Data, Technology and Cybersecurity
Adoption Survey

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Executive summary

The 2026 Data Maturity Survey provides an overview of the current state of data, technology, and cybersecurity adoption in the airline sector. As the survey's second edition, it was conducted on a voluntary and confidential basis to assess how airlines are embedding these essential elements into their operations. The feedback from participants is valuable for pinpointing dominant industry patterns and guiding recommended practices.

The insights gathered help identify key industry trends and inform recommend practices. All responses have been aggregated and anonymized to ensure confidentiality, with only non-sensitive observations presented. This effort is intended to provide a consolidated view of the levels of technological advancement, robustness in cybersecurity, and the overall data maturity across airlines globally.

Maturity in the airline industry

Amidst the dynamic changes shaping the aviation industry, data maturity is becoming increasingly pivotal to airlines' strategic planning. This report not only explores the industry's current ability to manage, analyse, and utilise data for informed decision-making, operational efficiency, and customer experience enhancement, but also highlights how these capabilities have evolved since the previous edition. As airlines continue to harness the power of big data and predictive analytics, they are better positioned to translate insights into actionable outcomes, strengthen cybersecurity, and drive technological innovation.

Survey Framework Overview

This survey considers maturity across Data, Technology and Cybersecurity, defined using a five-level scale across different regions.

Survey results

The survey received input from 113 airlines across all seven IATA regions (Figure 1). To assess whether the survey results are representative of the broader airline industry, the profile of participating airlines was compared with that of the global industry. Airlines were grouped into higher- and lower-traffic categories using a threshold of 50 billion RPK, and a statistical consistency check was performed. The results indicate that no significant difference was observed between the survey sample and the overall industry distribution, providing confidence that the findings are representative of the industry as a whole.

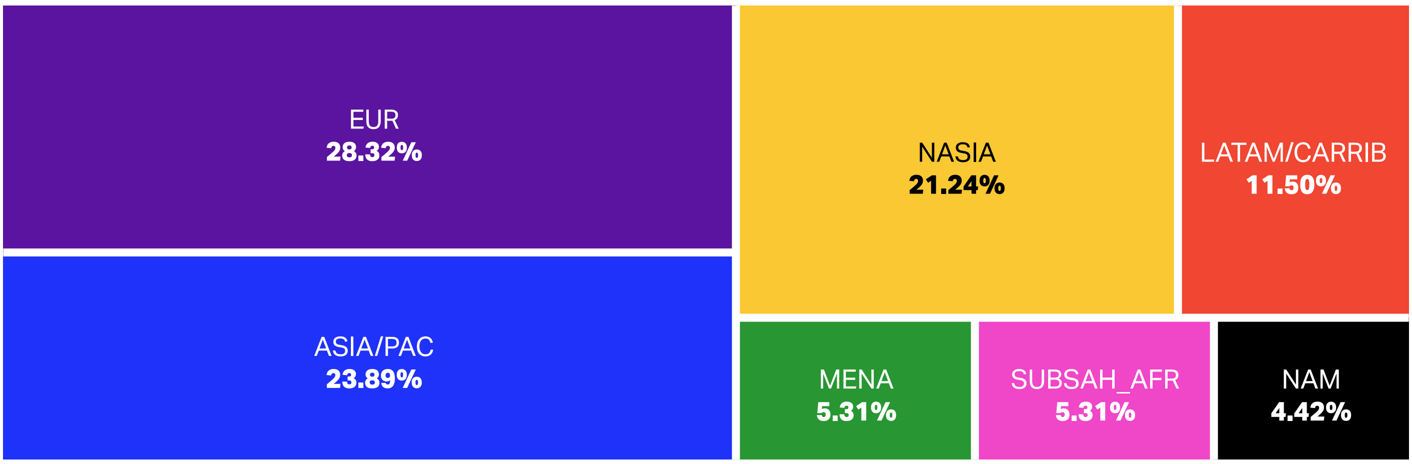
The survey is structured in four sections as follows:

- **Section 1 : Main Global Trends**
  The survey results highlight key points that show where the industry stands.
- **Section 2: Data Management**
  This section explores how airlines manage, analyse, and utilize data to drive decision-making processes.
- **Section 3: Technology Adoption**
  This part of the survey investigates the extent to which airlines have integrated new technologies into their operations.
- **Section 4: Cybersecurity**
  This section assesses the cybersecurity measures in place within airlines to protect against data breaches and cyber threats.

The survey presented airlines with a series of 20 questions regarding data management, technology adoption, and cybersecurity. It examines how airlines utilize and safeguard their data, integrate new technologies, and address challenges associated with cybersecurity risks.

These questions were distributed to IATA member airlines, and the report conveys the primary insights and findings based on their responses. The summary below outlines the significance of these results for the airline industry.

Figure 1: Global regions covered by the survey



Main Global Trends

The survey results highlight key points that show where the industry stands. They reveal how airlines are advancing in data management, technology, and cybersecurity. The main highlights are:

1. **Approximately one third (35%) of airlines consider themselves to be in the early stages of Data Strategy implementation, while a comparable share (36%) have reached advanced maturity.**

2. **A mature Data Strategy is achieved with a solid Data Governance framework.**

3. **A comprehensive data catalogue and classification system is essential for achieving data maturity within airlines.**

4. **Most of the Data Science use cases require experimentation, and scaling them requires specific Data Pipelines crafted for AI/ML.**

5. **Adopting a multi-cloud approach is indicative of technological maturity.**

6. **The industry demonstrates consistent mid-level maturity, generally reflected in Defined level across the main domains of the NIST Cybersecurity Framework, with cybersecurity governance being well established across more than half of the airlines surveyed.**

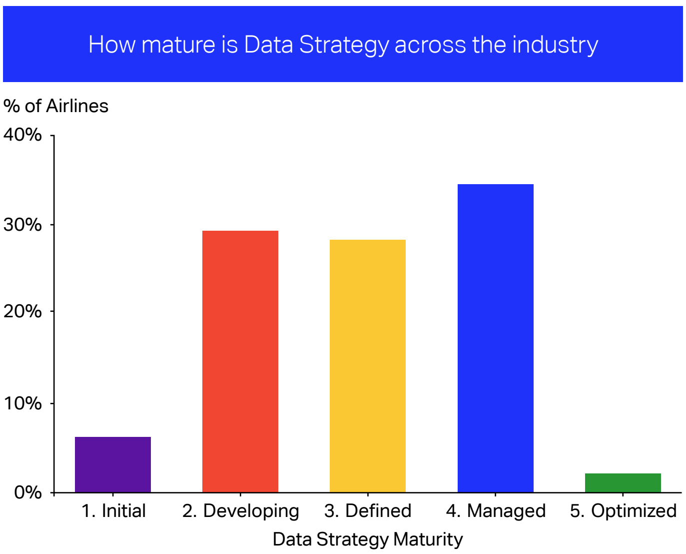
7. **Automation in cybersecurity activities remains a notable gap, with relatively few organizations indicating mature automation across the protect–detect–respond domains.**

Data Maturity

This section examines the status of airlines' data management, analysis, and utilisation to inform their decision-making. It highlights the maturity of strategies applied for data governance, the deployment of data science and AI, and the broader adoption of data strategies. These elements are fundamental to ensuring effective and efficient data handling within the airline sector. According to the survey, half of participating airlines assessed their data maturity as being in the early stages, categorised as either "Initial" or "Developing". (Figure 2)

The chart below illustrates how Data Strategy maturity varies across IATA regions. While each region shows a mix of maturity levels, a consistent pattern emerges: most airlines remain in the Developing or Defined stages, with relatively few reaching Managed or Optimized maturity. Overall, the distribution highlights that although data strategy adoption is advancing globally, significant opportunities remain for regions to strengthen strategic alignment, governance, and execution capabilities. (Figure 3)

Figure 2: Distribution of Data Strategy maturity. Around one third (35%) of airlines remain in the early stages ("Initial" or "Developing"), while a comparable share (36%) have reached advanced maturity ("Managed" or "Optimized")



The maturity heatmap below shows a clear pattern: airlines tend to progress in Data and Technology capabilities together rather than independently. The strong diagonal distribution of respondents indicates that advancing one area in isolation is uncommon. This underscores that treating Data solely as an IT initiative or a standalone governance exercise does not lead to meaningful maturity gains; progress requires coordinated development across both domains. (Figure 4)

Figure 3: Data Strategy Maturity Across Regions

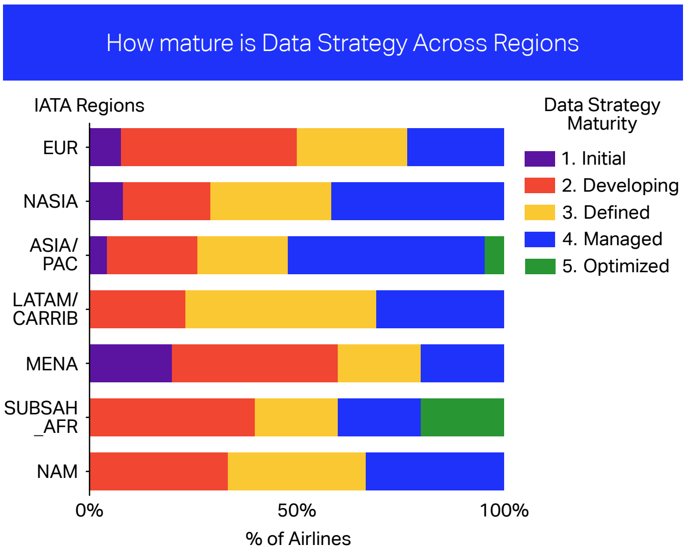
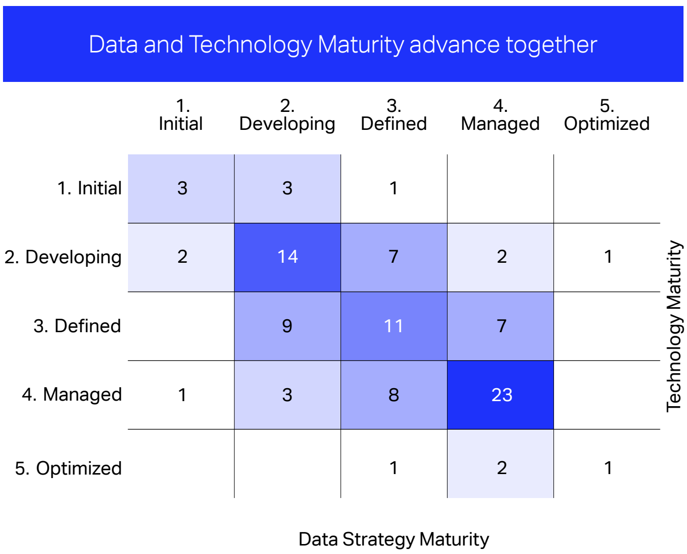


Figure 4: Data Strategy Maturity Across Regions



Data Governance Maturity

As data strategy initiatives are still maturing, adoption of core data pillars seems to improve significantly, but not uniformly. Data Catalogue and Data Classification show strong upward trends, with most organizations reaching high adoption by the "Managed" and "Optimized" stages. In contrast, Data Governance Frameworks lag in early maturity stages and only reach full adoption at the highest level of maturity. (Figure 5)

The progression from "Initial" to "Optimized" reflects a shift from ad hoc data management to structured, enterprise-wide data practices. Early efforts focus on visibility (catalogue) and organization (classification), while later stages embed governance to ensure consistency, quality, and trust.

This indicates that while organizations tend to prioritize foundational capabilities early, formal governance structures require greater maturity, discipline, and operating model alignment to fully implement.

AI Maturity

In 2026, the airline industry is demonstrating a gradual maturation in its application of AI. Comparative year-over-year data reveals a strategic shift from isolated experimentation toward broader AI integration. Notably, the proportion of airlines limiting their efforts to fewer than five AI use cases has decreased from 59% in 2025 to 52% in 2026, with corresponding growth seen in organizations managing up to 20, or even 20+, simultaneous use cases. (Figure 6)

However, despite this expansion in portfolio size, avoiding the "Proof of Concept (PoC) purgatory" remains an industry-wide challenge. While 2026 shows a modest improvement, the segment of airlines with the lowest PoC success rates (0 to 25%) dropped from 75% to 71%. The vast majority of the sector still face challenges to operationalize their models. (Figure 7)

Figure 6: Data Science portfolio size is increasing across the industry compared to last year

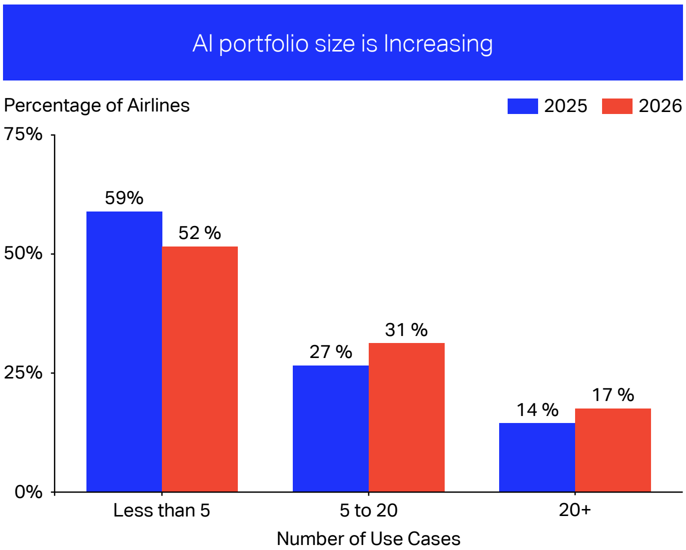


Figure 7: Data Science use cases progressing beyond the PoC stage are still very low

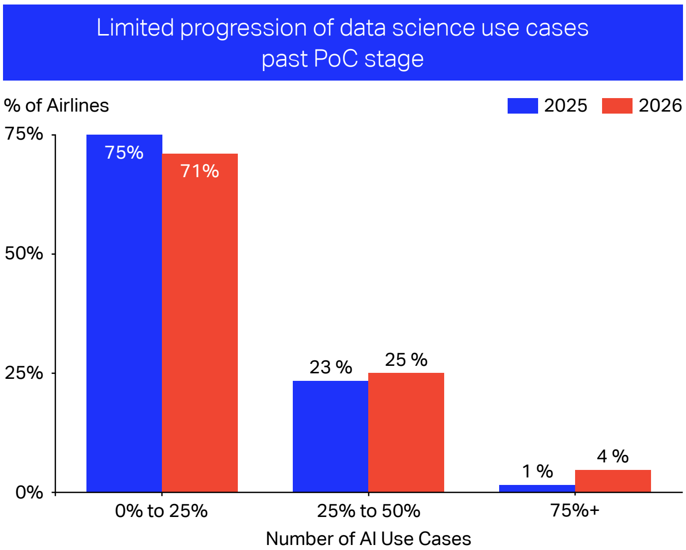
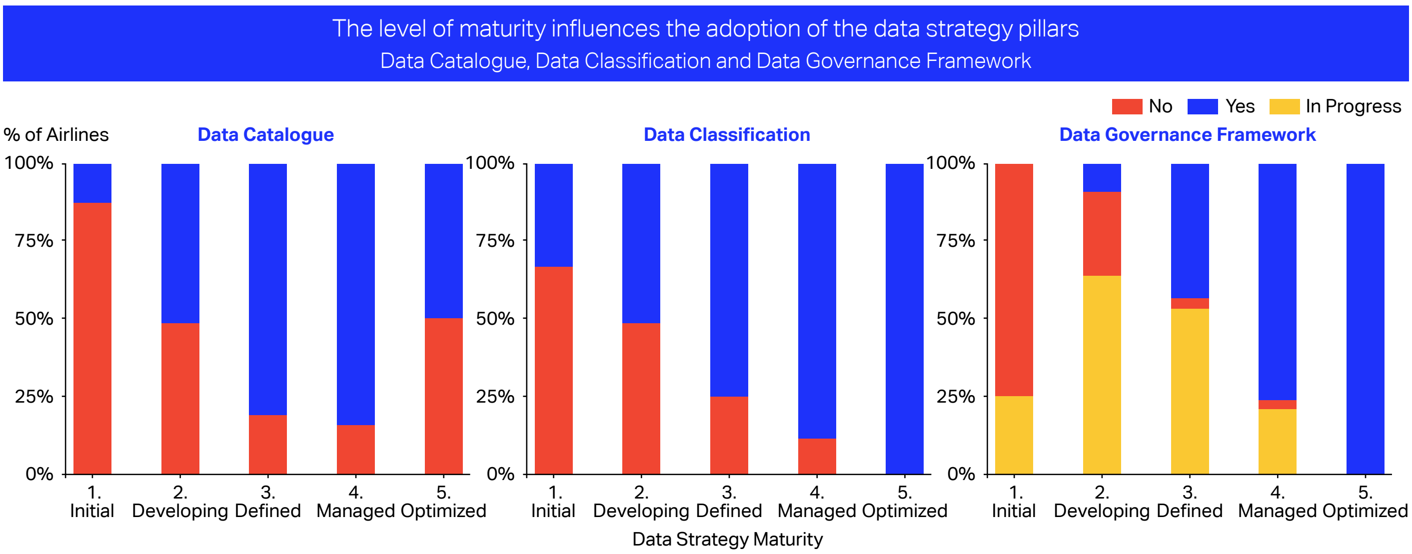


Figure 5: Adoption of core Data Strategy pillars—Data Catalogue, Data Classification, and Data Governance Framework—rises steadily with maturity. While foundational capabilities gain traction early, full adoption of formal governance practices emerges only at the most advanced maturity levels.



Survey findings strongly indicate that successfully scaling these initiatives beyond the exploratory phase is dependent on available infrastructure, specifically the deployment of specialized data pipelines crafted for AI and ML. There is a stark contrast between airlines based on their pipeline maturity. Organizations juggling 20 or more AI use cases report having these specialized pipelines in place or in progress. Conversely, airlines with fewer than five use cases lack this infrastructure. Traditional data processing methods are insufficient for the unique demands of scaling AI. (Figure 8)

Furthermore, this technological infrastructure is fundamentally anchored by an airline's Data Strategy Maturity. There is a direct correlation between an organization's strategic maturity and its ability to push models into operations. For instance, 100% of airlines at the "Initial" stage of Data Strategy maturity report that fewer than 25% of their use cases pass the PoC stage. However, as airlines progress into the "Defined," "Managed," and "Optimized" stages, the throughput of successful PoCs significantly widens, with a growing share of airlines pushing 50% to over 75% of their models into production. (Figure 9)

Ultimately, advancing in Data Science is a matter of both technology and data strategy acting in tandem. The survey's maturity heatmap clearly demonstrates that airlines rarely advance in one area without the other. Breaking out of the PoC stage requires a maturation of both the technological tools and the strategic frameworks that govern them.

Figure 8: Data infrastructure is a critical enabler for AI portfolio expansion

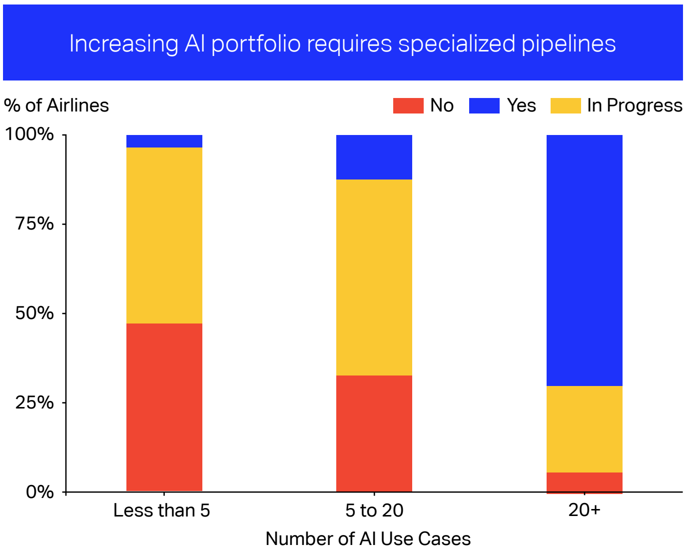
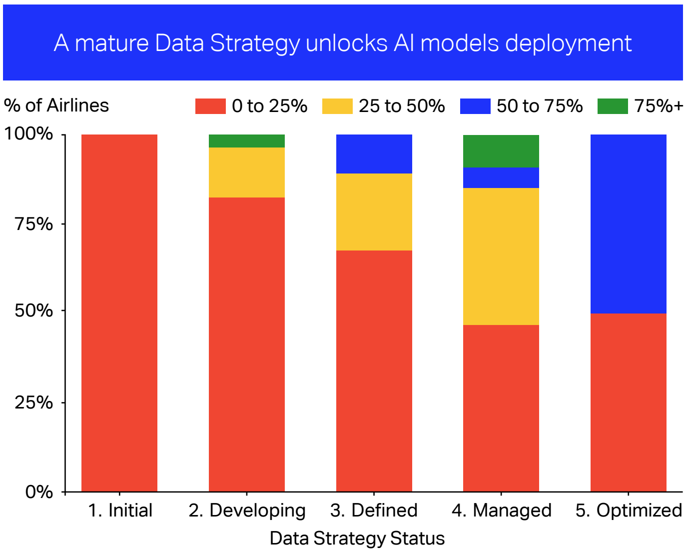


Figure 9: Data maturity key for moving AI use cases beyond proof-of-concepts



Technology Maturity

This part of the survey assesses the extent to which airlines have integrated new technologies into their operations, including infrastructure maturity and adoption of emerging capabilities.

From this year's results, we observe a continued shift toward higher maturity levels. The largest share of respondents are in the Managed stage (~35%), followed by Defined (~27%) and Developing (~26%). This indicates that most airlines are operating with structured and increasingly standardized technology environments.

Only a small proportion remain in the Initial stage (~7%), while a limited but notable share (~4%) have reached the Optimized stage, marking progress beyond last year where no respondents had achieved this level. (Figure 10)

Figure 10: Technology maturity continues to progress across the industry, with 39% of airlines operating at the "Managed" and "Optimized" levels.

How mature technology adoption is across the industry

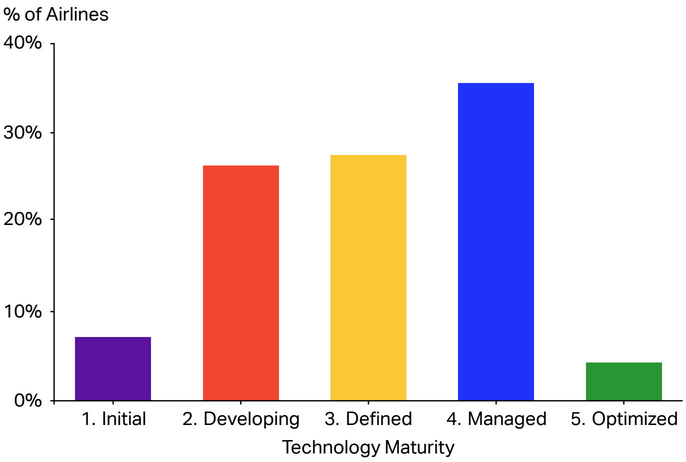
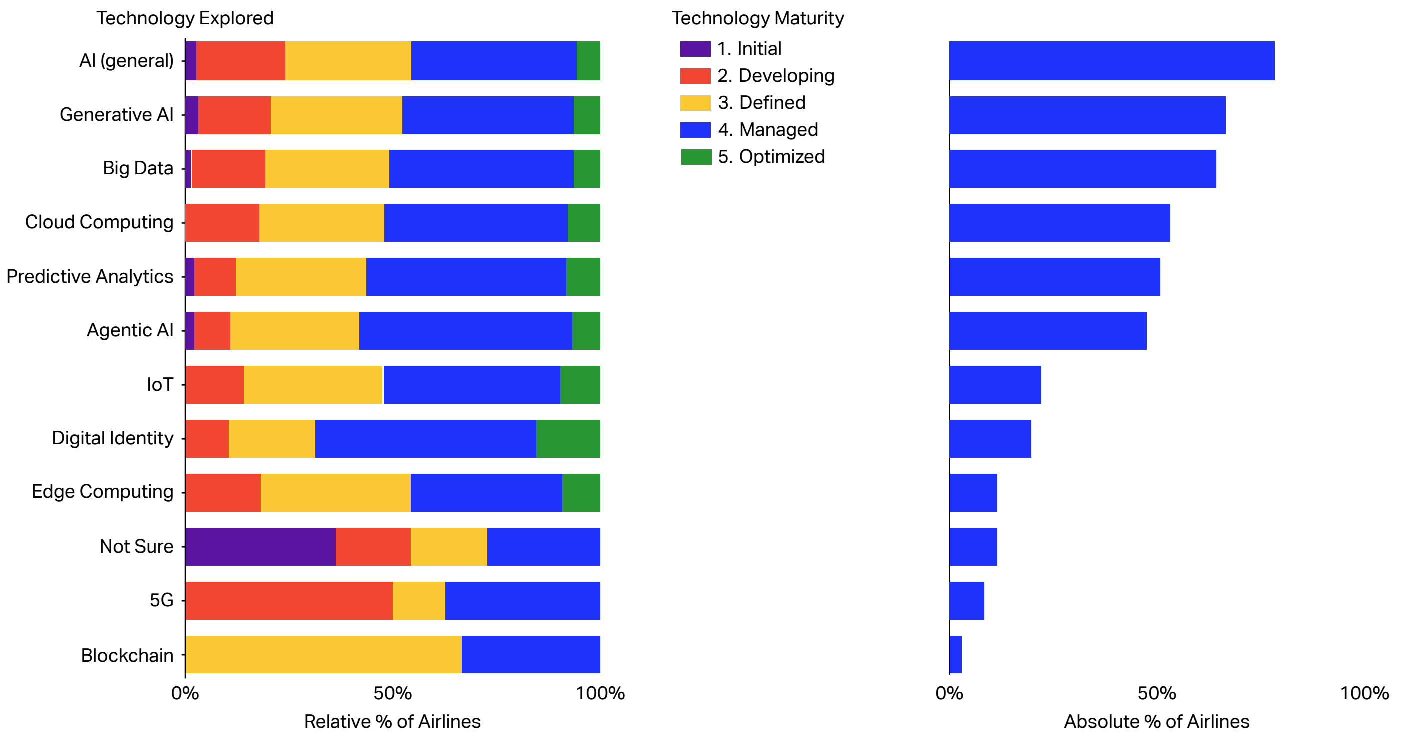


Figure 11: Adoption of advanced technologies increases sharply with higher technology maturity. AI, generative AI, big data, and cloud capabilities are most prevalent among Defined and Managed airlines, while Optimized organizations lead exploration of emerging areas such as agentic AI, digital identity, and edge computing. Earlier-stage airlines remain concentrated in foundational technologies or uncertain categories, underscoring the strong link between strategic maturity and breadth of technology adoption.

How each technology correlates with technology maturity



The data shows a clear relationship between technology maturity and the breadth of technology adoption. Core technologies such as AI (including generative AI), Big Data, and Cloud have the highest adoption and are most prevalent among organizations in the Defined and Managed stages. More advanced technologies, including Agentic AI and predictive analytics, are increasingly explored by higher maturity organizations. (Figure 11)

The regional breakdown indicates that technology maturity is broadly consistent across regions, with no significant outliers.

Regions such as Europe and North Asia show a balanced distribution across Developing, Defined, and Managed stages, while Asia-Pacific demonstrates slightly higher representation in more advanced stages. Other regions remain more concentrated in Developing and Defined stages, reflecting ongoing transformation efforts. (Figure 12)

The findings show that technology maturity progresses similarly worldwide, with cloud adoption closely linked to maturity. Early-stage organizations favor no or single-cloud use, while more mature ones adopt multi-cloud strategies. At the highest levels, all respondents use multi-cloud, confirming its increased adoption brings enhanced flexibility, scalability, and resilience. (Figure 13)

Figure 12: Technology maturity is broadly consistent across regions

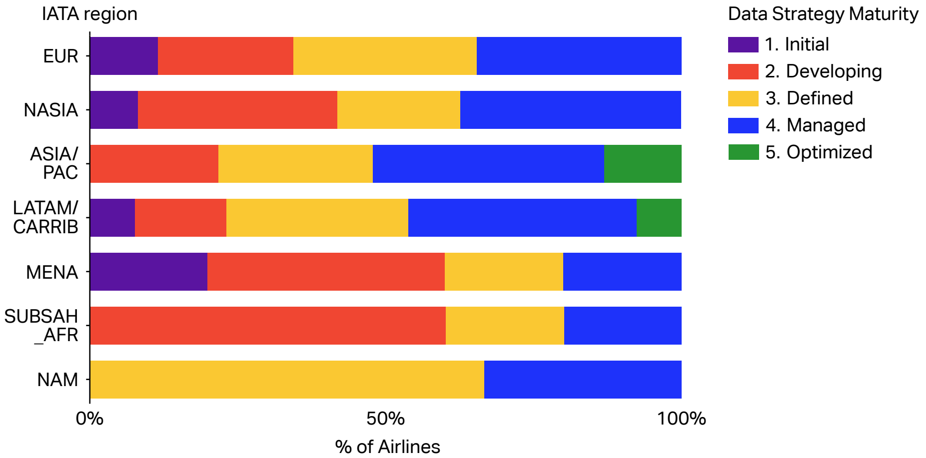
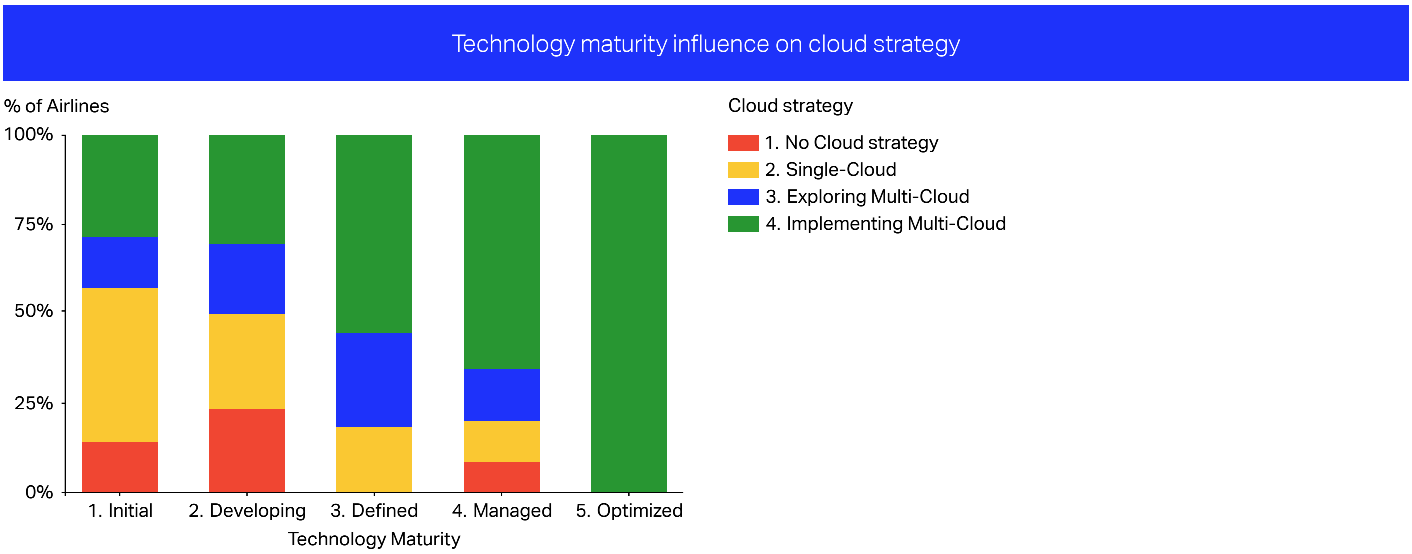


Figure 13: Technology maturity is broadly consistent across regions



Cybersecurity Maturity

Industry Overview

Across 113 respondents, and according to the National Institute of Standards and Technology (NIST) Cybersecurity Framework (CSF) 2.0 domains, results show that foundational cybersecurity processes are in place but not consistently operationalized or automated. Survey results reveal a consistent pattern of mid-level maturity across Governance, Identify, Protect, Detect, Respond, and Recover, indicating:

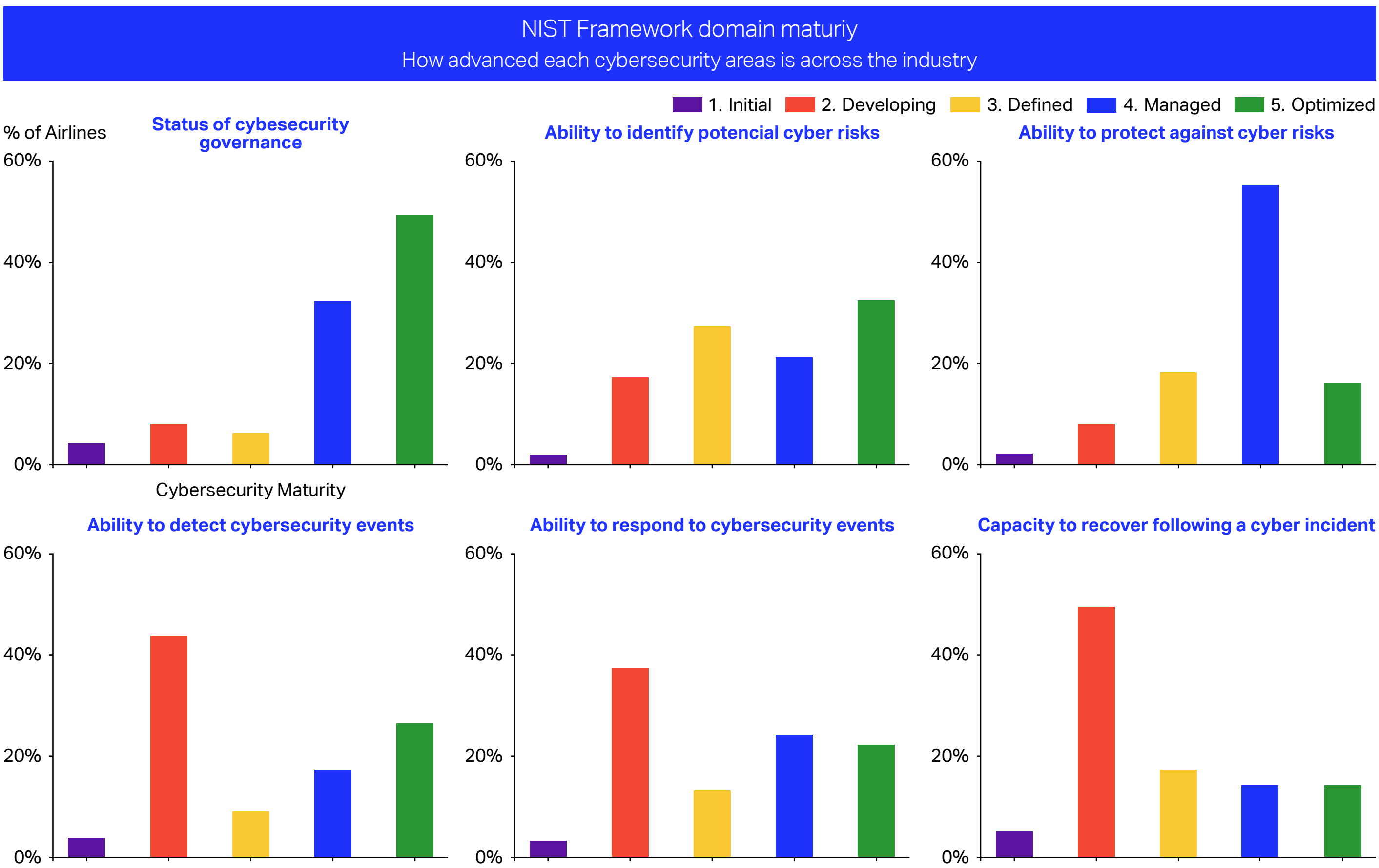
- Cyber processes exist but vary in consistency.
- Organizations rely on formal documentation more than active measurement or automation.
- True cyber resilience and adaptive defense remain limited industry wide.

Domain Summaries

The survey evaluates maturity across six core cybersecurity domains (Governance, Identify, Protect, Detect, Respond, and Recover). (Figure 14)

Most organizations report Governance practices that fall into the Optimized level with organization-wide approach to managing risks based on risk-informed policies, processes and procedures to address events. In the Identify domain, while many report that cybersecurity risks are continuously monitored and integrated into business decision, the majority of organizations have only some risk identification and proactive monitoring in place. Within the Protect category, respondents reflect that data protection mechanisms are present with proactive monitoring across their environment. Detection capabilities demonstrate that continuous monitoring is established for real-time threats, with fewer indications of behavioral and anomaly detection. For Respond, organizations note the existence of documented incident response plans, though testing and measurement practices appear limited based on maturity selections. Finally, in the Recover domain, recovery and continuity plans are reported as documented, but regular testing and refinement are less frequently reflected.

Figure 14: Breakdown by question assessing maturity across the NIST CSF domains



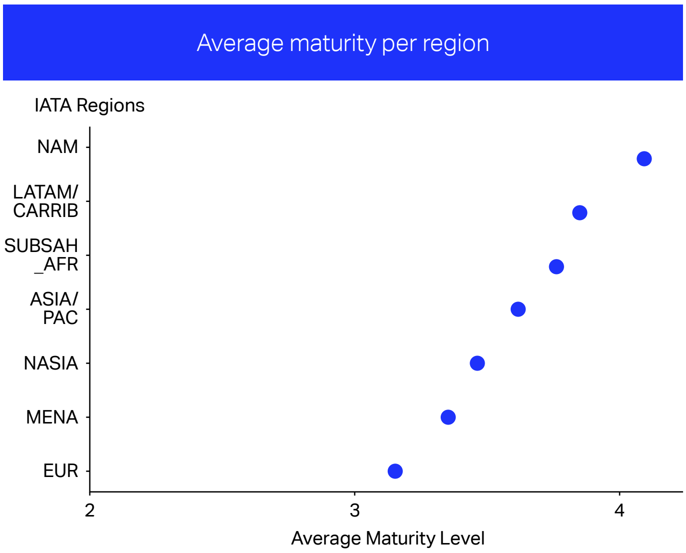
Regional Patterns

The regional comparison chart (across Asia-Pacific, Europe, Latin America/Caribbean, Middle East and North Africa, North America, North Asia and Sub-Saharan Africa) indicates a broadly similar mid-range maturity in the survey results. The data indicates that North America, Latin America and the Caribbean show slightly higher maturity levels across several domains. No region demonstrates widespread advanced maturity, and the overall results point to weaknesses shared across the global aviation sector. (Figure 15)

Key Takeaways

1. The industry demonstrates consistent mid-level maturity, generally reflected in Defined level, with limited adoption of more advanced adaptive or automated practices.
2. Governance is a well-established, as nearly one half of organizations place themselves at Optimized levels.
3. Incident response and recovery activities are not widely tested, with many organizations indicating that plans exist but are not regularly exercised.
4. Detection capabilities show room for enhancement, as behavioural analytics and anomaly detections are not yet widely deployed across respondents.
5. Automation remains a notable gap, with relatively few organizations indicating mature automation across the protect–detect–respond lifecycle.

Figure 15: Overview of cybersecurity maturity across the regions



Recommendations

1. Enhance detection and response capabilities: Consider broader adoption of behavioural analytics and extended detection and response (XDR) supported by dedicated threat-hunting functions.
2. Increase testing frequency: Conduct regular incident response and disaster recovery exercises, including integrated cyber-crisis simulations.
3. Expand automation: Leverage Security Orchestration, Automation, and Response (SOAR), automated asset discovery, and orchestration tools to support more efficient and consistent security operations.
4. Integrate cyber considerations into operational decision-making: Align cybersecurity metrics with aviation operations, planning activities, and cybersecurity resilience objectives.

Conclusion

The aviation sector has established a solid foundation of cybersecurity practices, with many organizations reporting Defined maturity across core NIST Cybersecurity Framework domains. Continued progress toward higher levels of consistency, automation, and adaptability will support stronger cybersecurity resilience against evolving threats. Advancing beyond current maturity levels will require broader adoption of automation and deeper integration of cybersecurity considerations into both operational and strategic decision-making.

Summary

This survey is an industry trend analysis in the areas of data management, technology adoption, and cybersecurity measures. It does not reflect the emphasis of any one company. The value of the report is in its ability to assist the aviation to benchmark their Data strategies, technology program maturity, and cybersecurity management against the industry. The survey results reveal several key highlights that illustrate the current state of the airline industry.

The findings indicate that while many airlines are still in the early stages of data strategy implementation, there is a clear pathway to achieving maturity through robust data governance frameworks. Additionally, the importance of cybersecurity resilience is evident, with most airlines having incident response plans and conducting regular third-party risk assessments. These practices are essential for safeguarding against cyber threats and ensuring the integrity and security of airline operations.

We want to thank all the IATA members that participated actively in the survey by sharing their assessment and insights.

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