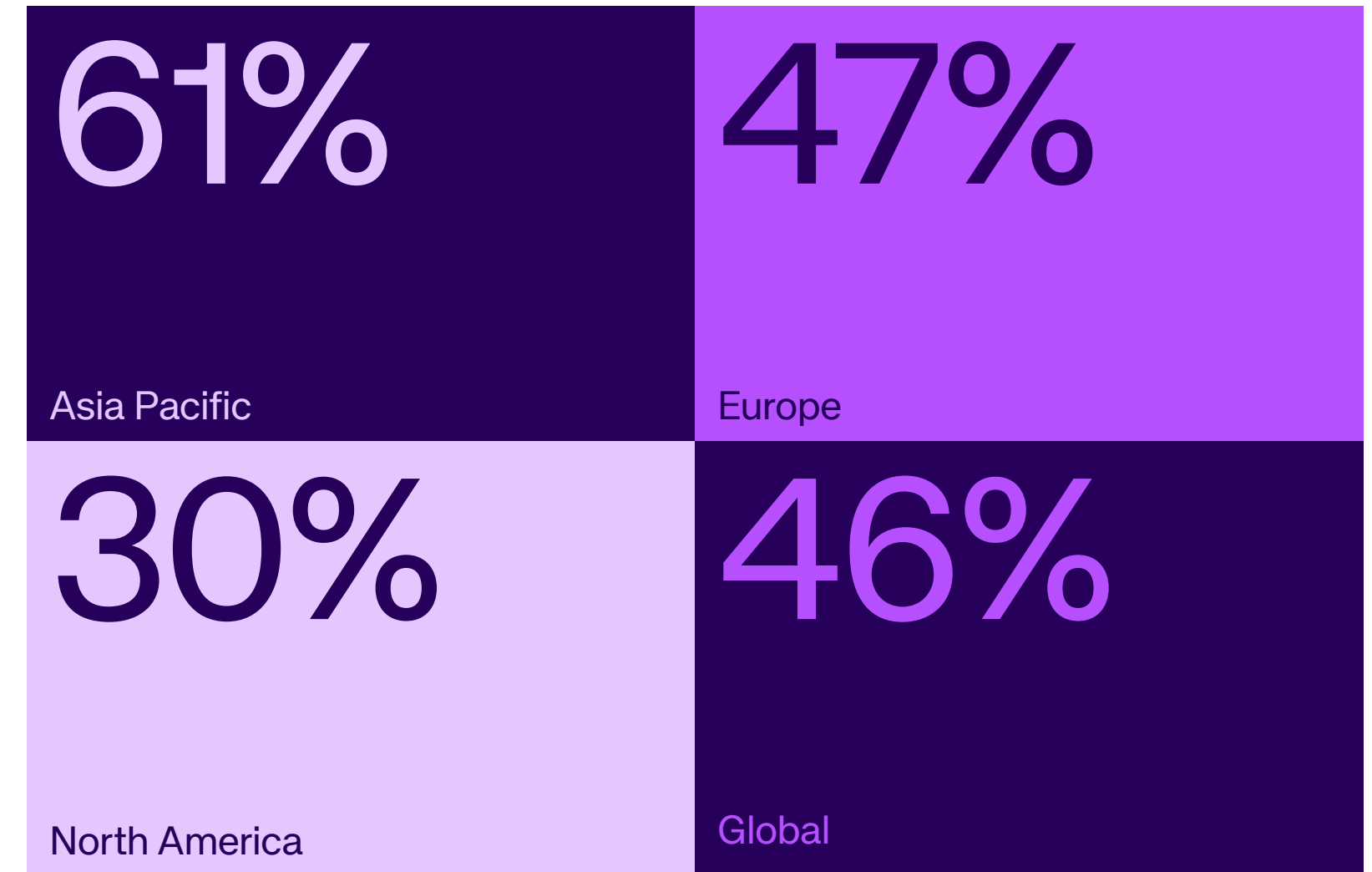
Change is coming – and fast.

Generative AI is rated as a top internal technology priority for the coming year ahead of data management (38%), cloud architecture (36%), non-Generative AI IT infrastructure (34%), and biometric technology (23%).

Technologies rated as priorities for internal use in the coming year:



While Generative AI was marked as a 'top priority' by the most senior technology leaders globally – regional differences were recorded:



Digging deeper, this discrepancy is potentially caused by money spent to date – perhaps United States-based Generative AI experts have already made sufficient investments, and the technology is less of a priority for the coming year, or those in Asia Pacific are accelerating spending as they see this as a vital technology. Alternatively, perhaps technology leaders in the United States are beginning to hit some of the barriers to deployment explored in Part IV of this report – time will tell.

“As part of Amadeus’ commitment to this new technology, we are investing in new tools to help us harness the power of Generative AI, with teams across the business working to develop capabilities. We have research teams of AI specialists and data scientists implementing and experimenting with different use cases, product development groups are applying the technology, while Amadeus is part of the debate happening across our industry.

This balance of research and implementation lets Amadeus explore the possibilities, while also showcasing innovative products that are market ready. The impact will be felt throughout the whole traveler experience.”

Rodrigo Acuna Agost

Head of Research & Generative AI

Center of Excellence

Amadeus

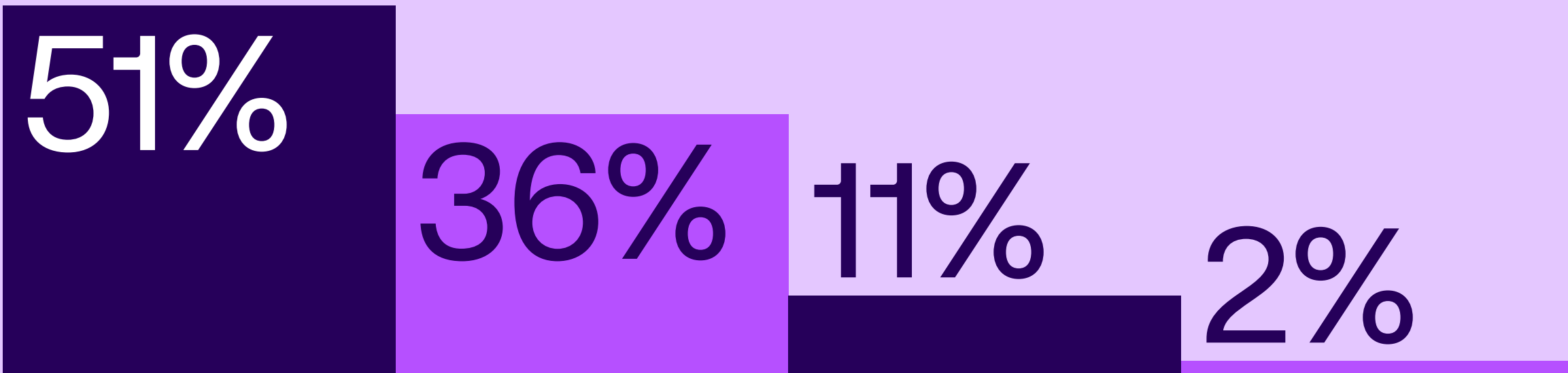
Generative AI already being widely used across the travel industry – with more to come

Virtually all respondents think Generative AI use for travel will be widespread within two years.

Globally, over half of travel technology leaders (51%) argue Generative AI already has a 'significant presence' in the travel industry in their country. This figure rises to 54% in Asia Pacific. A further 36% expect this presence to emerge over the next year, while 11% expect the process to take one-to-two years.

Just 2% of travel technology leaders think it will take three-or-more years for Generative AI to have a significant presence on the travel sector where they are.

When asked how their company uses Generative AI today, 68% of travel technology leaders cited 'data analysis', which was by far the most common application. This was followed by 'access to knowledge' (49%), 'client support' (46%), 'ideation and/or creativity' and 'copy-editing and /or proofreading' (both 45%).



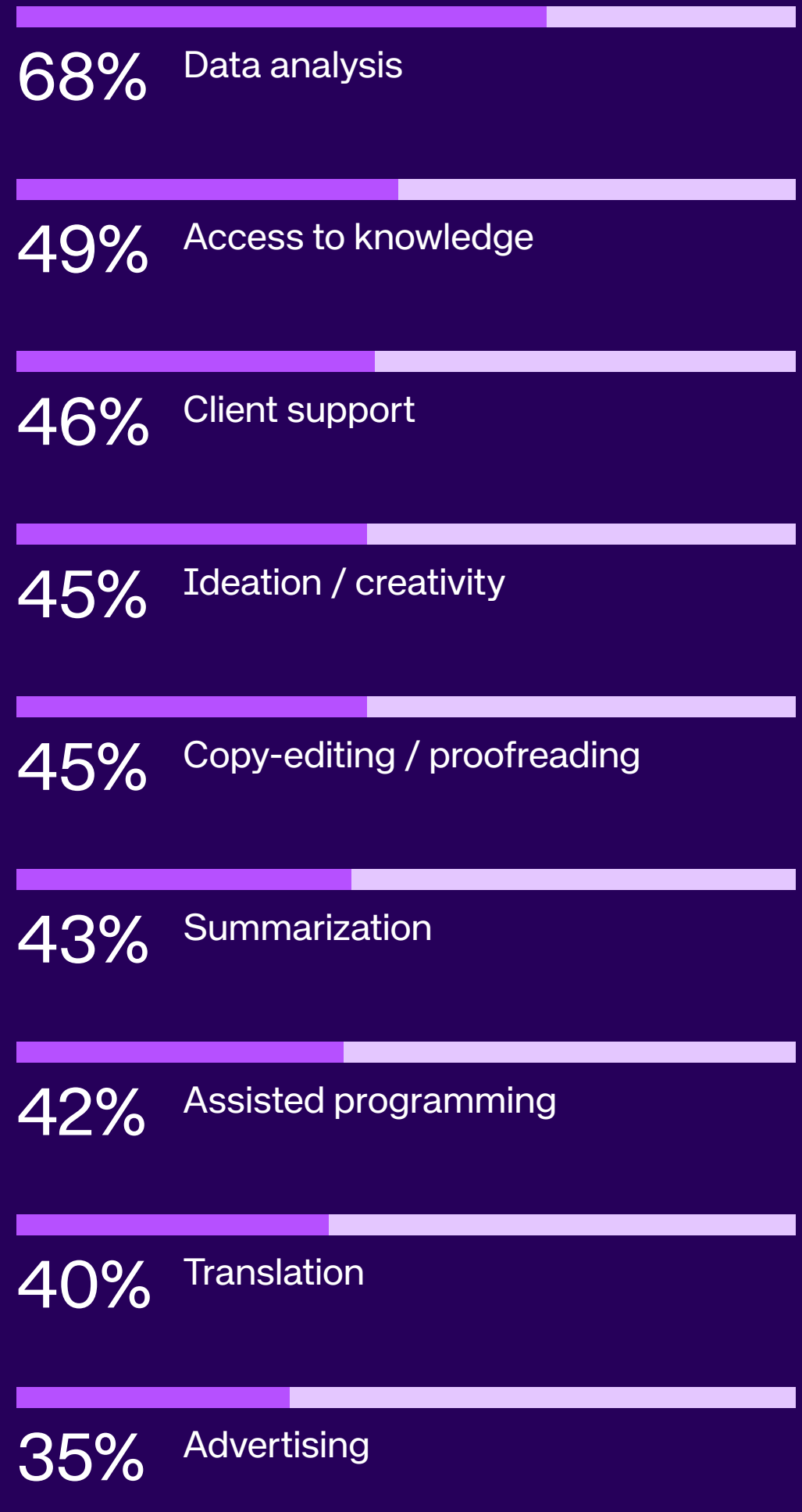
of technology leaders think Generative AI already has a 'significant presence' in the travel industry in their country

of technology leaders expect this presence to **emerge over the next year**

of technology leaders expect **the process to take one-to-two years**

of technology leaders think the process **will take three-or-more years**

Does your company use Generative AI for any of the following internal processes?



“Using Generative AI for internal processes offers significant business benefits, for example by automating time-consuming tasks, enhancing creativity and improving decision-making processes. It can streamline content creation, data analysis and customer support, reducing manual effort. AI-generated insights can also help teams make data-driven decisions faster, while personalized automation enhances productivity.”

Nicolas Hauviller

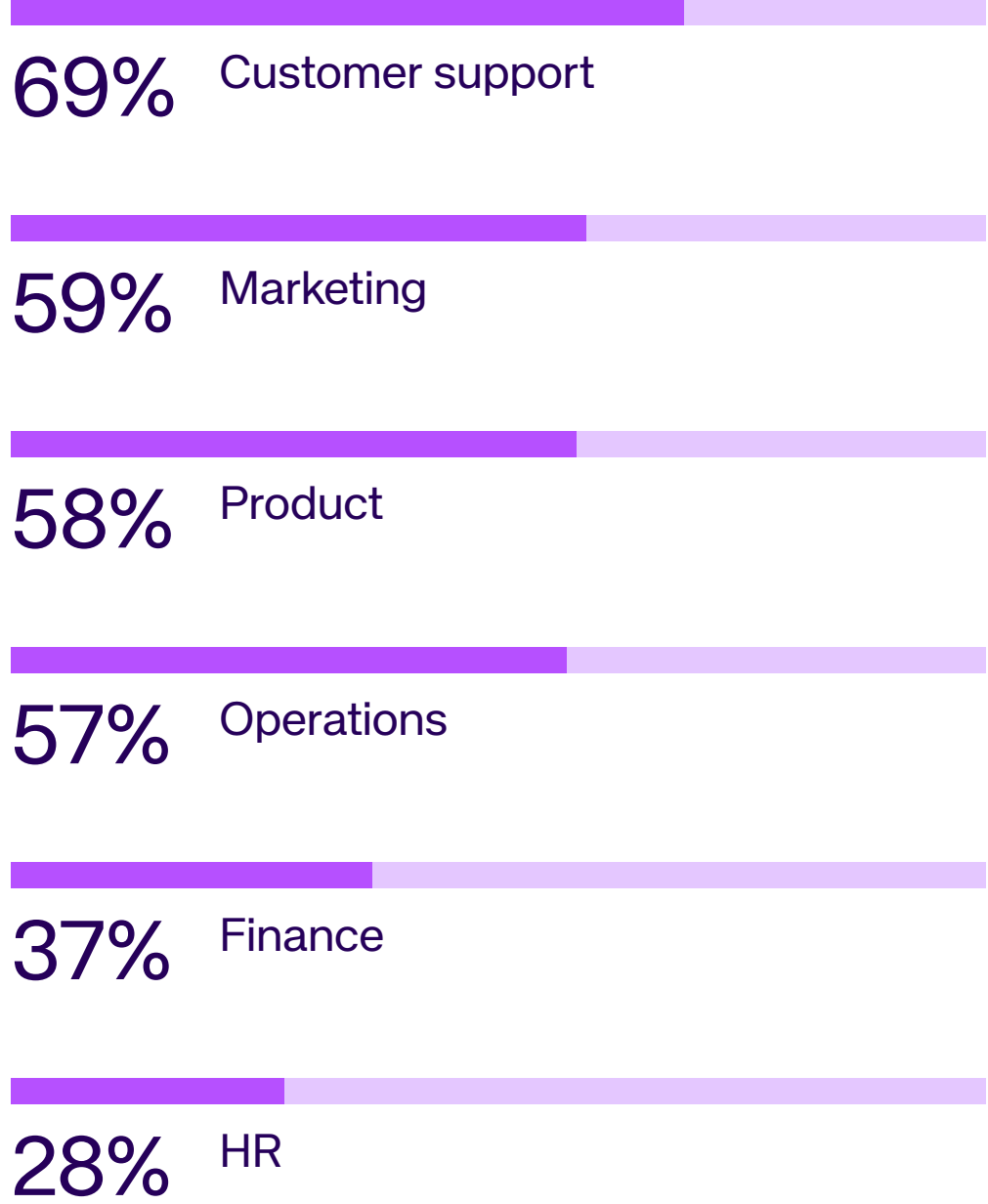
Senior Lead Innovation

Amadeus



When it comes to business function, Generative AI adopters are today focused on customer-facing tasks, including support and marketing, as well as areas that contribute to the customer experience, such as product and operations. Right now, back-office functions like finance and HR are a lower priority for many.

In which areas does your company use, or intend to use, Generative AI?



Part 2

Digital assistants, recommendations and content generation seen as top use cases

Technology leaders in travel see a broad range of uses for Generative AI right across the ecosystem. Perhaps unsurprisingly, the industry has to date focused on customer support as the first widespread use case for the technology, with 53% of companies currently deploying Generative AI for 'digital assistance for travelers during booking' and 48% deploying it for 'recommendations for activities or venues'.

When asked to provide qualitative insight into the impact of the technology, numerous **Navigating the Future** respondents pointed out that Generative AI-powered chatbots and virtual assistants have become the frontline for handling customer inquiries, providing round-the-clock support and resolving issues promptly – during booking and beyond. This has led to an increase in customer satisfaction and eased the

workload on human customer service representatives by taking over routine and repetitive tasks.

Respondents suggested 'matching destinations with our customers' data profiles,' 'personalized travel recommendations,' AI-generated itineraries, chatbots, virtual tour guides, and predictive analytics, and 'smooth coordination between flights accommodations and car rentals' were all front-of-mind use cases.

Another key area where Generative AI has already made a notable impact is in marketing and advertising. Many **Navigating the Future** respondents observed that Generative AI-driven content generation, ad copy creation and dynamic pricing strategies have revolutionized marketing and commercial efforts.

53%

of companies are currently deploying Generative AI for 'digital assistance for travelers during booking'

48%

of companies are currently deploying Generative AI for 'recommendations for activities or venues'

Does your company use Generative AI for:

53% Digital assistance for travelers during booking

48% Recommendations for activities or venues

47% Content generation

45% Helping staff to better serve customers

45% Collecting and condensing post-travel feedback

45% Travel inspiration

44% Digital assistance for travelers during the trip

41% Streamlining operations (internal tasks)

It is also interesting to note that a significant percentage of companies are already using Generative AI across all use case areas, evidencing that the technology has very much arrived in the travel sector and is already being widely deployed.

“Generative AI is no longer a ‘coming technology,’ it has arrived. From digital travel assistants to recommendation engines, content generation and feedback analysis, stakeholders across the industry are finding innovative ways to deploy this new technique in search of an enhanced passenger experience.”

Nicolas Hauviller
Senior Lead Innovation
Amadeus

How might Generative AI be used in the future?

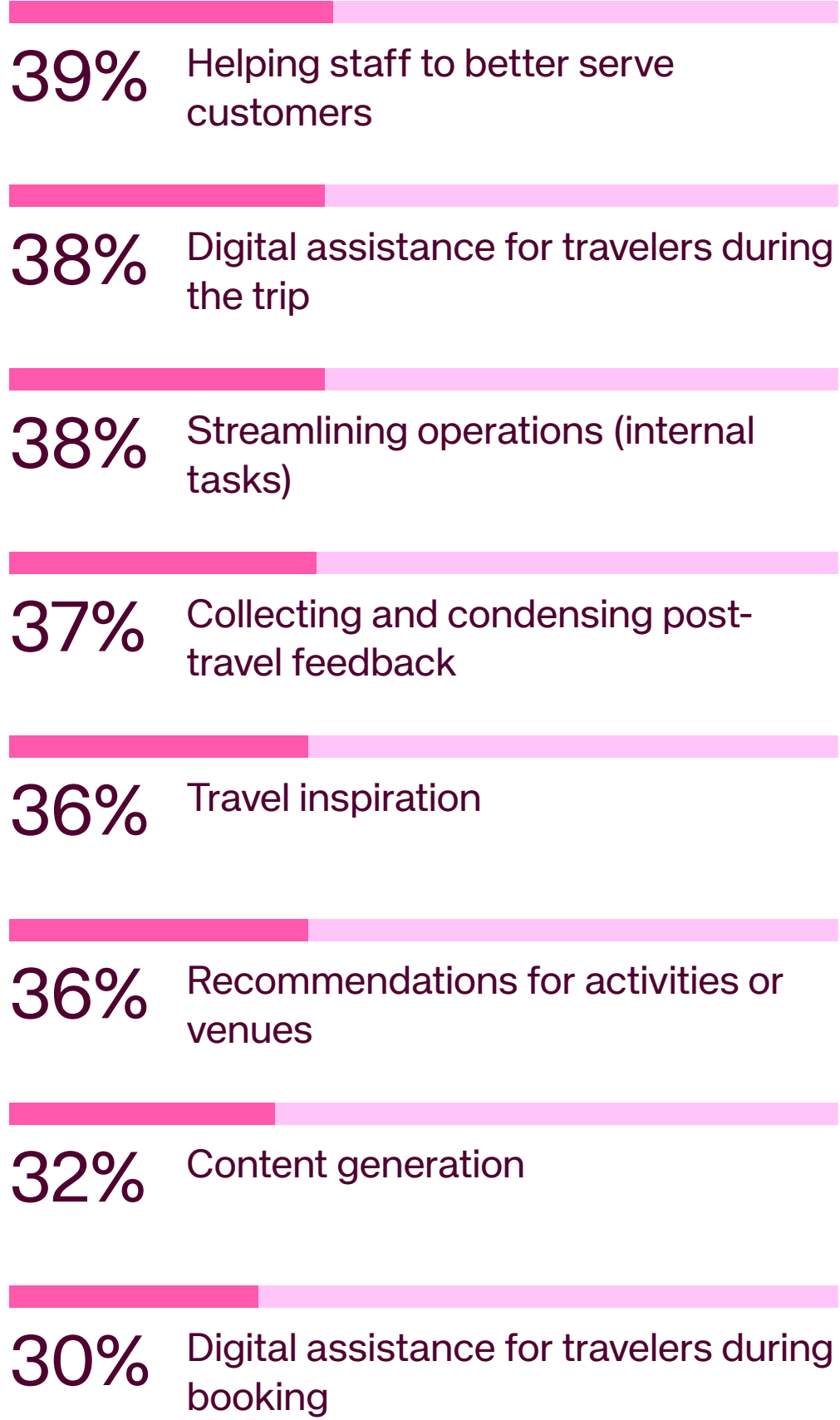
When it comes to areas of future growth for Generative AI, *Navigating the Future* respondents hope to see the technology create personalized travel itineraries – though work remains to be done to fully realize these benefits.

By analyzing data, including user demographics, travel history, booking patterns, and real-time information, Generative AI, when combined with other advanced AI technics, is able to craft

highly customized travel plans. These itineraries consider individual preferences, budgets, past travel behavior, and even real-time suggestions for accommodations, activities, and dining options, ensuring that each trip feels unique and tailored.



Is your company planning Generative AI for:



In the realm of real-time services, there is notable enthusiasm for the use of Generative AI in providing translation services. This feature would help tourists communicate more effectively with locals, breaking down language barriers and enriching the travel experience. Tourists would feel more comfortable and confident exploring new places when they can understand and be understood, enhancing their overall journey.



What do you think is the single most useful way Generative AI could be used in the travel industry (ranked order)?

- 1 Personalized travel recommendations and itineraries
- 2 Improved customer service through advanced chatbots and virtual assistants
- 3 Dynamic pricing and targeted advertisements
- 4 Enhanced booking process and user experience
- 5 Real-time language translation services
- 6 Inspiration for new travel ideas and destinations
- 7 Improved safety and efficiency in travel
- 8 Advanced data analysis and decision-making capabilities

Return on investment and customer satisfaction will be the key metrics of success for Generative AI

Today, 41% of travel companies say their organization has the budget and resources in place to implement Generative AI. At the same time, 51% say their company culture is ideal for Generative AI innovation, with 37% saying culture is 'okay', but needs to be further developed before their organization is ready to maximize the impact of this new technology.

So, how will these companies judge the success of the Generative AI solutions they develop?

A common thread among *Navigating the Future* respondents is the reliance on financial metrics, with many highlighting return on investment (ROI) as a primary measure of success. For example, some leaders quantified success through increased profit margins or higher revenue streams. The emphasis on ROI demonstrates how these leaders prioritize the financial benefits Generative AI applications bring to their organizations, underscoring the necessity for these technologies to contribute to the bottom line.

Customer satisfaction emerged as another pivotal benchmark for measuring the success of Generative AI applications. Respondents often equate success with the happiness and engagement of their customers. Many shared that tracking metrics such as customer feedback, satisfaction surveys, and net promoter scores (NPS) allows businesses to gauge the impact of Generative AI on their clientele.

41%

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of travel companies say their company culture is ideal for Generative AI innovation

37%

of travel companies saying culture is 'okay', but needs to be further developed before their organization is ready to maximize the impact of this new technology

How do you measure the success of the Generative AI applications that you have implemented (ranked order)?

- 1 Return on investment
- 2 Customer satisfaction
- 3 Efficiency and productivity improvements
- 4 Performance metrics (accuracy, precision and relevance)
- 5 Key performance indicators
- 6 Data analytics
- 7 Employee feedback
- 8 Business growth and market reach

Qualitative answers provided for gauging success included, 'by observing accuracy, precision, originality and efficiency,' 'the reduction in the time taken to complete tasks or processes with the help of the Generative AI,' and 'measurement on return on investment and time saved by the workforce'.

Efficiency and productivity gains are frequently cited measures of success when it comes to the deployment of Generative AI, alongside an ability to improve the employee experience, maximize value creation and drive creativity. The reduction in time taken to complete tasks, enhancements in team performance, and improved operational workflows were also highlighted as significant indicators of success.

“It is reassuring to see this customer-centric approach when it comes to the deployment of Generative AI. The traveler must be at the center of everything we do and particularly so when designing Generative AI applications, many of which will define the traveler’s interaction with a travel company.”

Rodrigo Acuna Agost
Head of Research & Generative
AI Center of Excellence
Amadeus

Part 3

Access to data will drive implementation of Generative AI

One of the great accelerators of Generative AI has been access to technology which enables aggregation, normalization and analysis of previously fragmented data.

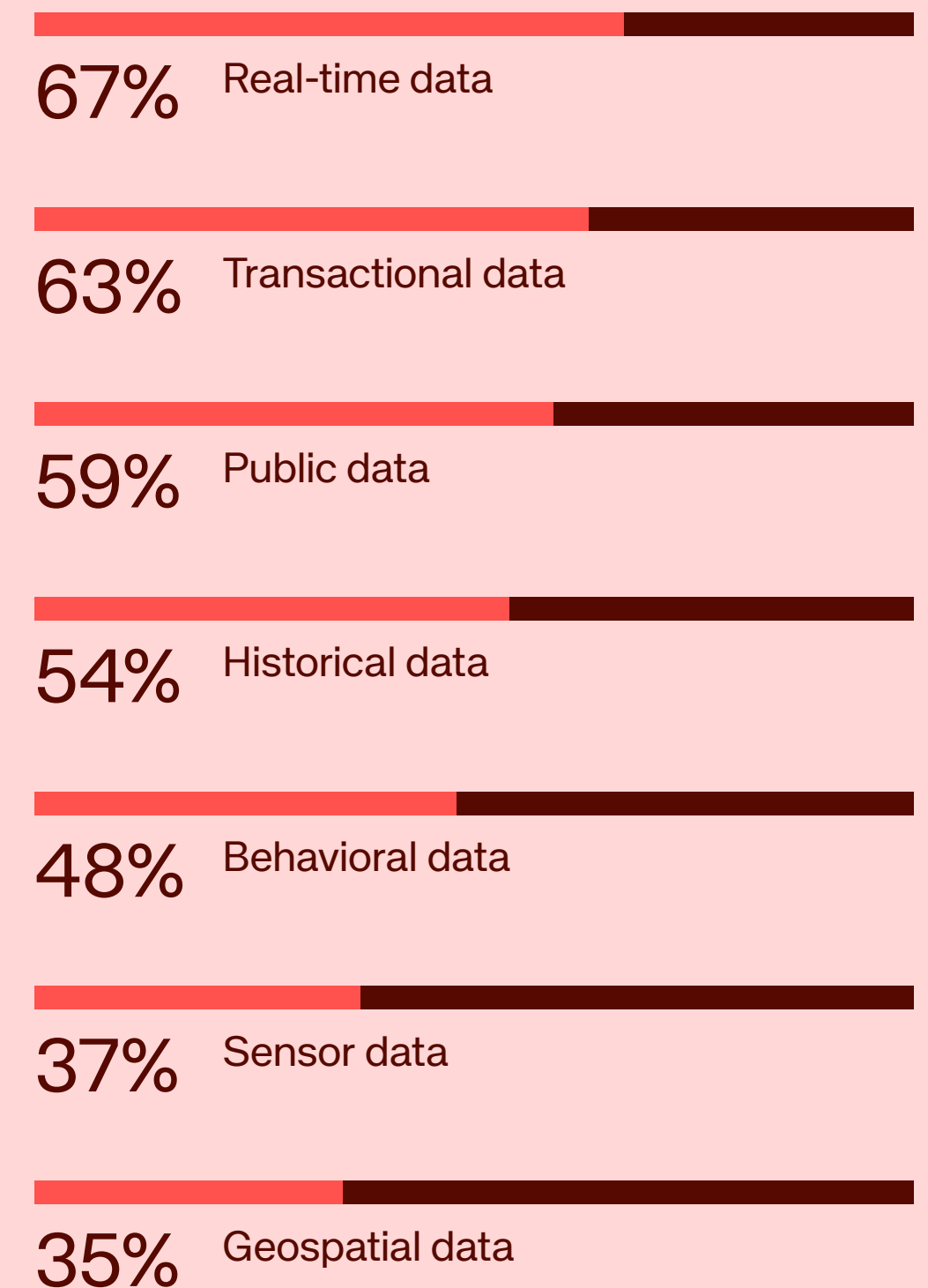
With this in mind, the travel industry is planning to make most kinds of data available to Generative AI solutions, led by 'real-time data' (67%), 'transactional data' (63%), 'public data' (59%) and 'historical data' (54%).

Also of note is the smaller percentage of respondents (48%) who expect to share behavioral data. This kind

of information could enhance Generative AI solutions in the travel industry by enabling more personalized, context-aware experiences for users. By analyzing patterns, Generative AI solutions can potentially predict and generate tailored travel recommendations, itineraries, and promotions that match individual traveler needs.

However, with potential concerns around privacy also paramount to responsible Generative AI users, this type of data needs to be used with appropriate safeguards in place.

What types of data does your company have available?





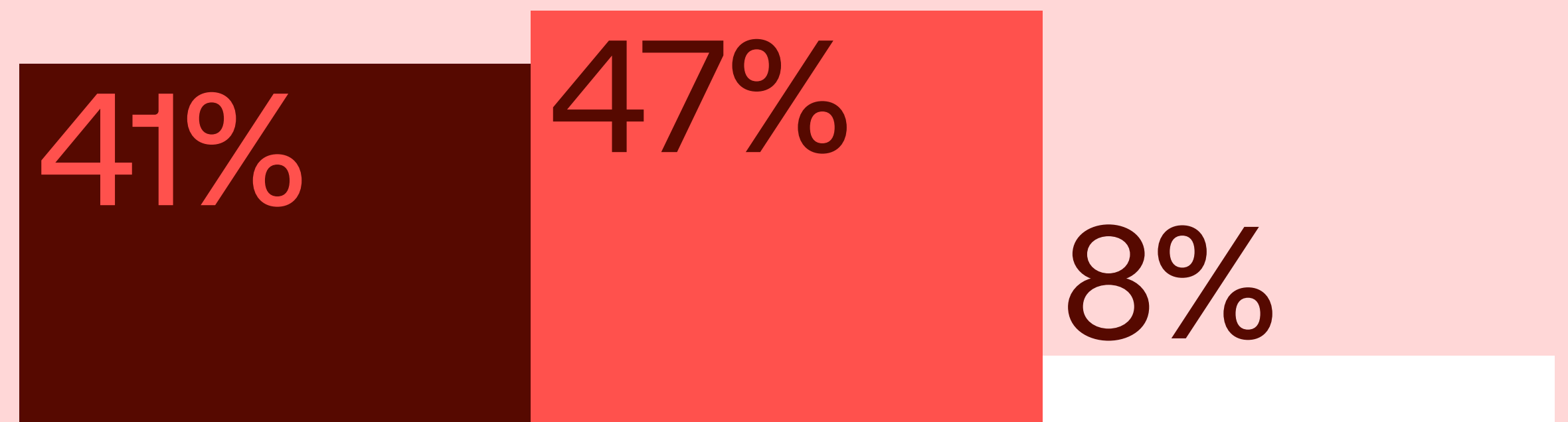
A collaborative pathway forward for Generative AI

When it comes to solutions, there is widespread agreement travel companies can maximize the opportunity presented by this new technology by partnering with a vendor that develops Generative AI-powered applications – with some 87% open to working with a vendor.

However, when asked directly, 41% of travel companies said they are developing their own tools that use Generative AI independently. A further 47% revealed they are jointly developing such tools with a vendor, with 8% confirming they have a vendor that develops Generative AI tools for them.

When asked for qualitative thoughts on the topic, **Navigating the Future** respondents highlighted Generative AI has significantly streamlined the merging of various data streams, making it more efficient and error-free. This has allowed companies to leverage diverse datasets in real-time, ensuring that they make informed and timely decisions.

Additionally, cloud computing technology appears to be a cornerstone in data integration strategies. Numerous leaders emphasize the role of cloud services in facilitating the seamless integration of data from various external sources.



41% of travel companies said they are developing their own tools that use Generative AI independently

47% of travel companies are jointly developing Generative AI tools with a vendor

8% of travel companies have a vendor that develops Generative AI tools for them

“We’ve long seen that collaboration is key to success across the travel industry, and the findings from this research suggest that creating value from Generative AI is no different. There is widespread appetite to partner and work together in this area to bring new and exciting solutions quickly to market.”

Fredrik Odeen
Innovation Program Director
Amadeus

Part 4

Talent shortages, data security and ROI concerns slow roll-out of Generative AI

Adoption of Generative AI across the travel industry is accelerating, but barriers to wholesale deployment remain.

The most frequently discussed issue is a lack of expertise and technical know-how necessary for the effective deployment and utilization of the technology, with a shortage of skilled employees of particular note. According to *Navigating the Future* respondents, this deficit in expertise spans operational levels, technical implementation, and proper experience, which collectively stymie the practical adoption of Generative AI technologies.

Companies are also grappling with training their existing workforce to bridge this skills gap, which in turn, reiterates the time and resource costs associated with upskilling efforts.

Today, a third of technology leaders also cite quality of data and inadequate infrastructure as the key barriers to Generative AI adoption. Some 44% of respondents confirmed the technology infrastructure at their organization needs work to secure the benefits of this technology, with 12% noting 'significant' work is needed before they can even begin to experiment.

44%

of technology leaders confirmed the technology infrastructure at their organization needs work to secure the benefits of this technology

12%

of technology leaders said 'significant' work is needed before they can even begin to experiment

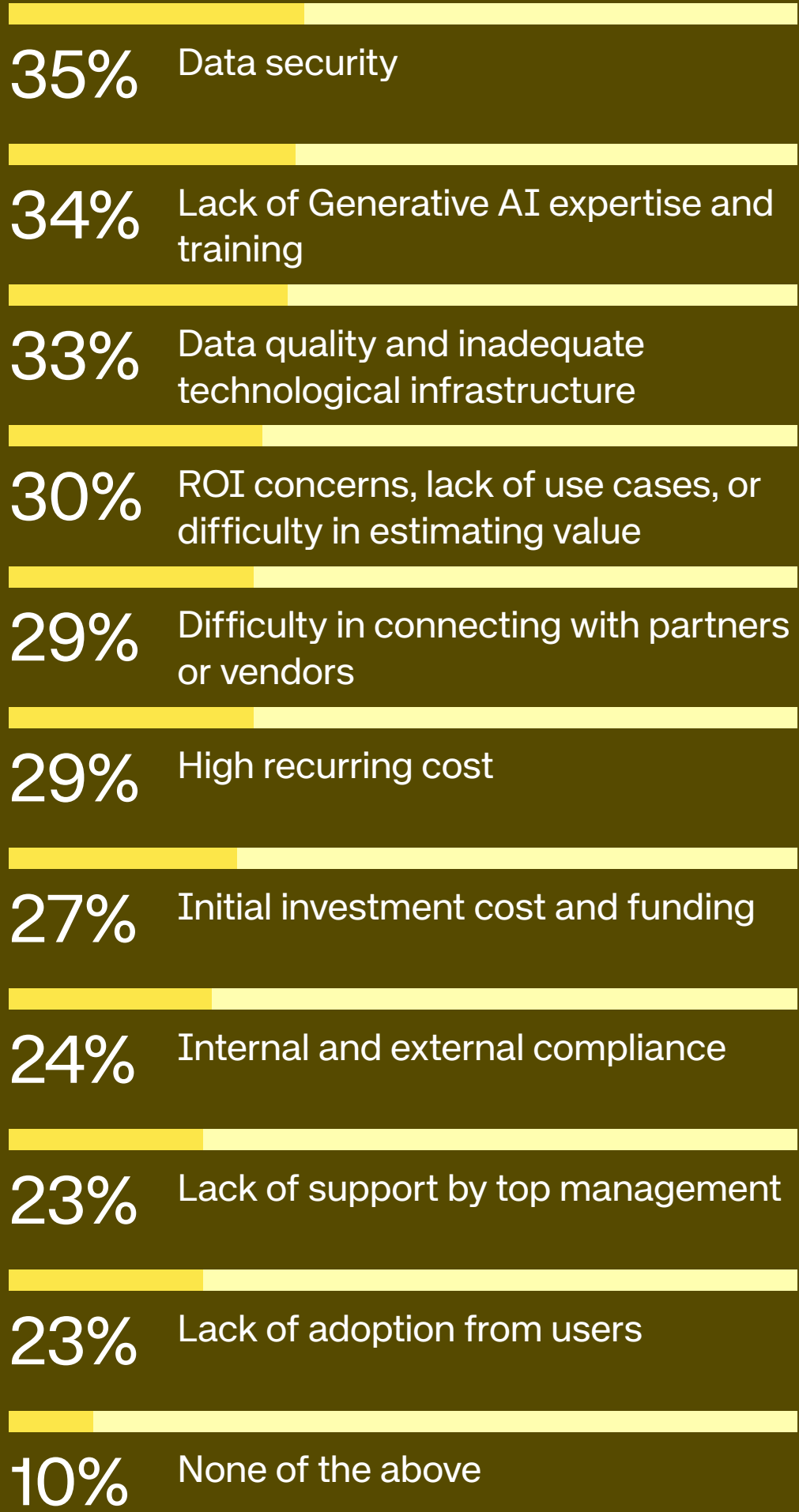
Similarly, 43% of respondents confirmed their internal data organization needs work to secure the benefits of Generative AI, with 10% saying significant work is needed before they can even begin to experiment.

When asked what the biggest barrier was right now, respondents said, 'data privacy and security, as well as sometimes the cost,' 'insufficient computing power and infrastructure to handle the complex Generative AI models,' and 'the board of directors understanding the return on investment'. However, a smaller percent replied: 'there is no barrier!'

Another prevalent concern noted across *Navigating the Future* responses is the high costs associated with both the initial implementation and the ongoing maintenance of Generative AI systems. The financial barriers encompass various components, including the infrastructure needed to support such advanced technology and the cost of hiring or training experts. Businesses are wary of the significant monetary investments required and the challenge of justifying these costs without clear, immediate ROI.



Are any of the following barriers currently preventing your company from implementing Generative AI?



Data security and privacy emerge as critical apprehensions among the leaders responsible for Generative AI integration. Ensuring the protection of sensitive information, while simultaneously managing and processing the large volumes of data integral to Generative AI, poses substantial risks.

When questioned, ***Navigating the Future*** respondents revealed these concerns are partly fueled by the fear of cyber-attacks, data breaches, and regulatory penalties. Companies are keenly aware of the ethical and legal implications that mishandling data can bring, which calls for robust security measures and stricter compliance with evolving global regulations.

The resistance from within company walls also surfaced prominently; employee adaptation to new technology is another significant barrier. The reluctance or inability of employees to embrace and effectively use Generative AI tools slows the progress of implementation.

However, 10% of travel technology leaders currently see no barriers to the deployment of Generative AI.

“While there is little doubt about the potential of Generative AI, there are challenges - ranging from expertise gaps and ROI concerns to data security, employee resistance and executive buy-in. Overcoming these barriers necessitates a well thought-through approach that prioritizes business impact, while protecting security and privacy.”

Frederick Ros

Head of Digital Workplace Services
Amadeus

How can we overcome security concerns around Generative AI?

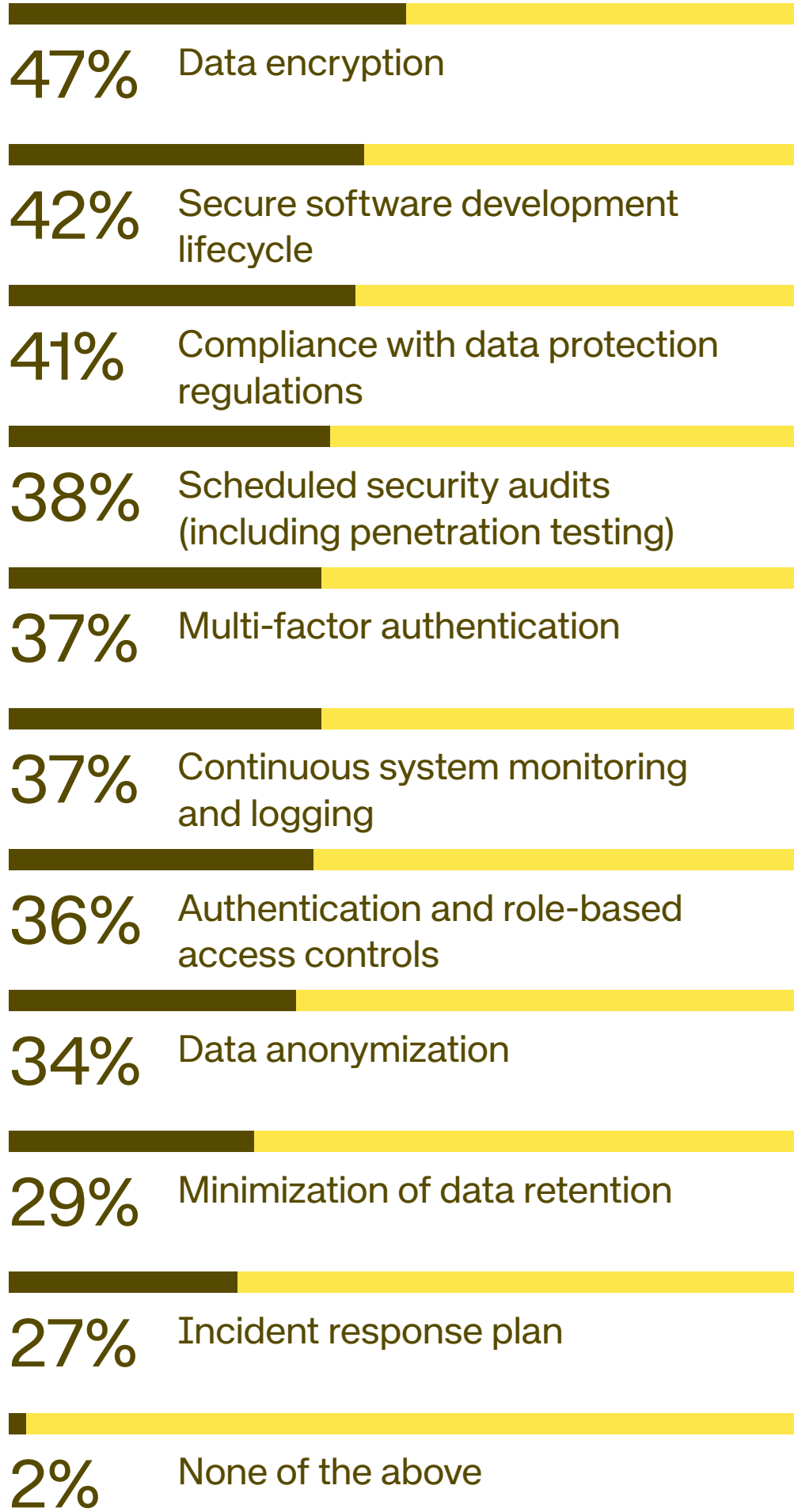
Alongside the generation and proliferation of false information, other risks include the potential for Generative AI use resulting in bias and discrimination.

There is also the risk of unintended sharing of sensitive data, trade secrets and intellectual property with inappropriate third parties, potential infringement of third-party intellectual property rights, and violations of contracts with customers, suppliers or partners.

Large Language Models (LLMs) often rely on extensive datasets that may include personal, proprietary, or confidential data. Without proper safeguards, this data can be inadvertently exposed or used inappropriately, leading to potential privacy violations, intellectual property theft, or even cyberattacks.

As models become more sophisticated and capable of generating human-like content, ensuring that training data is anonymized, encrypted, and stored securely is essential to prevent unauthorized access or misuse.

What measures, if any, do you have in place to ensure the security and privacy of your GAI systems and data?



Alive to these risks, travel technology professionals are putting a range of measures in place to ensure data is protected, led by 'data encryption' (47%) and 'secure software development lifecycle' (42%). A worrying 2% of travel technology leaders, however, say they are putting no safeguards in place.

However, only 41% of *Navigating the Future* respondents said they today have data privacy safeguards in place for Generative AI.



“Responsible, ethical and secure use is vital when it comes to trustworthy use of Generative AI and we have effective governance in place that ensures our use of the technology respects the principles of fairness, reliability & safety, privacy & security, transparency, accountability and sustainability, whilst facilitating innovation.”

Noelle Higham

VP Group Data & AI Office

Amadeus

Conclusion

Navigating the Future confirms that the Generative AI revolution is well underway across the travel ecosystem.

However, the research has also revealed potential barriers to the rapid deployment of this technology. Securing talent will be vital, while quality data must be organized in such a way as to make it accessible to Generative AI tools. Return on investment is also coming in for closer examination.

It is vital companies across the travel ecosystem collaborate effectively to unlock the potential of this technology, working with trusted technology partners to efficiently deliver use cases with a proven business impact.

More than half of travel industry leaders report that the technology already holds a significant presence in their markets, with the trend most pronounced in the Asia-Pacific region. Only 2% of respondents believe it will take longer than three years for Generative AI to have a notable impact on their sector, underscoring its rapid adoption.

Looking ahead, nearly half of those surveyed identified Generative AI as their top priority for the coming year - surpassing all other technologies - with the strongest focus again in Asia-Pacific. Key applications for the technology are quickly emerging, including digital assistants and personalized travel recommendations.

Findings show a substantial percentage of companies are already leveraging Generative AI across various use cases, further reinforcing the technology's arrival as a transformative force in the industry.

Success in deploying Generative AI is measured by enhanced return on investment, increased customer satisfaction, and heightened productivity.

Finally, travel companies are addressing security challenges by implementing advanced encryption, secure software development practices, and adhering to strict regulatory compliance, ensuring that the widespread adoption of Generative AI is both safe and sustainable across the travel ecosystem.

Methodology



Amadeus [↗](#) commissioned **Mercury Analytics** [↗](#), a market research organization which harnesses state-of-the-art techniques and AI, to study the role – both current and future – of Generative AI in the travel sector.

A total of 306 senior technology decisionmakers within the travel industry with knowledge of Generative AI were questioned in the third quarter of 2024. They were based in ten markets: Canada, Italy, United Kingdom, France, Germany, India, Australia, China, Japan and the United States.

Respondents' quantitative ratings were supplemented, where relevant, with qualitative feedback in the form of open-ended questions.

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