IDC

April 2026
InfoBrief
Sponsored by MongoDB

Modernizing Legacy: Winning in the Age of AI

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Executive summary

AI success depends on feeding AI systems and engines with good, quality data. To explore the connection between legacy infrastructure, data challenges, and AI readiness, IDC conducted a survey across eight Asia/Pacific markets[1]. The findings are telling:

- Despite strong recognition of the need for quality operational data and transformation among Asia/Pacific enterprises, only a subset — what IDC calls the Leaders Cohort — have moved quickly to innovate and secure their digital future.
- The Leaders Cohort includes not only 'born-in-the-cloud' organizations but also traditional industries such as manufacturing and construction. Despite facing similar technical, process, and people challenges as their peers, these organizations have embraced modernization and achieved significant business outcomes. Through strategic choices, they overcome legacy drag, seize AI opportunities, and generate digital revenues nearly three times the regional average, demonstrating a strong link between modernization and monetization.
- Ongoing application modernization efforts, supported by leadership alignment and investment in talent, underpin their achievements. While "lift and shift" migrations offer quick results, lasting value comes from investing in newer platforms and replatforming applications to cloud-native environments.

This IDC InfoBrief compares the Leaders Cohort with the Mainstream Cohort — the rest of the respondent pool which are still working toward modernization. Whilst both groups face similar modernization challenges, the Leaders Cohort is less impacted due to stronger executive support and a focus on skills.

Looking ahead, transformational leadership will be critical. IDC predicts that by 2028, 60% of Asia's top 1,000 CIO roles will be held by transformational leaders implementing new AI-fueled business models with enterprisewide consistency while modernizing IT to meet AI business needs.[2] In today's AI-driven digital world, failure to transform is not an option — those who lead and innovate first stand to reap advantages over their peers.

Leaders Cohort	Have embraced modernization, overcome legacy challenges, and achieved higher digital revenue
Mainstream Cohort	Slower to modernize and less effective adoption of AI, resulting in limited digital revenue growth

Leaders Cohort organizations generate nearly **3X more digital revenue** than their peers

Survey overview[1]

- Asia/Pacific market coverage: Australia, China, Hong Kong, India, Indonesia, Singapore, South Korea, Thailand
- Online survey conducted between September and October 2025
- 1,400 IT organizations

Sources: [1]IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400
[2]IDC FutureScape: Worldwide CIO Agenda 2026 Predictions Doc # US53865325

Section 1:

The AI readiness gap

Section 1 2 3 4

Legacy data issues: A critical barrier to AI success

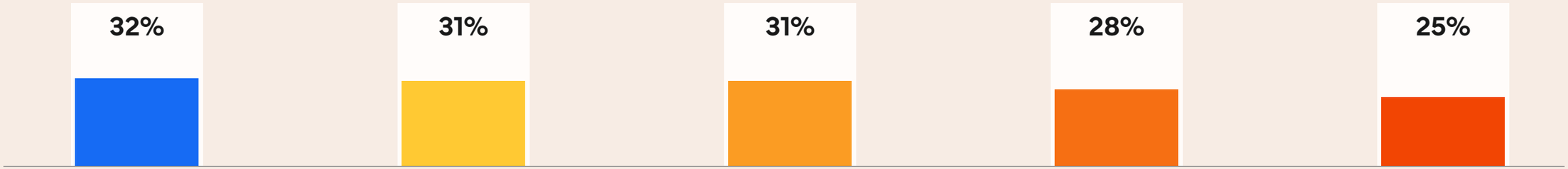
Data has become a vital driver of economic value, as evidenced by IDC's forecast that the Asia/Pacific big data and analytics software market will grow from US$16.7 billion in 2023 to US$47.2 billion by 2028, at a compound annual growth rate (CAGR) of 23.1%.[1] This surge is driven by the increasing demand for data-driven decision-making and the integration of AI and machine learning technologies.

However, legacy relational databases remain a root problem — they are too rigid, costly, and slow for today's requirements. This rigidity contributes to data debt, as siloed, redundant, outdated, and poor-quality data accumulates, undermining AI performance and driving up costs. Without remediation, flawed data will fuel underperforming models, leading to inconsistent outputs, model bias, and rising costs. While leading organizations are prioritizing modernization to overcome these constraints, adoption of cloud-centric data management platforms — though the top planned investment for the next 12 months — is still lagging behind IDC's expectations.

IDC predicts that **by 2027, CIOs who fail to launch data debt remediation will face 50% higher AI failure rates and rising costs**, as model underperformance exposes issues from siloed, redundant, or poor-quality data.[2]

Yet organizations in the Asia/Pacific region continue to underestimate its importance. Our survey shows that about a third of organizations struggle with poor data quality, security integration, and limited business engagement, while a quarter find it challenging to adapt their workflows to evolving needs.[3]

Top challenges in software delivery



Data management – poor data quality, classification, and defined data logistics processes are top challenges in software development

Outdated database technology that does not support the variety, scale, and demands of AI workloads

Security – embedding security into the development process without impacting velocity or innovation

Engagement with the business and mutual understanding of requirements

Organizational design – workflows/organizational structure not adapted to today's needs

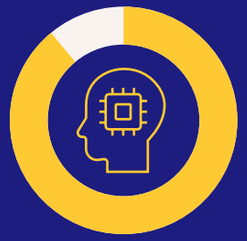
Source: [1]IDC Asia/Pacific Big Data and Analytics Software Forecast, 2025–2028
[2]IDC FutureScape: Worldwide CIO Agenda 2026 Predictions Doc # US53865325
[3]IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400

Section 1 2 3 4

Modernization roadblocks: Technical debt, security, and legacy systems

Our survey results reveal a range of challenges that hinder organizations' progress toward AI readiness and modernization. Respondents report that audits and regulatory reviews frequently expose the risks of aging applications, including security vulnerabilities, operational inefficiencies, compliance issues, and threats to business continuity. In severe cases, legacy systems can jeopardize a company's ability to operate after major incidents.

One critical underlying factor contributing to these risks is technical debt, which is a major obstacle for a significant majority of survey respondents. Defined by IDC as the residual cost of technology tasks left undone in the pursuit of agility or due to lack of funding or oversight, technical debt is an emerging issue in Asia/Pacific and could become a serious problem if not addressed early.

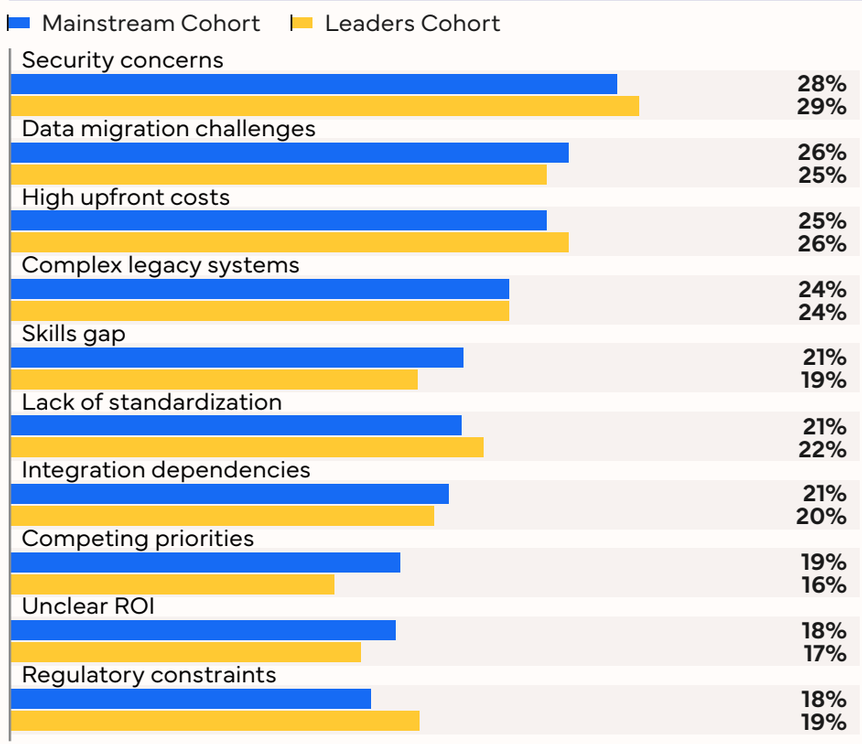


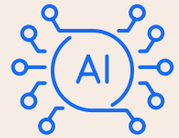
89% of Asia/Pacific organizations acknowledge that **technical debt is a major obstacle to modernization**[1]

Security, data migration, and cost are universal challenges, though the Leaders Cohort face fewer issues with skills and competing priorities and are more focused on standardization and regulatory constraints.[1]

Top challenges to modernization of certain applications

See the figure data in an accessible table format.





Security remains paramount:

IDC predicts that by 2030, 60% of organizations will use AI agents in DevOps and DevSecOps to manage risk and standardize processes[2]

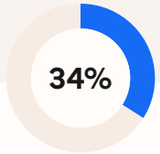
Sources: [1]IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400;
[2]IDC FutureScape: Worldwide Worldwide Developer and DevOps 2026 Predictions Doc # US53858525

Section 1 2 3 4

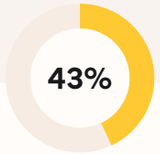
Breaking the cycle: Modernization pays off for Leaders Cohort

Our research shows a significant proportion of organizations across the Asia/Pacific region, or the **Mainstream Cohort**, remain entrenched in outdated systems that slow innovation, increase risk, hinder customer experience, and stifle growth.

Legacy application headaches and rigid databases, designed for static tasks, create a rigidity trap — draining time, resources, and competitive edge.



of Asia/Pacific organizations have yet to begin any modernization initiatives



of Asia/Pacific organizations report that their **existing architecture is a major challenge**, making it impossible to build new applications without extensive modernization

of Asia/Pacific organizations report that **technical debt is a significant barrier to modernization**

While legacy is inevitable, it need not be persistent. Leading organizations tackle legacy challenges by embedding effective modernization processes, enabling them to take advantage of new technologies and tools.

High maintenance costs, outdated databases, and the inability to embed AI are top barriers, but real progress requires cross-functional teams and commitment — not just technology swaps. These obstacles are meant to be overcome, not used as excuses.

Source: IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400

In contrast, the **Leaders Cohort** overcome the rigidity trap of legacy systems by adopting next-generation technology, empowering teams, optimizing processes, and achieving better business outcomes. Their approach to modernization and data strategy drives superior results, including stronger digital financial performance, setting them apart from the Mainstream Cohort for AI readiness and digital leadership.

Leaders Cohort

- These innovation leaders **generate almost 3x the digital revenue of their peers** by modernizing their core infrastructure, investing in AI, as well as emphasizing executive support and skills as key ingredients for accelerated transformation.
- As a result, they are in a stronger position to leverage the most benefits from AI sooner than the Mainstream Cohort.

58% of the Leaders Cohort have multiple programs in place to continually address legacy modernization

% of revenue generated from digital sources	Leaders Cohort	Mainstream Cohort
Today	71%	23%
In 3 years	77%	60%

1

Section 2:

Data and hybrid cloud

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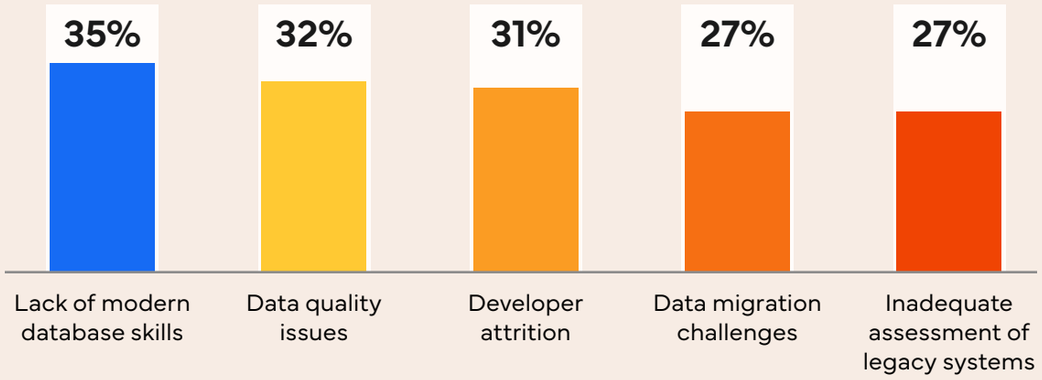
Poor operational data: The common cause of project delays and failures

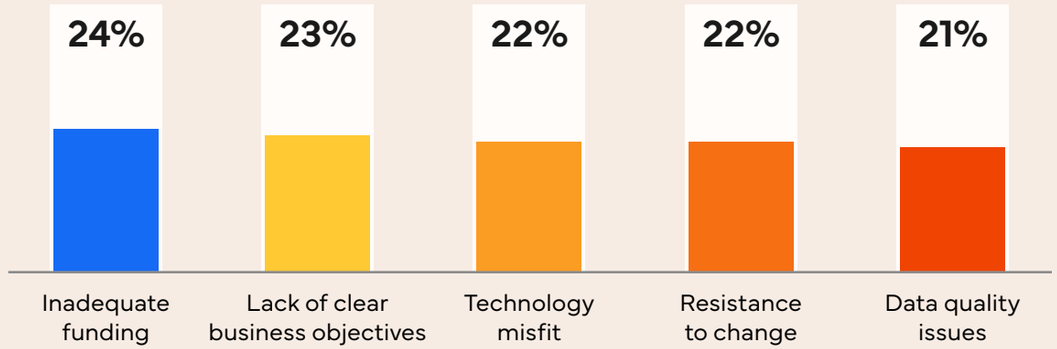
In our Asia/Pacific survey, 95% of respondent organizations reported experiencing project delays, and 90% had encountered failed modernization initiatives. Although the top 5 causes of delays and failures varied, **poor data quality consistently appeared as a key issue** in both lists.

The underlying question is why data has become such a significant barrier to modernization. While AI is a current catalyst, previous inflection points such as business intelligence, cloud strategies, and big data, also presented opportunities to modernize data. However, the adoption of public cloud computing across the region often overlooked data as the strategic asset, resulting in data sprawl which complicates seamless modernization. Even with hybrid cloud strategies which offer on and off-premise services, the problem of data silos has grown over time. Until data could be directly monetized, CIOs often prioritized other areas. As a result, organizations are at a critical juncture: the lack of a strategic focus on data has now reached a tipping point, making the race to modernize not just applications, but also the underlying data, a major priority.

Top 5 reasons for delayed modernization programs



Top 5 reasons for failed modernization programs



Source: IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400

1 Section 2 3 4

Data and cloud: The key investments for modernization

Forget just "data management" — think of data as the force multiplier for AI, analytics, and superior customer experiences.

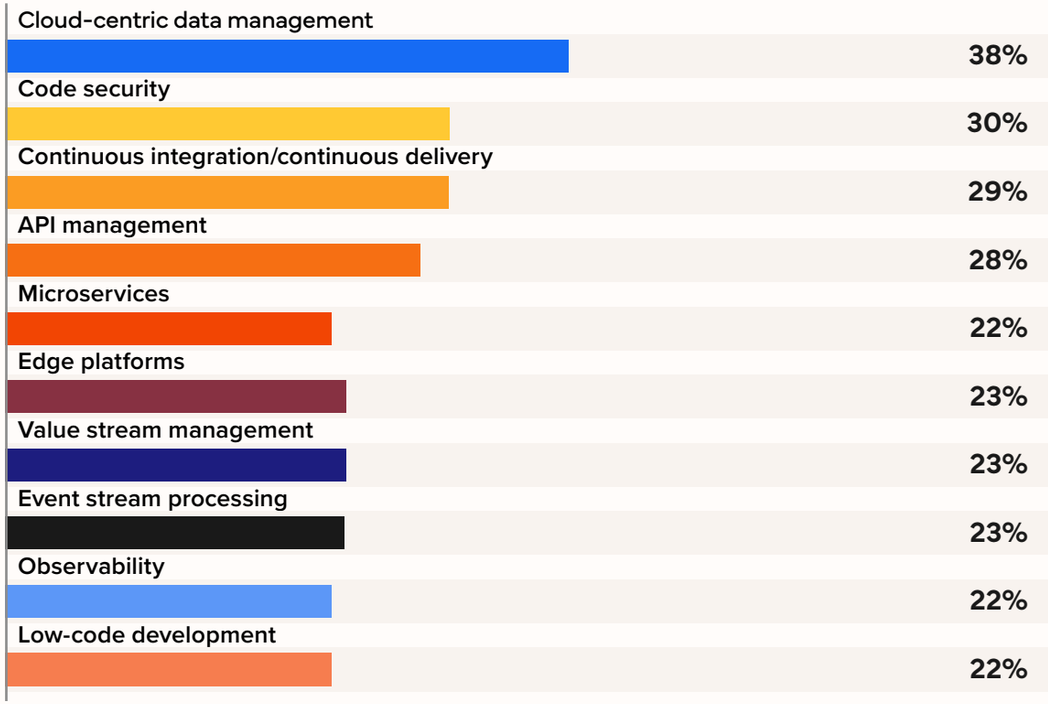
The most successful enterprises leverage advanced data strategies to unlock insights, automate decision-making, and scale their operations with confidence. Achieving this level of agility and intelligence requires an AI infrastructure strategy that centers on hybrid cloud implementation.

IDC research shows that most organizations now run AI workloads in a hybrid cloud environment, combining on-premises solutions with cloud platforms for scalability and cost efficiency.

This growing reliance on hybrid cloud environments is reflected in Asia/Pacific's 2026 investment priorities:

38% of Asia/Pacific organizations cite **cloud-centric data management/ platforms as their top technology investment for modernization in 2026**

Top 10 technology investments supporting modernization over the next 12 months



Source: IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400

Section 3:

Transforming infrastructure for the AI era

1 2 Section 3 4

Beyond data management: Building AI-enabled database strategies

A key differentiator for the Leaders Cohort is the importance placed on identifying and utilizing the types of data that can advance their AI strategies. While traditional architectures typically store structured data, **much of the recent and relevant data required for AI success now resides in unstructured storage systems. This creates a demand for new database technologies capable of seamless integration across data types, enabling organizations to fully leverage AI**.

Organizations can follow the example set by the Leaders Cohort, moving from simply "managing" data to actively unleashing its potential. These top performers focus less on cost and more on supporting diverse data structures and types, reflecting a more mature approach to AI development challenges.

Across all organizations, **AI enablement is the most sought-after characteristic in cloud-centric databases**. For the Leaders Cohort, additional priorities include security and robust support for varied data structures and types — driven by the evolving demands of AI. In contrast, performance and scalability are top drivers for the Mainstream Cohort.

Leaders Cohort

Top 3 drivers

- AI enablement
- Security and compliance
- Data structure and type

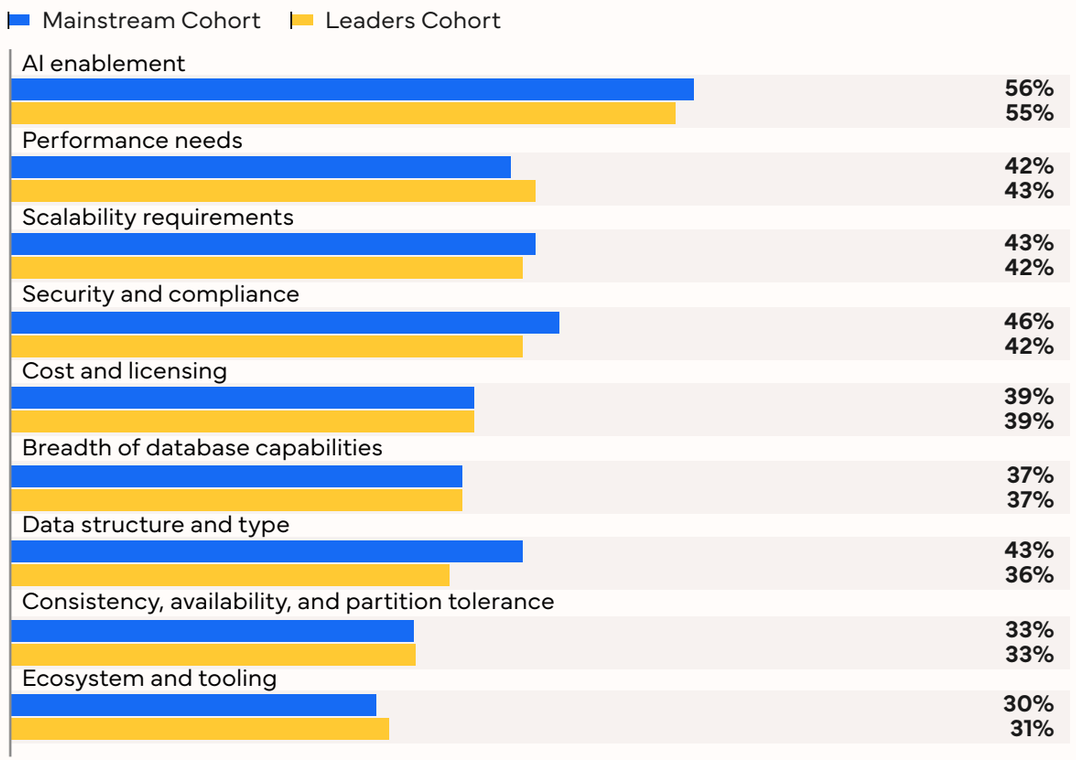
Mainstream Cohort

Top 3 drivers

- AI enablement
- Performance needs
- Scalability requirements

Top 10 drivers of database selection

See the figure data in an accessible table format.



Source: IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400

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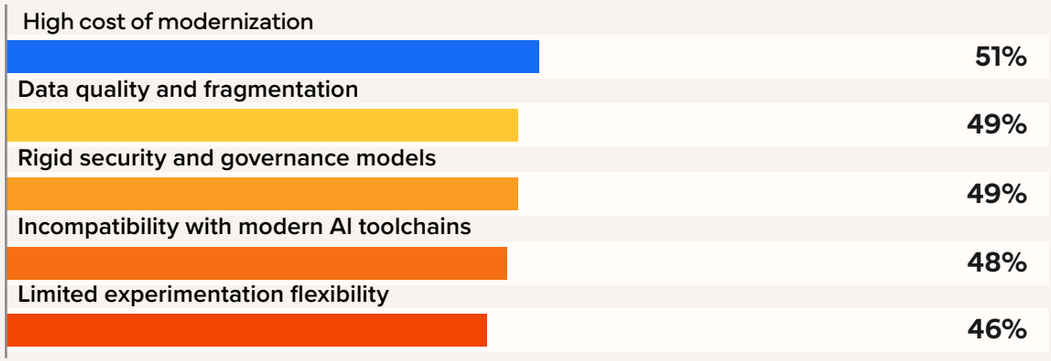
Underlying database technology needs to adapt

Modernization often equates to risk in the minds of CIOs, and risk is something they strive to avoid. Cost, however, is the leading cause for delaying modernization initiatives due to the need for new skills required, new processes to be defined and learned, and new technologies. However, when modernization is approached strategically, these investments can yield positive economic returns.

The ongoing issue of inadequate funding remains the leading reason why past modernization projects have failed, underscoring the need to address and reframe the perception of cost. Without confronting these challenges directly, organizations risk not only missing out on AI's potential but also repeating the mistakes of previous initiatives.

In reality, IDC research shows that global leaders operate a strong ROI discipline, identifying pre-program costs, expected returns, and measurable interim milestones throughout project delivery. This typically results in better alignment with business objectives, and a higher likelihood of achieving positive outcomes, which in turn helps offset concerns about upfront costs.

Top 5 challenges existing databases have when delivering AI demands



Source: IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400

Security remains a major barrier to rapid AI adoption, and the Leaders Cohort stands out for its higher awareness of its impact. In contrast, a lower proportion of the Leaders Cohort cite cultural and data quality challenges. This is characteristic of organizations that are using business models anchored in digital revenue, which inherently calls for strong business alignment and a unified approach to overcoming obstacles and seizing opportunities.

IDC research finds that top-performing organizations demonstrate strong alignment on AI strategy across their operations. The Leaders Cohort is generally more informed and proactive in tackling data quality issues, understanding that robust data governance directly addresses data quality challenges.

However, a critical challenge for all is the limited scalability of their legacy databases. Originally designed for static tasks, these systems struggle to support the dynamic and rapidly expanding data requirements of AI. This lack of scalability restricts integration, impedes data flows, and creates barriers to rapid adaptation and innovation.

Causes that delay AI adoption

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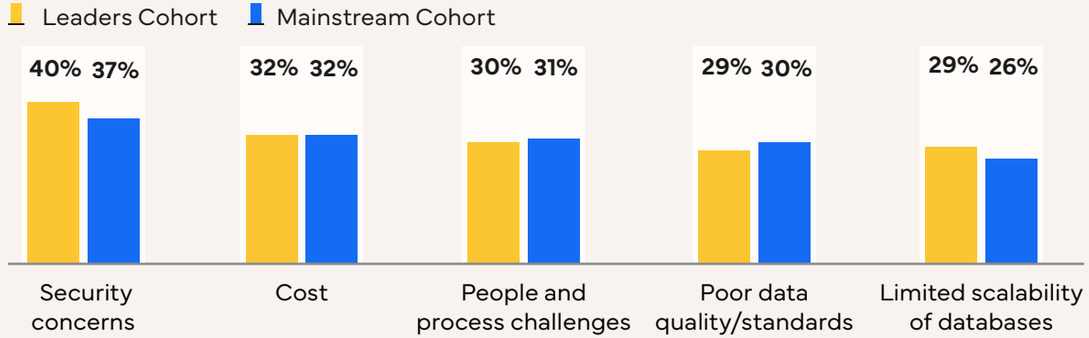

Section 4:

Leadership insights: Charting the path to success

1 2 3 Section 4

Key lessons from leaders: people, process, technology

Top performers combine bold technology choices with smarter operating models. The Leaders Cohort's success is built on a balanced approach across three pillars:

- **People:** Leaders invest in their teams, emphasizing talent and skills as key drivers of modernization.
- **Process:** Leaders embed innovation into processes while balancing clear objectives, cloud-readiness strategies, and AI-first design for sustained growth.
- **Technology:** Leaders prioritize investments in modern development tools and platforms that streamline workflows, enhance integration, and accelerate application delivery.

Top technology investments of Leaders Cohort

1. Cloud-centric data management/platforms
2. Code security
3. Application programming interface (API) management

Unless the Mainstream Cohort can start to identify and remediate their growing legacy issues, they risk falling behind their competitors. Continued investment in outdated systems will limit their ability to innovate and modernize.

Source: IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400

The **Leaders Cohort are not only investing more but also increasing their investments at a faster pace** than their peers.

- **Leaders Cohort's** spending is expected to grow from US$3.4 million today to US$5.6 million in three years — a 65% increase. In comparison, their peers are projected to increase investments from US$2.8 million to US$4.5 million over the same period, a 61% increase.

Estimated funding/budget to support **legacy applications** (US$M value)

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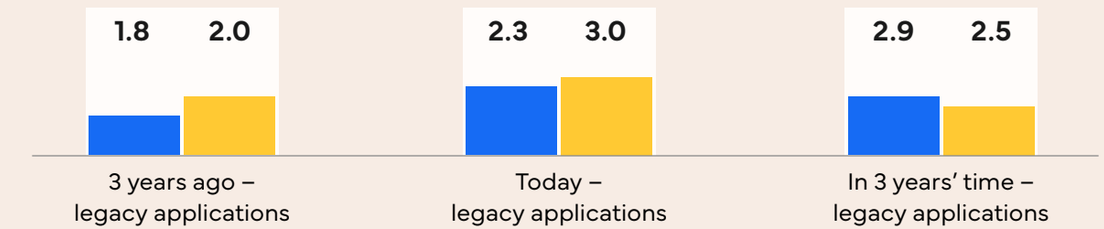

Estimated funding/budget to support **modern applications** (US$M value)

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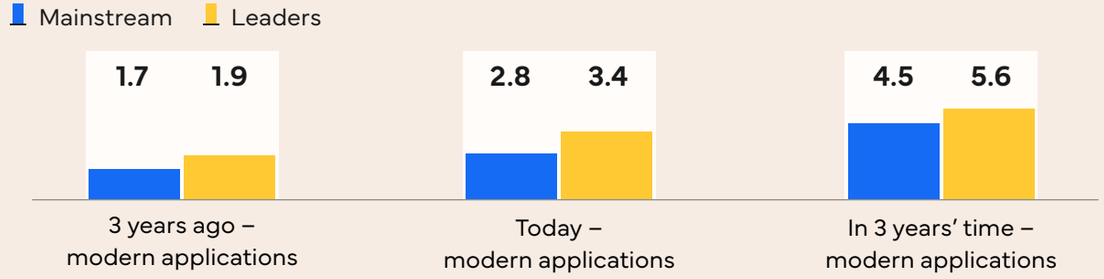


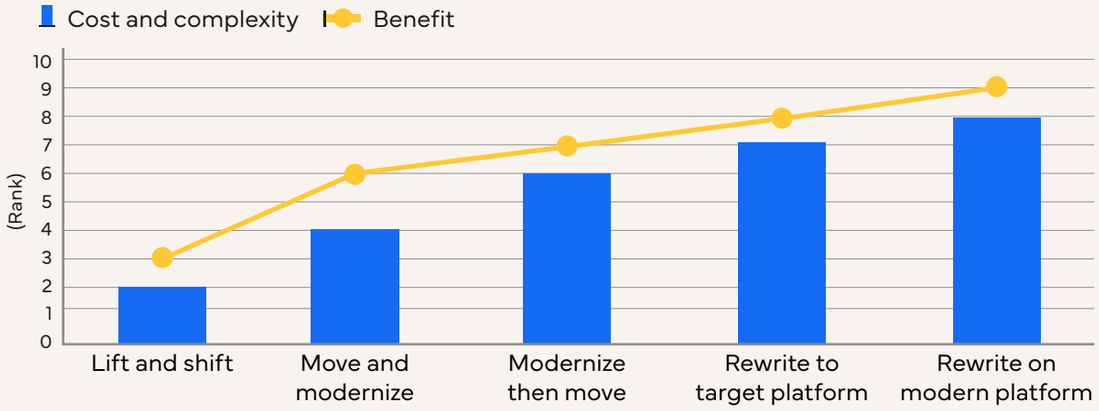
1 2 3 Section 4

Threefold returns require the correct levels of investment

Legacy systems drain resources and pose significant business risks, yet they often don't receive the attention they deserve in the boardroom, especially in organizations focused on efficiency. Some legacy challenges are self-inflicted.

- IDC's analysis of cloud adoption strategies reveals that organizations that chose a lift-and-shift approach to cloud applications for quick benefits experienced diminishing benefits over time and created a new set of legacy applications in the process, ultimately completely failing to address the underlying concern.
- The chart, based on IDC research and field examples, shows that investing sufficiently in an application rewrite on a modern platform delivers returns three times greater than that of a lift-and-shift approach.
- Our latest conversations with end users and vendors indicate that integrating GenAI into the modernization process significantly reduces the cost, complexity, and time required for successful modernization, further increasing the potential ROI.

Application modernization approaches: Relative cost and complexity versus benefit



Note: Data is ranked on a scale of 1–10, where 1 = least costly/complex/beneficial and 10 = most costly/complex/beneficial.

Source: IDC PlanScape: Application Modernization Approaches, #US52933325

- **Embedding modernization: A shift toward long-term value**
  IDC research[1] indicates that organizations are increasingly adopting a strategic perspective in their funding decisions.

33% of Asia/Pacific organizations now take a longer-term funding viewpoint, making it easier to embed modernization into standard operations, and adopt tools like a prioritization scorecard

A key pillar of modernization initiatives is the growing demand for AI across enterprises. While the rewrite approach to modernization may come with higher initial costs, the long-term ROI is clear and well documented.

Once AI is deployed in production, organizations can realize significant returns. IDC has documented[2] a broad range of returns, including:

- Reducing report generation time from weeks to hours
- Achieving 10–20% increases in productivity and cost savings
- Lowering service costs by 10%
- Saving nearly US$800,000 in operational expenses

Sources: [1]IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400
[2]IDC Tech Buyer, Agentic AI and AI Agents, 2025: Case Studies —1, July 2025, Doc :# US53487526

1 2 3 Section 4

Essential steps for a successful modernization strategy

To achieve modernization success, organizations must focus on talent and skills, cloud readiness, clear objectives, and effective change management, while accelerating data maturity to unlock innovation.

Prioritize talent and skills development

- Skills gaps — whether due to lack of availability or resistance to change — are a major legacy challenge.
- Successful modernization hinges on building and nurturing talent.
- Ongoing modernization must support both human and technical resources within IT.
- AI skills are in short-supply, but training is becoming abundant, so ensure there are suitable programs that support the deployment plans.

Adopt cloud-native strategies

- Future success depends on the flexibility to move workloads to the optimal platform, whether on-premises or in the cloud, as business needs evolve.
- For advanced workloads such as AI, cloud-native approaches are essential.
- Avoid repeating the mistakes of "lift and shift" migrations, which can create new technical debt and drain resources.
- Insufficient funding of this process will create issues over time.

Accelerate data maturity

- Data maturity is critical; address it now to avoid future setbacks.
- Accurate, well-managed data enables IT to align projects with business goals, meet compliance requirements, and drive rapid innovation.
- Invest in platforms that support hybrid cloud environments without adding unnecessary complexity or risk.
- Data modernization initiatives need to be embedded as operational procedures, not a one-time project.

Modernize database technology

- Maintenance of legacy databases has proven to be a challenge to modernization.
- Modern applications require modern database foundations.
- Upgrading database technology is key to improving data management and supporting the demands of today's digital business.
- Ensure database solutions are scalable and flexible to accommodate future growth, new data types, and evolving AI workloads.

Methodology

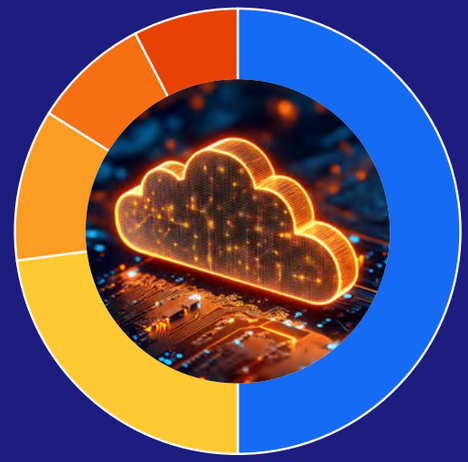
IDC surveyed 1,400 organizations with software development and delivery capabilities, each with at least 100 employees. Respondents included both IT decision-makers and developers, with 56.7% primary decision-makers, 32.7% part of the decision-making unit, and 10.6% decision influencers.

Organizations were categorized by self-declared digital revenue into Mainstream (440), Leaders (460), and the Regional Average (300).

Breakdown of respondents

Country	Sample size
China	200
Australia	200
India	300
South Korea	200
Singapore	200
Hong Kong	200
Thailand	50
Indonesia	50

Respondents' role



- **50%** IT developer (e.g., app developer, app architect, cloud architect, DevOps, cloud engineering, product manager, app owner)
- **22%** Director/manager of IT
- **11%** IT administrator/professional
- **8%** EVP, SVP/VP of IT
- **7%** C-level (e.g., CEO, COO, CFO, CIO, CTO)

Appendix: Accessible data tables

Figure on page 6

Top challenges to modernization of certain applications

	Mainstream Cohort	Leaders Cohort
Security concerns	28%	29%
Data migration challenges	26%	25%
High upfront costs	25%	26%
Complex legacy systems	24%	24%
Skills gap	21%	19%
Lack of standardization	21%	22%
Integration dependencies	21%	20%
Competing priorities	19%	16%
Unclear ROI	18%	17%
Regulatory constraints	18%	19%

Source: [1]IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400;
[2]IDC FutureScape: Worldwide Worldwide Developer and DevOps 2026 Predictions Doc # US53858525

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Figure on page 12

Top 10 drivers of database selection

	Leaders Cohort	Mainstream Cohort
AI enablement	56%	55%
Performance needs	42%	43%
Scalability requirements	43%	42%
Security and compliance	46%	42%
Cost and licensing	39%	39%
Breadth of database capabilities	37%	37%
Data structure and type	43%	36%
Consistency, availability, and partition tolerance	33%	33%
Ecosystem and tooling	30%	31%

Source: IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400

Return to figure

Appendix: Accessible data tables (continued)

Figure on page 13

Causes that delay AI adoption

	Leaders Cohort	Mainstream Cohort
Security concerns	40%	37%
Cost	32%	32%
People and process challenges	30%	31%
Poor data quality/standards	29%	30%
Limited scalability of databases	29%	26%

Source: IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400

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Figure on page 15 (top)

Estimated funding/budget to support legacy applications (US$M value)

	Mainstream Cohort	Leaders Cohort
3 years ago – legacy applications	1.8	2.0
Today – legacy applications	2.3	3.0
In 3 years' time – legacy applications	2.9	2.5

Source: IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400

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Figure on page 15 (bottom)

Estimated funding/budget to support modern applications(US$M value)

	Mainstream Cohort	Leaders Cohort
3 years ago – modern applications	1.7	1.9
Today – modern applications	2.8	3.4
In 3 years' time – modern applications	4.5	5.6

Source: IDC's *Asia/Pacific Modernization Survey*, 2025, sponsored by MongoDB, n = 1,400

Return to figure

About the IDC analysts

Simon Piff

Research Vice President
IDC Asia/Pacific

Simon Piff is research vice president for IDC's Asia/Pacific (AP) region based in Singapore. After almost 30 years in the AP IT scene, there are very few areas Simon has not spent time working within — be it cloud computing, business intelligence, datacenter management, security, and automation. From building ISPs in the 1990s to explaining distributed ledger technologies in 2019, he has always been across the leading-edge of technology innovation and implementation across the Asia/Pacific region.

More about Simon Piff →

Dr. William Lee

Senior Research Director
Service Provider and Core Infrastructure Research, IDC Asia/Pacific

Dr. William Lee is Senior Research Director within IDC's enterprise infrastructure global research domain, and part of the core infrastructure subdomain. William focuses on IDC's research on computing systems, platforms and technologies and delivers market insights and strategic analysis on accelerated computing architectures, AI infrastructure platforms, and the evolving supply chain dynamics shaping hyperscalers, service providers, and enterprise datacenters.

More about Dr. William Lee →

Message from the sponsor

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Whether optimizing a single application or executing a full-stack transformation, MongoDB provides a **flexible, modern foundation for AI-driven innovation**.

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