

SAUDI ARABIA'S AI READINESS: THE DATA INFRASTRUCTURE IMPERATIVE

IN COLLABORATION WITH



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[SHAKER Group](#), and [DATAVOLT](#) are delivering energy-efficient cooling solutions for NEOM's new AI data centers, combining sustainability with high-performance computing.

- **Edge AI Innovation:** [NEOM Investment Fund](#) has partnered with [MemryX](#) to advance low-latency edge AI, integrating intelligent applications across smart cities and industrial infrastructure.

These developments reflect a nationwide pivot toward AI-enabled growth. However, sustained progress requires addressing structural barriers related to data quality, system scalability, and cross-functional governance.

Key Survey Findings and Trends: AI Strategy & Infrastructure Readiness

Survey responses from Saudi-based enterprises reveal an AI ecosystem in transition:

- **Adoption Momentum:** Nearly 50% of organizations report using AI across multiple departments. Predictive analytics (80%) and generative AI (66%) lead deployment, particularly in automation, forecasting, and decision support.
- **Maturity Gaps:** Approximately 20% of organizations remain in the pilot phase, indicating uneven readiness across sectors.
- **Capability Constraints:** The top reported barriers include weak data governance (49%), talent shortages (40%), and outdated IT systems (40%). Encouragingly, 40% of respondents have established in-house AI teams, with another 43% building internal capabilities.

These trends signal long-term capability development, but also reinforce the centrality of modern infrastructure in scaling AI impact.

Infrastructure and Data Readiness

Modern infrastructure has become essential to AI scalability, but survey findings indicate conservative adoption patterns:

- **Deployment Models:** 49% of organizations prefer hybrid infrastructure, blending on-premise systems with cloud for performance and compliance. Another 43%

rely exclusively on on-premise models, while just 9% operate fully in the cloud.

- **Data Maturity:** Only one third report having more than 60% of data usable for AI. The remainder face challenges related to fragmentation, access, and reliability.
- **Technical Limitations:** Scalability (63%), storage complexity (57%), and system response times (49%) are cited as key technical constraints.
- **AI Platform Strategy:** 49% continue to run separate AI environments, while 20% have adopted centralized platforms to streamline governance and improve consistency.

Decisions about where AI workloads are deployed reflect broader regulatory and performance priorities. On-premise models are preferred for sensitive data by 40% of organizations, while 34% use hybrid approaches and 11% are moving toward sovereign cloud models. These choices reflect a growing focus on compliance, data sovereignty, and national capability-building.

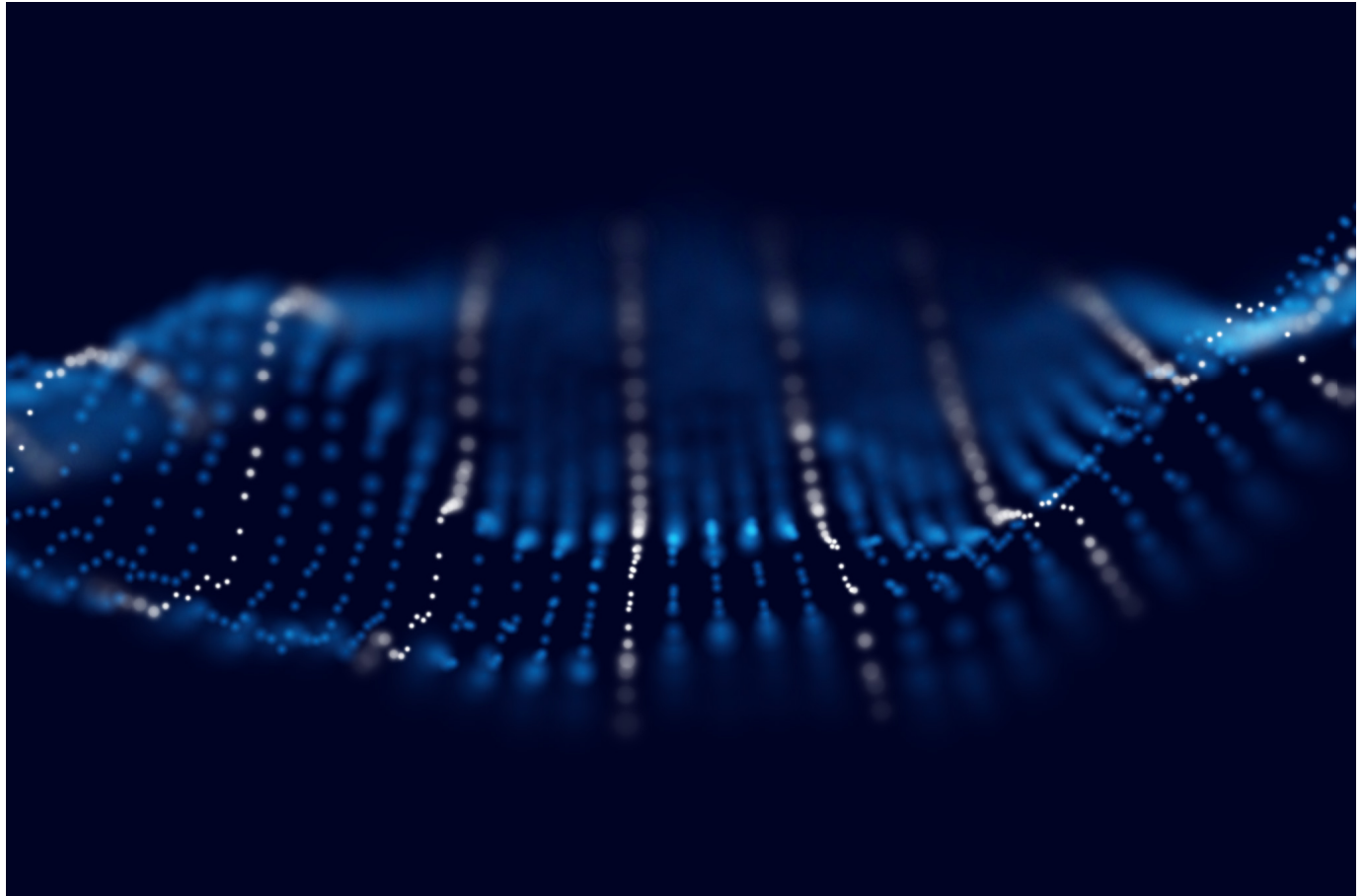
Toward Scalable, Sustainable AI

The early momentum around AI in Saudi Arabia is being followed by a more deliberate focus on scale, integration, and business alignment. National strategies, regulatory frameworks, and sectoral investments are laying the groundwork for long-term digital competitiveness. However, this next phase requires more than isolated projects or infrastructure upgrades.

Sustained progress depends on aligning data strategies, modernizing IT systems, and embedding AI into enterprise-wide workflows. Gaps in data readiness, siloed infrastructure, and limited governance must be addressed to enable broader AI adoption and measurable outcomes. Without coordinated effort across technology, talent, and leadership, organizations may struggle to translate experimentation into enterprise value.

This whitepaper provides a roadmap for navigating that transition. The sections that follow offer detailed survey findings and case studies, along with strategic recommendations for accelerating AI maturity. Saudi Arabia's position as a future AI leader will rest on its ability to scale responsibly, modernize effectively, and align infrastructure investments with national and organizational priorities. ■

Introduction



Saudi Arabia's AI Landscape

Saudi Arabia is rapidly emerging as a significant force in the global AI landscape. Its progress is grounded in a cohesive national strategy that unites large-scale investments, regulatory enablement, and advanced digital infrastructure. This coordinated approach is attracting global partnerships, accelerating commercialization, and embedding AI across key sectors of the economy.

The creation of the [Saudi Data and AI Authority \(SDAIA\)](#) in 2019 was a turning point in institutionalizing AI governance. SDAIA leads

the **National Strategy for Data and AI (NSDAI)** through its three specialized entities:

- **National Information Center**
- **National Center for Artificial Intelligence**
- **National Data Management Office**

These institutions work collectively to ensure that AI development aligns with the Kingdom's Vision 2030, driving economic diversification, enhancing human capability, and positioning Saudi Arabia as a regional and global AI hub. A core tenet of this strategy is the commitment to **responsible AI**, which embeds ethical governance,

privacy, and sustainability into all initiatives.

National progress is reinforced by a [USD 10.7 billion investment through the Public Investment Fund \(PIF\)](#), including the [launch of HUMAIN](#), a sovereign AI company advancing Arabic large language models (LLMs), sustainable infrastructure, and applied use cases. [In 2024, Saudi Arabia ranked 14th globally and 1st in the Arab world on the Global AI Index](#), an indicator of its rising stature. AI research output has grown from [4,100 publications in 2019 to over 10,500 in 2023, with patent activity increasing fivefold](#).

AI is no longer just a research frontier. It is being operationalized across energy optimization, smart cities, logistics, and education, supporting practical transformation at scale.

Developing human capital is central to sustaining this trajectory. Major initiatives include:

- [SDAIA Academy](#), which trained over 46,000 professionals in 2023
- [SAMAI \(One Million Saudis in AI\)](#), aimed at building widespread AI fluency and ethical understanding
- [National AI Scholarship Programme](#), which enables top talent to gain global expertise and return with skills aligned to national priorities

Together, these efforts aim to develop **over one million AI-skilled professionals by 2030**.

Private sector engagement is also intensifying:

- [PIF and Google Cloud](#) announced a global AI hub in Dammam, focused on sovereign cloud and sector-specific applications.
- [Salesforce's USD 500 million investment aims](#) to enhance enterprise AI adoption and Arabic-language model development.

Saudi Arabia's AI ecosystem now rests on a platform of strategic governance, robust infrastructure, global partnerships, and growing talent pipelines. However, transforming this ecosystem into operational maturity requires overcoming persistent structural and technical constraints.

From Ambition to Readiness: Common Challenges of AI Adoption

Despite clear momentum, many organizations across Saudi Arabia face difficulty translating national ambitions into tangible, enterprise-wide

AI readiness. The challenge lies in bridging the gap between vision and execution.

Key barriers identified:

- **Inconsistent Data Governance:** While SDAIA has laid down a foundational regulatory framework, enforcement and cross-sector consistency remain uneven. Organizations cite the need for clearer data standards, sharing protocols, and governance models.
- **Talent Shortages:** Despite national upskilling efforts, demand for specialized roles, such as data engineers, ML practitioners, and AI architects, continues to outstrip supply. The lack of in-house expertise slows the shift from experimentation to scalable deployment.
- **Legacy IT Infrastructure:** Many enterprises remain constrained by outdated systems ill-suited to AI workloads. These limitations lead to inefficiencies and increased modernization costs.
- **Lack of System Interoperability:** Fragmented technology environments make it difficult to integrate AI into existing business processes. Disconnected systems lead to inefficiencies and duplication of effort.
- **Siloed Data:** Data remains scattered across departments or confined to proprietary systems. This fragmentation compromises data quality, limits usability, and reduces the impact of AI applications.

Progress toward AI readiness demands more than investment in technology. It requires unified data strategies, modernized infrastructure, cross-functional alignment, and long-term capability-building, to ensure that AI becomes an operational driver of Saudi Arabia's Vision 2030.

Purpose of the Whitepaper

This whitepaper aims to equip senior decision-makers in IT, AI, and data science with actionable insights to close the gap between AI ambition and enterprise-scale readiness. As AI use expands, managing complex, high-volume, unstructured data has become critical to unlocking its full value.

Published by MIT Sloan Management Review in collaboration with Pure Storage, this paper

explores how Saudi organizations can adopt infrastructure strategies that support flexible, scalable, AI-ready operations. Drawing on exclusive survey data and regional case examples, it outlines how enterprises can:

- Align infrastructure with evolving AI workloads
- Improve data usability and system interoperability
- Strengthen governance and cross-functional ownership

This whitepaper is designed to support strategic infrastructure decisions that accelerate AI adoption, reduce implementation risk, and maximize enterprise value. By shifting focus from experimentation to integration, it offers a roadmap for organizations to realize AI's full potential – across sectors, at scale, and in alignment with national priorities. ■

Research Methodology

Survey Approach and Executive Profiles

This research assesses the maturity of AI infrastructure in Saudi Arabia by engaging senior executives and technical leaders directly responsible for enterprise AI strategy, data platforms, and digital transformation initiatives. Respondents include Directors of Data & AI, Heads of AI and Data Science, Vice Presidents of AI & Data Hubs, and AI Engineers representing key verticals aligned with national economic priorities. These sectors include financial services, energy and utilities, telecommunications, government and public services, industrial manufacturing, and urban development.

The study evaluates the preparedness of enterprise infrastructure to support scalable and sustainable AI deployments. It focuses on data management platforms, compute capacity, cloud adoption strategies, and the integration of unstructured data sources for advanced analytics and machine learning. Strategic insights from executive decision-makers are complemented by technical perspectives from implementation leaders, offering a 360-degree view of how organizations plan, build, and scale their AI infrastructure.

By capturing both strategic vision and operational realities, the research identifies systemic strengths, infrastructure bottlenecks, and practical challenges that organizations encounter as they move from pilot initiatives to enterprise-wide AI deployment. It also surfaces best practices that accelerate adoption and improve ROI. The overarching objective is to understand the foundational infrastructure investments necessary to realize AI's full economic and operational impact in the Kingdom.



Quantitative and Qualitative Design

The research employs a mixed-methods approach to ensure both empirical rigor and contextual depth. Quantitative data tracks measurable indicators such as AI adoption stages, infrastructure performance, data readiness, platform modernization, and cloud deployment preferences. These metrics allow benchmarking across industries and help chart organizational progression from experimentation to operationalization.

Qualitative inputs enrich the analysis by revealing how leaders align infrastructure with business outcomes. This includes approaches to improving flexibility and real-time access, fostering cross-functional collaboration, and evaluating

the long-term sustainability of AI infrastructure investments. Executive narratives provide critical insights into the decision-making frameworks and governance structures underpinning infrastructure modernization.

This integrated methodology offers a systematic framework for assessing enterprise readiness for AI, from strategic intent to operational execution. It enables a nuanced understanding of how infrastructure contributes to scalable and outcome-driven AI adoption.

Research Boundaries and Considerations

To ensure validity and applicability, the research design incorporates key contextual and methodological considerations specific to Saudi Arabia's AI landscape.

Regulatory Environment and Policy Context

The study accounts for national and sectoral governance frameworks that shape infrastructure decisions. This includes the National Strategy for Data & AI (NSDAI), sovereign cloud policies, and compliance regulations across finance, healthcare, energy, and public administration. These frameworks directly influence how organizations prioritize risk mitigation, data control, and long-term infrastructure planning.

Infrastructure Diversity and Maturity Spectrum

The respondent base reflects a diverse range of digital maturity levels. Leading organizations have adopted hybrid architectures, GPU-accelerated computing environments, and MLOps pipelines to support enterprise-grade AI. Others remain in earlier phases, managing legacy IT systems and data silos. This spectrum captures the heterogeneous nature of AI adoption across the Kingdom, shaped by varying levels of investment, organizational readiness, and technical capacity.

Data Validation and Triangulation

To enhance reliability, all findings were cross-referenced with secondary data sources, including:

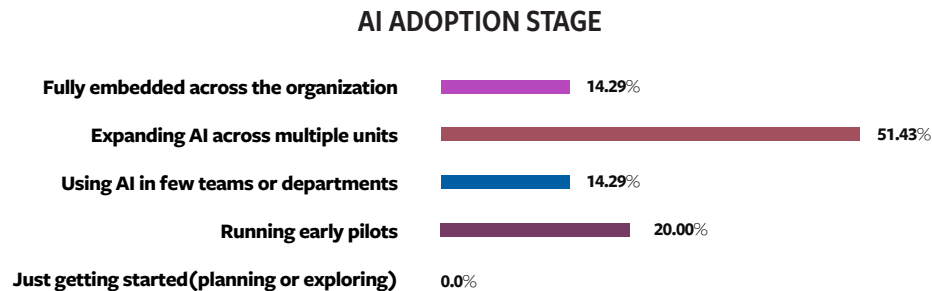
- Official government publications and SDAIA statements
- Regional and sector-specific AI research
- Global benchmarks for AI infrastructure readiness

This triangulation ensures methodological robustness, situating primary research findings within a broader policy and industry context. The result is a credible, representative, and actionable analysis of AI infrastructure readiness in Saudi Arabia. ■



AI Strategy and Execution in the KSA

Stage of AI Adoption Across Key Business Areas



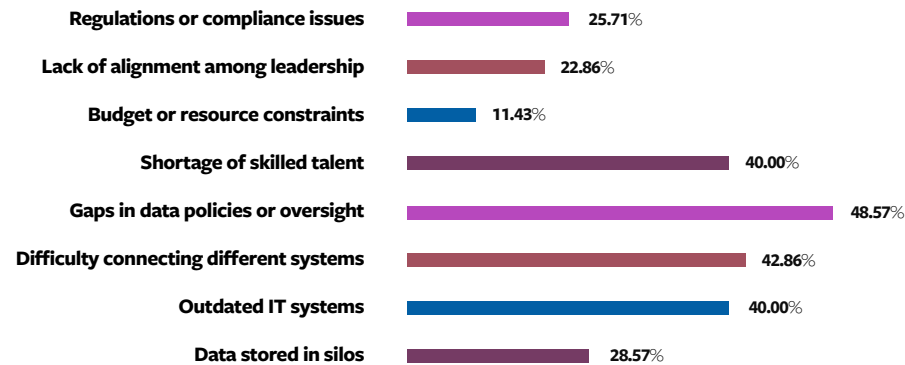
AI ADOPTION IN SAUDI ARABIA is rapidly progressing, with a growing number of organizations moving beyond initial pilots to broader enterprise-wide implementation. Survey analysis indicates that **51% of organizations** in Saudi Arabia are **expanding AI adoption across multiple business units**, reflecting a substantial shift toward enterprise-wide integration. **20% of organizations** are also running **early AI pilot projects**, indicating varied stages of AI maturity across the market. Saudi Arabia is accelerating AI deployment through a combination of expansion and ongoing testing, fueled by targeted national initiatives,

significant infrastructure investments, and a rapidly growing pool of skilled talent.

To support this momentum, in May 2025 the [Saudi Data & AI Authority \(SDAIA\)](#) signed a [Memorandum of Understanding \(MoU\)](#) with [Advanced Micro Devices \(AMD\)](#) at the Saudi-US Investment Forum in Riyadh. This partnership aims to develop AI-focused data centers powered by AMD technologies, establishing a state-of-the-art digital infrastructure to enhance AI capabilities and applications. This illustrates SDAIA's broader strategy to accelerate AI adoption through international collaborations, strengthening Saudi Arabia's position as a regional hub for cutting-edge AI innovation across sectors.

Barriers & Skills for Scaling AI

INTERNAL CONSTRAINTS ON AI EXPANSION



As Saudi Arabia accelerates its journey to becoming a global AI powerhouse under its Vision 2030 agenda, understanding the challenges of scaling adoption beyond initial pilots becomes critical. The survey shows that **49% of organizations identify gaps in data policies or oversight** as the key hindrance, highlighting an urgent need for stronger governance frameworks. **Shortages of skilled talent (40%) and outdated IT systems (40%)** also emerge as major barriers, underscoring the combined impact of human capital and infrastructure constraints on effectively scaling AI.

on external expertise and setting local enterprises up for sustained success.

A recent example is [stc's launch of Saudi Arabia's first sovereign LLM-as-a-service cloud platform in partnership with SambaNova](#), unveiled at LEAP 2025. The platform combines high-performance infrastructure with locally governed AI solutions, directly addressing concerns around data sovereignty, scalability, and secure deployment. By embedding such initiatives into national AI priorities, enterprises are demonstrating how investment in governance and talent can translate into tangible

AI SKILLS AND EXPERTISE ACROSS ORGANIZATIONS



Despite these challenges, enterprises are making clear progress in building internal capabilities. A substantial **40% of organizations boast well-established AI and machine learning teams**, while **43% are actively cultivating in-house talent**. This shift in the talent landscape underscores a resolute commitment to minimizing dependence

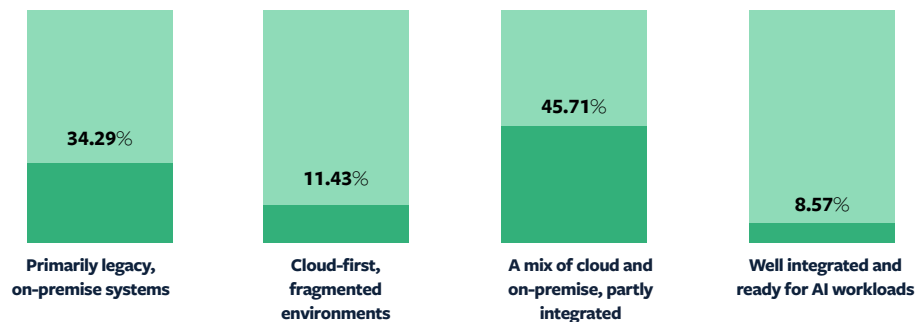
on infrastructure advancements. These findings illustrate a market in transition, one in which governance and infrastructure remain key challenges but investments in people and strategic partnerships are laying the groundwork for scalable and sustainable AI growth that aligns with Saudi Arabia's broader strategic objectives. ■



Data & Infrastructure Readiness

Infrastructure Landscape & Deployment Models

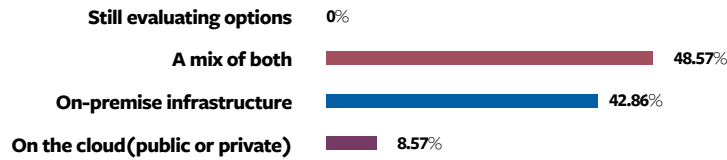
DATA INFRASTRUCTURE READINESS



THE SURVEY SHOWS THAT MOST organizations in Saudi Arabia are currently modernizing their data infrastructure to support AI adoption. A significant share (34%) continue to rely **primarily on legacy, on-premise systems**, while **46%** report operating

in **mixed environments that combine cloud and on-premise systems** but remain only partly integrated. Only **9% of organizations** describe their **infrastructure as well-integrated and fully ready for AI workloads**, which indicates a gap between current capabilities and those required for large-scale AI deployment.

AI WORKLOAD PREFERENCE



Asked about preferred environments for running AI workloads, **49% of survey respondents** indicate a **preference for hybrid models** that **integrate on-premise and cloud deployments**. Another **43% favor on-premise infrastructure**, while only **9% report pursuing a cloud-first** approach. The strong lean toward hybrid and on-premise reflects the importance of data security, sovereignty, and compliance to the Kingdom's AI journey.

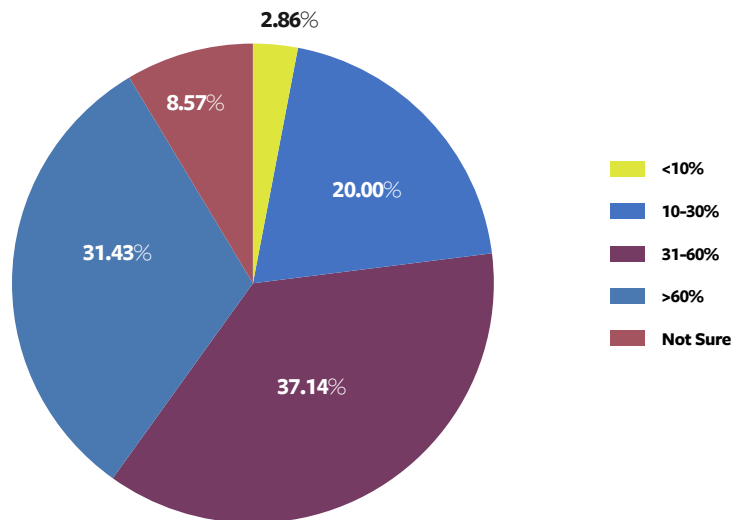
A recent example of this shift is [OmniOps' strategic partnership with Groq to advance sovereign AI infrastructure in Saudi Arabia](#). This groundbreaking collaboration will drive enterprise-grade inference across key sectors like government,

energy, and aviation. By combining Groq's hardware with OmniOps' software, it will offer locally hosted, high-performance inference-as-a-service, ensuring strict compliance with national data protection and cybersecurity rules. This initiative also empowers organizations to take control of their AI and data by providing flexible on-premise and sovereign cloud deployment options.

The survey results and industry examples show a market at a critical turning point. Organizations are modernizing their infrastructure but still face significant barriers in creating seamless, AI-ready environments. While sovereign and hybrid initiatives are making progress, the readiness of enterprise data itself remains the biggest challenge.

Data Readiness & Infrastructure Challenges

DATA USABLE FOR AI

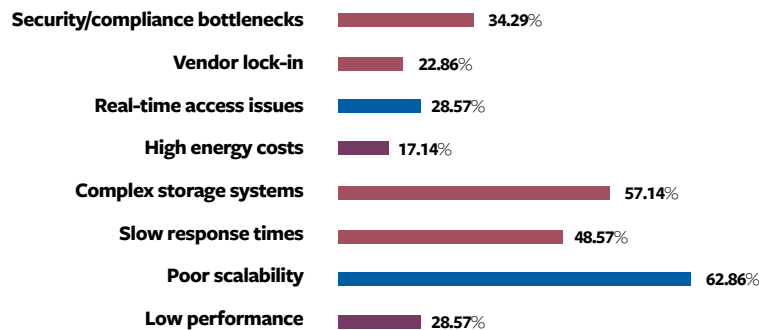


Although infrastructure modernization is advancing, enterprise data readiness remains uneven across organizations in the Kingdom. Survey findings reveal significant variability in the share of data

enabler of AI success. Without sustained investment in data infrastructure, even mature AI initiatives risk falling short of their intended impact.

While data usability remains a core determinant

AI INFRASTRUCTURE CHALLENGES



that is usable for AI, analytics, and decision-making.

- **31% of organizations** report that **over 60%** of their data is usable. This indicates a strong foundation for advanced AI integration. Examples include Aramco, Alrajhi Bank, SABIC, the Ministry of Justice, and the National Center for Artificial Intelligence (NCAI), where data maturity is enabling meaningful adoption at scale.
- Another **37%** report **data usability in the 31-60%** range. Entities such as the Saudi Electricity Company (SEC), the National Center for Genomic Research (NCGR), NEOM, Mobily, the Ministry of Environment, Water and Agriculture, SDAIA, and STC fall into this category. While progress is evident, further investment in data governance, interoperability, and system integration is needed to support enterprise-wide deployment.
- **20%** of respondents indicate that only **10-30%** of their **data is currently usable**. Organizations such as SDAIA, the Public Investment Fund (PIF), SABIC, and Tahakom continue to face challenges with fragmented data systems, limiting the immediate applicability of AI-driven solutions. These findings highlight data readiness as a core

of AI maturity, it cannot be evaluated in isolation. The readiness of enterprise infrastructure significantly influences an organization's ability to operationalize AI at scale. Survey responses identify three primary infrastructure constraints.

63% of organizations report **scalability limitations** that restrict their ability to manage expanding AI workloads.

57% cite **complex storage** architectures that hinder efficient data access and integration.

49% indicate **slow system response times** that undermine operational agility and the effectiveness of AI-driven decision-making.

By contrast, **only 17%** identify **high energy costs** as a current barrier, suggesting that most enterprises view compute efficiency and responsiveness as more immediate concerns than operational expenses.

Efforts to overcome these infrastructure gaps are already underway. In October 2024, the [Public Investment Fund \(PIF\) announced a strategic partnership with Google Cloud](#) to establish a national AI hub near Dammam. The initiative integrates advanced GPUs, TPUs, and the Vertex AI platform to accelerate AI adoption across sectors. It also supports the development of Arabic-language models and workforce upskilling, aligning with national goals to localize AI infrastructure and talent.

These developments reflect broader momentum, but bridging the divide between data readiness and infrastructure maturity will require sustained investment. Scalable systems, improved governance, and high-performance architectures are necessary to enable secure, enterprise-grade AI. Addressing these challenges will be essential for advancing toward real-time, trustworthy, strategically aligned AI integration – priorities explored in the next section.

Approaches to Improving Flexibility and Real-Time Access

As AI maturity deepens across Saudi Arabia, organizations are rearchitecting their infrastructure to support flexibility, responsiveness, and enterprise-wide alignment. The survey indicates a clear transition from monolithic systems toward hybrid, modular, real-time platforms that serve dynamic business objectives.

- **Hybrid and cloud-native deployments**

are becoming central to infrastructure modernization.

For example, Alinma Bank has adopted a hybrid model, using on-premise infrastructure to manage sensitive data while offloading compute-intensive AI workloads to the cloud. This approach enables performance gains without compromising regulatory compliance. Similarly, NEOM is advancing cloud-native and hybrid architectures that allow dynamic workload orchestration between on-premise and cloud environments based on real-time cost, latency, and compliance considerations.

- **Streaming architectures and real-time data pipelines** are enabling AI models to act on live signals.

Institutions such as Tahakom and the

Ministry of Environment, Water and Agriculture are deploying low-latency APIs and event-driven platforms that support use cases in predictive analytics, operational forecasting, and personalized engagement.

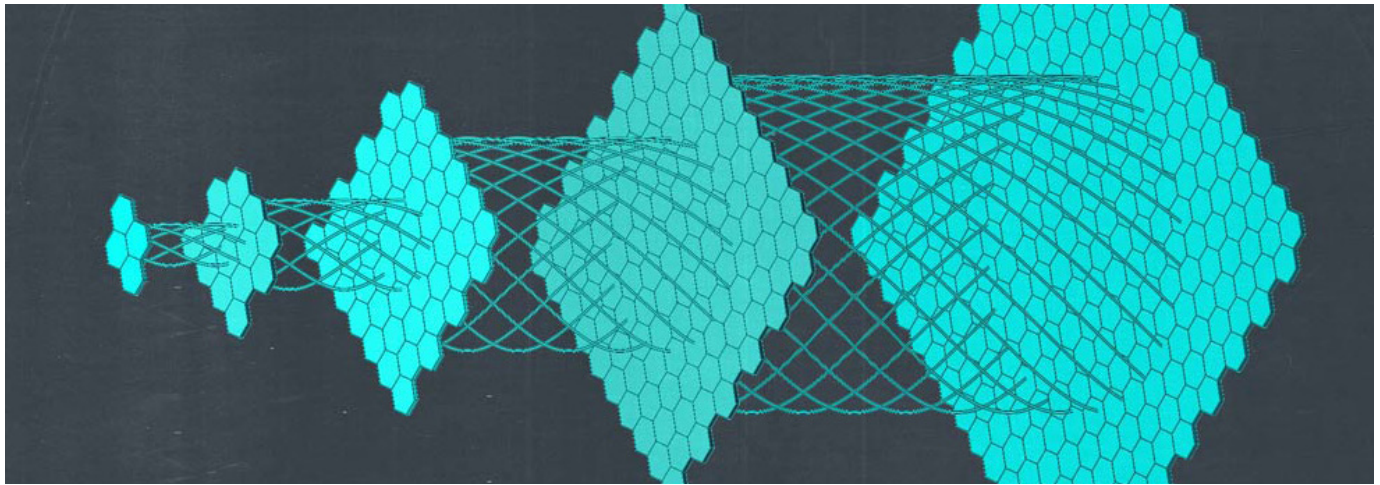
- **Composable infrastructure built on modular design principles** is enhancing integration and scalability.

Through the use of containerization, orchestration, and microservices, enterprises can deploy AI models, connect new data sources, and activate services without long implementation timelines. SABIC emphasizes that maintaining data quality while scaling infrastructure is essential to producing actionable, reliable insights across business units.

- **Strategic alignment between infrastructure and business outcomes** remains essential.

As one respondent from Alinma Bank notes: “Infrastructure decisions must be aligned with business outcomes. By defining desired results up front – whether improving customer experience, optimizing operational efficiency, or managing risk – we can prioritize infrastructure choices that directly support those goals.” This underscores the role of AI infrastructure as a core driver of enterprise performance, not just a technical asset.

These approaches reflect a national shift toward adaptive infrastructure, prioritizing real-time responsiveness, modularity, and strategic coherence. By embedding flexibility into the foundation of their AI systems, Saudi organizations are positioning themselves to accelerate transformation, scale innovation, and translate technical capability into sustained enterprise value. ■



Infrastructure Features, Strategy, and Governance

Prioritized Capabilities for AI Infrastructure

Selecting the right infrastructure is critical to effectively supporting AI workloads. Enterprises are focusing on capabilities that enable reliable, scalable, and manageable operations across diverse AI applications. Key considerations include:

- **Performance:** Infrastructure must handle complex models and compute-intensive tasks efficiently, ensuring consistent high-speed processing for AI workloads.
- **Scalability:** Systems should be able to grow with expanding data volumes and AI initiatives, accommodating variable workloads without disruption.
- **Integration with AI Tools:** Seamless compatibility with AI frameworks and platforms is essential to streamlining deployment and reducing operational complexity.
- **Centralized Control and Monitoring:** Visibility and governance across distributed

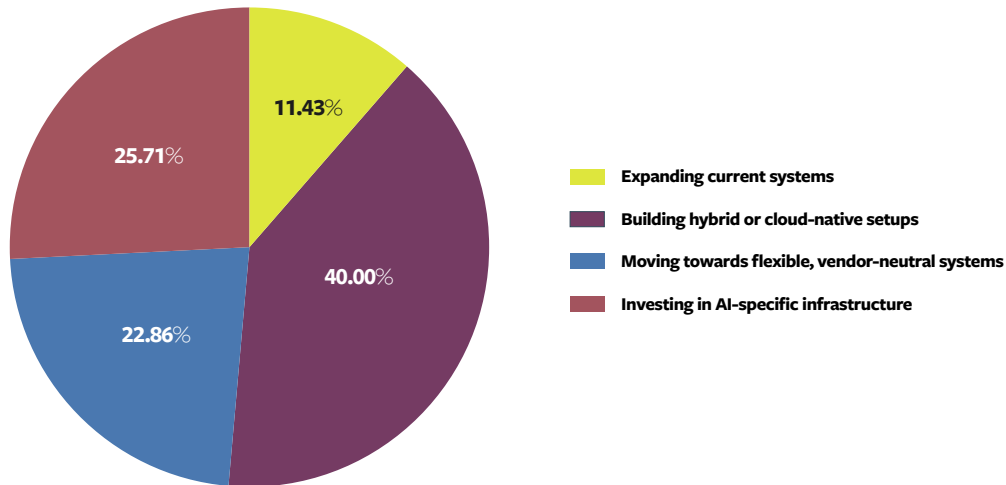
systems allow organizations to effectively manage resources and maintain operational oversight.

- **Cost Predictability:** Predictable infrastructure investment supports resource planning and aligns spending with strategic AI objectives.
- **Energy Efficiency:** Sustainable design practices help organizations reduce environmental impact while maintaining long-term operational efficiency.

These capabilities highlight the critical requirements for AI infrastructure, emphasizing performance, scalability, and integration as enablers of effective AI deployment. Building on these priorities, the next section explores practical approaches to modernizing infrastructure, showing how organizations can translate these requirements into actionable strategies that support flexible, real-time, scalable AI operations.

Approaches to Modernizing Infrastructure

AI INFRASTRUCTURE MODERNIZATION STRATEGIES



Enterprises are adopting a range of strategies to modernize storage and infrastructure for AI. In the survey, three leading approaches stand out:

▪ Hybrid or Cloud-Native Setups (40%)

Many organizations are combining on-premise systems with cloud environments to strike the right balance between performance, scalability, and regulatory compliance. This approach allows enterprises to scale resources dynamically, manage sensitive data within national boundaries, and leverage the flexibility of cloud-native services for AI model development and deployment.

For example, in May 2025 [Oracle announced a USD 14 billion investment in Saudi Arabia](#) over the next decade, aimed at advancing cloud and AI capabilities. The initiative supports the Kingdom's Vision 2030 by strengthening hybrid infrastructure, enabling organizations to innovate faster while maintaining compliance and sovereignty requirements.

▪ AI-Specific Infrastructure Investments (26%)

Many organizations are also prioritizing purpose-built infrastructure, such as high-performance GPUs, optimized storage systems, and advanced compute platforms, to support demanding AI models and workloads. Such targeted investments ensure that organizations can support the rapid training of large models, enable faster experimentation, and maintain reliability under heavy demand.

For example, [HUMAIN, a subsidiary of Saudi Arabia's Public Investment Fund, announced a landmark partnership with NVIDIA](#) to build hyperscale AI factories in the Kingdom. This includes deploying an 18,000-unit NVIDIA GB300 Grace Blackwell AI supercomputer and establishing data centers with up to 500 megawatts of capacity. These investments will provide sovereign-scale compute power, enabling industries to accelerate innovation and digital transformation.

▪ **Flexible, Vendor-Neutral Systems (23%)**

To avoid dependency on a single provider, a few enterprises are moving toward vendor-neutral infrastructures. Such systems are designed to be open and interoperable, allowing seamless integration with diverse AI tools and frameworks. This strategy enhances interoperability, supports integration with a wide array of AI tools and frameworks, and preserves long-term agility. By remaining adaptable, organizations can more easily adopt emerging technologies and optimize cost structures as the AI ecosystem evolves.

In May 2025, [HUMAIN](#), in partnership with [AMD and Cisco](#), launched a first-of-its-kind global initiative to build an open, scalable, developer-first AI superstructure. Positioned as one of the world's most neutral AI ecosystems, the collaboration enables startups, enterprises, and governments to train and deploy AI models without dependency on proprietary systems – reinforcing the value of flexibility and openness in future AI infrastructure.

This illustrates that organizations are prioritizing infrastructure strategies that align with AI requirements while offering modernization, flexibility, scalability, and operational efficiency. By focusing on hybrid or cloud architectures, AI-specific investments, and vendor-neutral approaches, enterprises can create resilient systems capable of supporting real-time analytics and high-demand AI workloads.

Governance & Alignment of AI Strategy

Effective modernization of infrastructure for AI requires not only the right technology choices but also strong governance and cross-functional alignment. Survey findings reinforce this point.

When asked who leads **decision-making around**

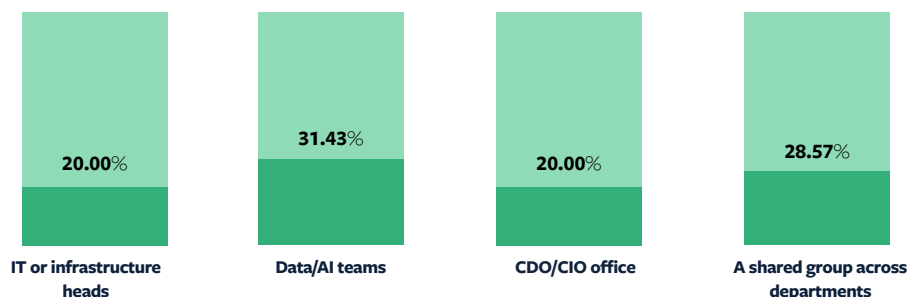
AI infrastructure, the most common response is **Data/AI teams (31%)**, underscoring their critical role in shaping infrastructure choices during the early phases of AI adoption, when specialized expertise is essential in order to balance feasibility and innovation. The second-most common response is **shared group across departments (29%)**, highlighting that organizations increasingly view AI as a collective responsibility rather than a stand-alone function. Such cross-departmental governance ensures that technical design aligns with business objectives while maintaining scalability and compliance.

Similarly, when exploring how well data strategies align with AI goals, the largest share of organizations point to **partial coordination with central oversight (46%)**. This indicates that most enterprises are currently in a transitional state: while some structures for governance exist, fragmentation across departments still poses a challenge. A smaller but notable group (23%) **report full enterprise-wide integration**; this is the most advanced stage of maturity, with data and AI strategies fully embedded across the business. This level of integration minimizes redundancies, accelerates scaling, and enables AI to directly support strategic priorities.

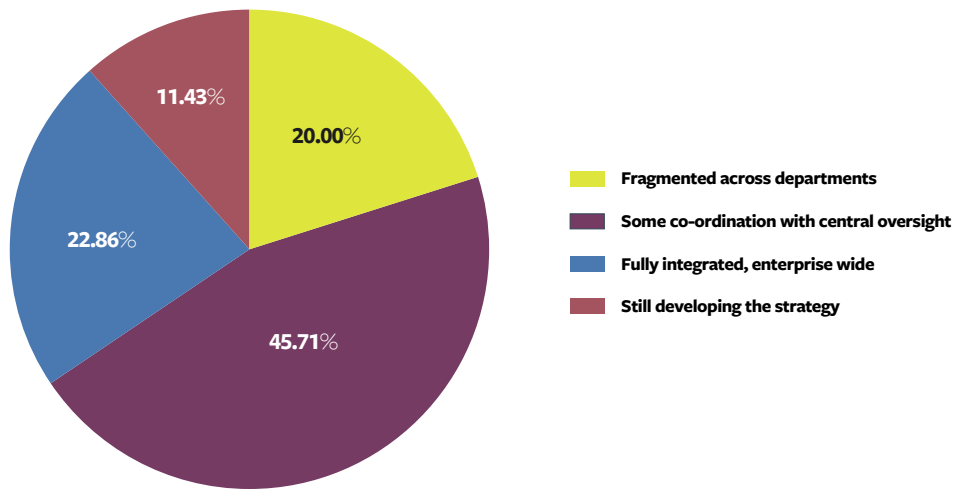
Leaders emphasize that this gap cannot be solved by technology alone; it requires a governance model that integrates business priorities, data requirements, and infrastructure capabilities. As a senior leader at the Saudi Data and AI Authority (SDAIA) explains:

“The key to preparing for large-scale AI initiatives is cross-functional alignment from the very beginning. Success doesn’t come from any single team working in isolation – it comes from creating a shared operating

AI INFRASTRUCTURE DECISION LEADERS



AI-DATA STRATEGY ALIGNMENT



model where data science, infrastructure, and business teams co-own both the challenges and the outcomes.”

This cross-functional orchestration ensures that AI is not treated as a technical exercise but as a business-driven initiative. NEOM’s approach illustrates this balance:

“For large-scale AI initiatives, success comes from orchestration, not just technical excellence. Business defines the why, data science defines the how, and infrastructure enables the can.”

– Head of Data & AI Health & Wellbeing, NEOM

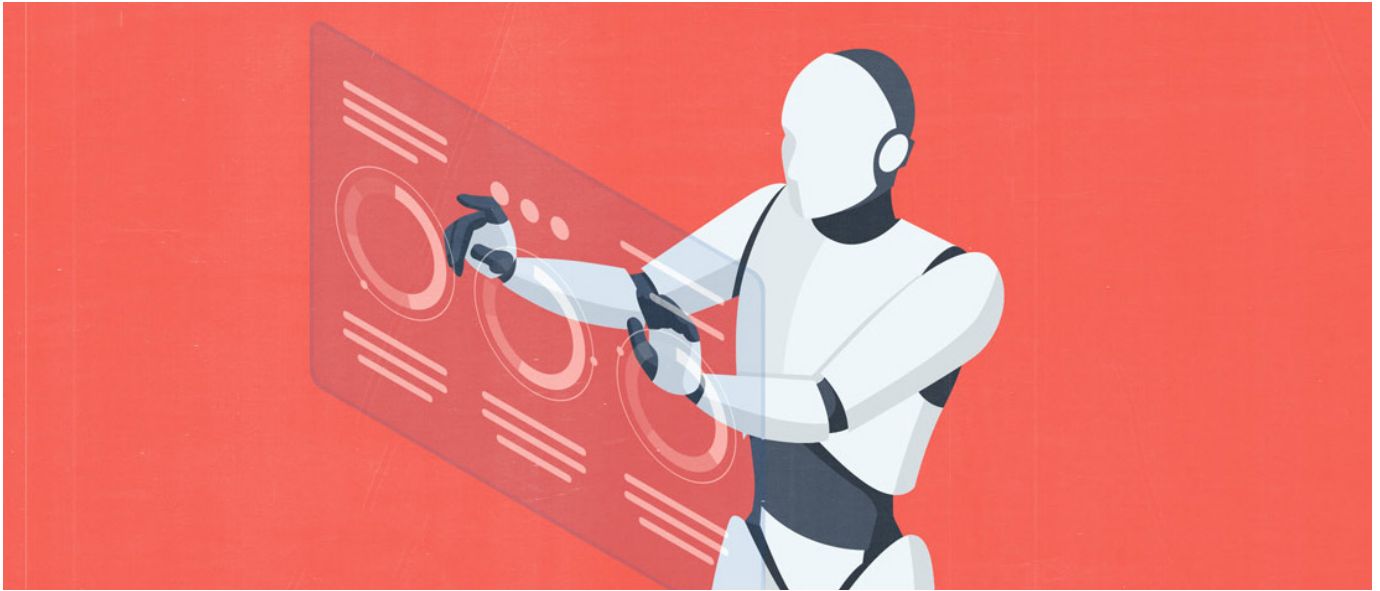
Some organizations are institutionalizing this alignment. Mobily (Etihad Etisalat) has established an AI Center of Excellence that oversees data, platforms, governance, and use cases, creating a single coordination layer across units. SABIC uses collaboration, accountability, and clear business-tech alignment to connect business and technical teams, ensuring consistent communication and delivery.

At a more technical level, leaders also stress the

importance of enabling collaboration through shared frameworks. For example, a Principal AI Engineer at the National Center for Artificial Intelligence (NCAI), part of SDAIA, highlights that: *“Ontology alignment is crucial in allowing cross-functional collaboration and the ability to find common patterns in disparate, heterogeneous data stores.”*

This perspective underscores that even the most advanced infrastructure can fall short without common standards and shared vocabularies. By aligning how data is structured and interpreted, enterprises create a foundation for teams to work seamlessly across silos, accelerating use-case development and reducing duplication of effort.

Together, these perspectives underline a consistent lesson: governance and alignment are prerequisites for scaling AI infrastructure. Without shared ownership, organizations risk fragmentation and stalled adoption. With it, enterprises can translate modernization strategies, such as hybrid setups, AI-specific investments, and vendor-neutral systems, into sustainable business impact. ■



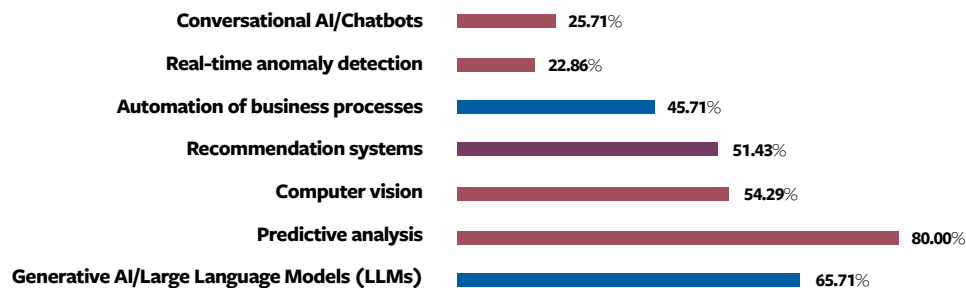
Executive Insights and Use Cases

Current AI Use Cases Driving Adoption

AI adoption in Saudi Arabia is evolving from isolated experimentation to enterprise-wide integration, shaped by Vision 2030 imperatives and external volatility. Market fluctuations, cybersecurity threats, and supply chain constraints are accel-

erating urgency, while internal strategies focus on efficiency, customer outcomes, and cost control. In this context, organizations are deploying AI where it directly enhances business resilience, operational performance, or competitive positioning.

AI USE CASES PRIORITIZED BY BUSINESS RELEVANCE



Predictive analytics leads with 80% adoption, reflecting the need for reliable forecasting. Enterprises face commodity pricing shifts and logistics disruptions that increase operational risk. Predictive models help mitigate these challenges by anticipating demand fluctuations, optimizing resource allocation, and improving business continuity. In the oil and gas sector, predictive maintenance reduces equipment failures and maximizes asset availability.

Generative AI and Large Language Models (66%) follow closely, addressing the need for faster decision-making. Executives are using these tools to extract insights from complex datasets and model potential scenarios. This shortens planning cycles and supports rapid alignment across departments. One example is the Accenture-Google Cloud partnership, which expands generative AI and sovereign cloud infrastructure in Saudi Arabia while developing local AI talent in alignment with Vision 2030.

Sector-specific adoption further illustrates strategic alignment:

- **Computer Vision (54%)** enables infrastructure monitoring at mega-projects such as NEOM, reducing the need for manual inspection and supporting real-time quality control.
- **Recommendation Systems (51%)** are enhancing customer personalization in

banking and retail, improving conversion and retention rates.

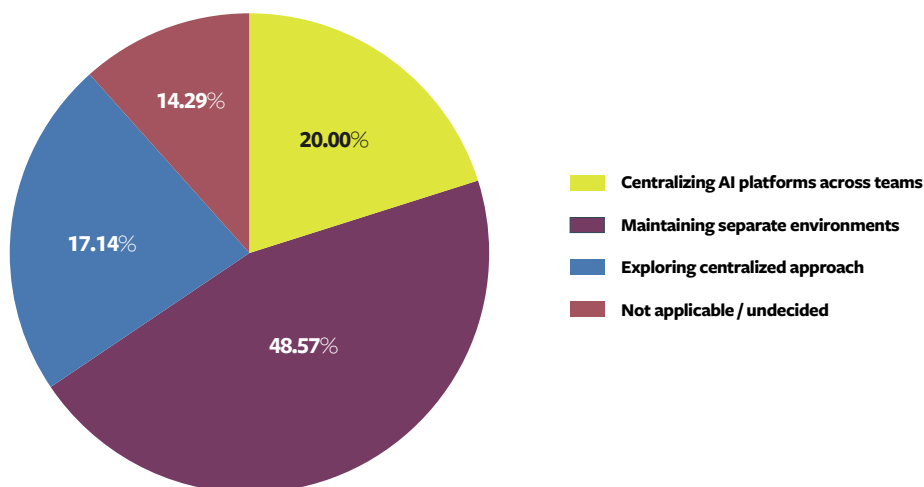
- **Business Process Automation (46%)** is streamlining operations in logistics and finance, cutting processing delays and reducing operational costs.
- **Conversational AI (26%)** is supporting service delivery in the public sector and banking, improving accessibility while reducing call center loads.
- **Real-Time Anomaly Detection (23%)** is protecting critical infrastructure in energy and cybersecurity, enabling early intervention and risk mitigation.

These patterns indicate that Saudi enterprises are embedding AI into core processes. Adoption is driven by business needs and measured by impact, positioning AI as a source of competitive advantage rather than a tool for experimentation.

Platform Strategy: Evaluating Centralized and Separate Architectures

As AI scales across sectors, platform architecture has become a key determinant of enterprise efficiency, governance, and cost control. Organizations are weighing the trade-offs between separate, domain-specific environments and centralized platforms that promote standardization and oversight.

PREFERRED AI PLATFORM STRATEGY



Survey data shows a fragmented landscape:

- **49% of organizations maintain separate environments.** These offer speed and flexibility but often lead to inefficiencies, data duplication, and fragmented compliance.
- **20% have adopted centralized platforms,** consolidating infrastructure, governance, and monitoring. These systems improve control and cost-efficiency but may reduce responsiveness in certain domains.
- **17% are currently piloting centralization,** seeking to balance agility with oversight.
- **14% remain undecided,** often due to reliance on vendor-managed solutions or early-stage deployments.

This distribution reflects a key tension. Separate platforms foster innovation and speed, but introduce long-term challenges in governance and scale. Centralized platforms offer stronger alignment, reduce cost, and improve compliance, especially as regulatory expectations evolve. With infrastructure complexity and AI workloads increasing, many organizations are expected to move toward more unified, scalable models.

As platform choices evolve, they directly influence how enterprises manage risk, security, and sensitive data, making cloud infrastructure and governance central to the next phase of decision-making.

Confidence in Cloud for Sensitive Workloads

AI-related infrastructure decisions in Saudi Arabia are shaped by regulatory frameworks, sector-specific policies, and level of confidence in cloud controls. Enterprises are adapting strategies to balance compliance with operational scalability.

Survey results show multiple approaches:

- **40% of organizations retain sensitive data on-premise.** This reflects a strong preference for control and sovereignty, particularly in high-risk sectors.
- **34% use hybrid deployments,** managing critical workloads locally while using the cloud for other operations.
- **14% adopt classification-driven models** that assign infrastructure based on workload sensitivity.
- **11% use full cloud,** leveraging advanced encryption and sovereign controls to meet security requirements.

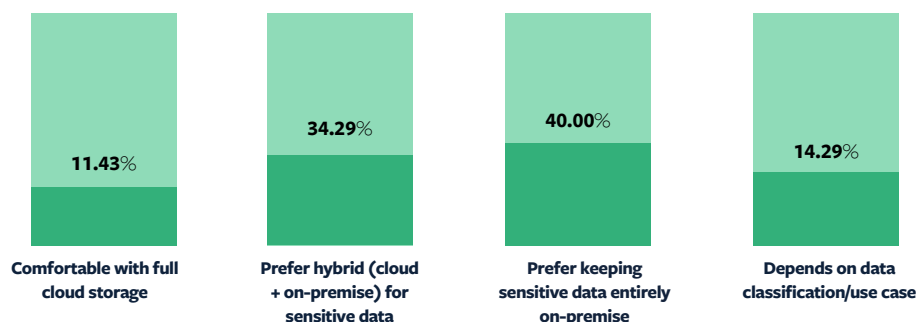
These practices reflect sector priorities:

- National ID and smart city data remain on-premise due to policy mandates.
- Healthcare providers use hybrid models to meet NHIC compliance.
- Financial institutions deploy sovereign cloud environments in line with SAMA regulations.
- Energy companies prioritize local hosting to reduce exposure to cyber risk.

[Alinma Bank's partnership with IBM](#) is one example of this strategic alignment. The bank launched a hybrid cloud and AI-powered API platform to enhance fintech innovation while maintaining secure infrastructure. The platform streamlines operations and supports Vision 2030 by enabling scalable, compliant digital services.

Across sectors, cloud decisions are driven less by storage location and more by how infrastructure supports measurable business outcomes. As maturity grows, organizations are shifting focus toward building confidence in cloud models that support performance, compliance, and future scalability. ■

CONFIDENCE IN CLOUD FOR SENSITIVE DATA





Future Evaluation and Vendor Selection

Shifts in Evaluation Criteria for AI Infrastructure

Enterprises in Saudi Arabia are shifting their evaluation frameworks for AI infrastructure. The focus has moved beyond technical specifications toward outcome-based assessments that prioritize business impact. Infrastructure is now viewed as a strategic asset that enables revenue generation, operational efficiency, customer satisfaction, and regulatory alignment.

Outcome-Driven Infrastructure and AI-First Planning

Infrastructure decisions increasingly begin with clearly defined business objectives. These may include reducing decision cycle times, lowering operational costs, or improving service delivery. An AI-first approach ensures that infrastructure investments are future-focused and designed to meet evolving business needs rather than sustaining legacy systems. When aligned to key performance

indicators, infrastructure directly contributes to return on investment through faster deployment, cost optimization, and measurable results.

As a respondent from NEOM emphasizes:

Infrastructure decisions must be driven by business outcomes, not by technology trends alone. As AI adoption increases, it's easy to get caught up in building the 'latest and greatest' platforms. But unless the infrastructure directly enables measurable outcomes, whether that's faster decision-making, better customer experiences, cost efficiency, or regulatory compliance, it risks becoming an expensive experiment."

Flexible, Modular, Scalable Architectures

As AI workloads diversify, enterprises require adaptable infrastructure. Modular, hybrid, cloud-native designs provide the flexibility to scale resources efficiently while maintaining perfor-

mance. Standardization and infrastructure optimization reduce system complexity and help ensure long-term alignment with business goals.

Governance, Compliance, and Risk Management

Integrated governance frameworks and embedded security protocols are essential to the protection of business continuity. By designing infrastructure with built-in compliance monitoring and risk management capabilities, organizations can reduce exposure to regulatory penalties and cybersecurity threats. This approach strengthens resilience and reinforces stakeholder confidence in AI initiatives.

Talent and Organizational Readiness

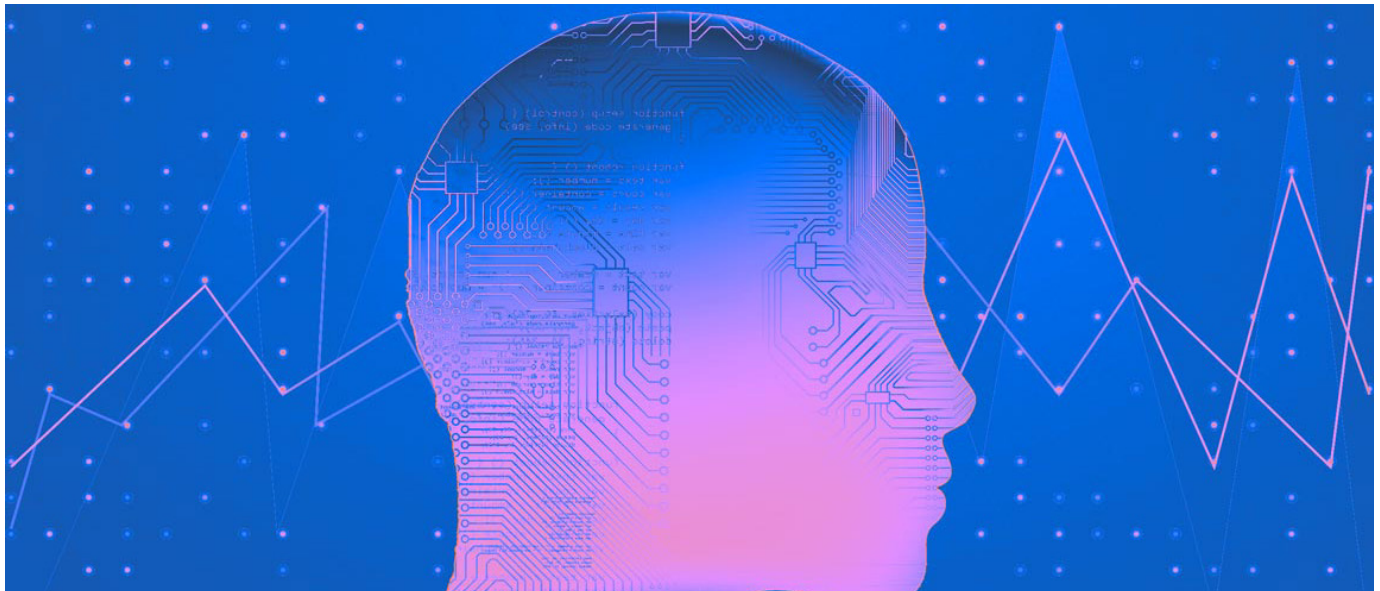
Technical capacity must be matched with skilled personnel and organizational alignment. Cross-functional collaboration, agile development workflows, and internal cultural readiness all contribute to successful scaling. Teams with experience

in both data science and business operations are essential to moving AI beyond pilot stages, into operational environments that generate value.

Strategic Vendor and Ecosystem Partnerships

Vendor selection now emphasizes long-term flexibility, interoperability, and integration with existing ecosystems. Enterprises seek partners that support open architectures and facilitate seamless integration with cloud platforms, hardware accelerators, and AI frameworks. Compatibility and ecosystem alignment are increasingly seen as essential to ensuring that infrastructure remains adaptable over time.

This evolution underscores a broader shift in enterprise priorities. Saudi organizations are no longer evaluating infrastructure solely on performance benchmarks. They now consider speed, resilience, cost-effectiveness, and business alignment to be primary indicators of success. ■



Strategic Recommendations for Scalable AI, & Key Insights

TO DELIVER RELIABLE, SOVEREIGN, cost-effective AI at scale, Saudi enterprises and public-sector entities must align infrastructure, governance, and talent with national priorities and business outcomes. The following priorities provide an actionable roadmap:

Align AI investments with national and business priorities

AI infrastructure spending must tie directly to business objectives and enterprise KPIs. Linking investments to measurable outcomes such as decision speed, customer impact, or downtime reduction accelerates accountable adoption.

Build flexible, hybrid, cloud-native architectures

Scalable AI requires architectures that span cloud, edge, and on-premise environments. Modular, containerized platforms ensure interoperability,

resilience, and future-proofing while balancing performance demands, sovereignty requirements, and evolving workloads across sectors.

Modernize data architecture with real-time pipelines

Unified data fabrics and streaming pipelines enable instant high-fidelity access to enterprise data. This foundation supports predictive, generative, and adaptive AI applications where timely insights determine competitive and operational advantage.

Optimize infrastructure efficiency and sustainability

Multi-tier compute strategies, tiered storage, and workload scheduling maximize performance while controlling cost. Energy-efficient GPUs and orchestration align with Saudi Arabia's Green Initiative, enabling scalable AI without escalating resource intensity.

Embed compliance, data sovereignty, and technical resilience

Infrastructure must integrate encryption, tokenization, and governance by design to meet SAMA, NHIC, and SDAIA standards. Embedding safeguards up front builds resilience, reduces retrofit risks, and sustains stakeholder trust.

Transform procurement into outcome-driven partnerships

Procurement must shift from rigid hardware cycles to modular, outcome-focused partnerships. Vendor selection should emphasize interoperability, cloud-agnostic designs, and measurable business impact in order to avoid lock-in and maximize long-term flexibility.

Institutionalize governance and cultural readiness

Cross-functional governance, MLOps adoption, and executive sponsorship ensure infrastructure delivers sustained value. Overcoming pilot dependency and fostering cultural readiness are essential to scaling AI beyond experiments into enterprise-wide transformation.

These actions together create a foundation for scalable AI that advances national objectives while balancing performance, compliance, and sustainability.

Tailored Sector-Based Strategic Recommendations: Insights from KSA Leaders

Saudi leaders across government, telecom, energy, and finance stress that AI scaling succeeds when infrastructure and governance reflect sector priorities.

Head of AI of Alinma Bank, on driving business-aligned and -governed AI initiatives:

“The key lesson I’ve learned in aligning AI infrastructure with business outcomes is that technical capability alone is not enough; success depends on close collaboration across business, technology, and compliance teams, combined with clear governance frameworks. In complex organizations, especially in highly regulated sectors like banking, AI initiatives often involve mul-

tiple stakeholders – from data governance, data engineers, and architects to risk, compliance, and business units. Without structured collaboration, AI projects risk becoming siloed, with infrastructure designed for technical performance but misaligned with the strategic goals of the organization. Establishing cross-functional communication channels early ensures that business priorities drive technical decisions, and that the AI infrastructure is designed not only to be robust, scalable, and performant, but also to deliver measurable business impact.

“A critical component of this alignment is governance. AI initiatives can encounter significant regulatory and compliance barriers, particularly in jurisdictions such as Saudi Arabia where data sovereignty and privacy regulations are evolving rapidly. Governance frameworks ensure that these requirements are incorporated into the infrastructure design from the outset, rather than being retrofitted after deployment. This proactive approach minimizes delays, mitigates risk, and instills confidence among stakeholders that AI solutions are compliant, auditable, and trustworthy. Clear governance also defines responsibilities, approval processes, and escalation mechanisms, enabling teams to make timely decisions and maintain accountability throughout the AI lifecycle.”

A senior respondent from the Saudi Data and AI Authority, highlighting the shift toward outcome-driven AI infrastructure investments:

“Looking ahead, I believe the way organizations evaluate and buy AI-ready infrastructure will shift from a capacity-driven decision to an outcome-driven investment. In the past, buying infrastructure was about scaling compute and storage. Now, it’s increasingly about ensuring that every dollar spent on infrastructure translates into agility, speed, and measurable business impact.”

A senior respondent from Aramco, on modernizing infrastructure procurement in response to tech evolution and cloud adoption:

“I have learned that digital infrastructure procurement is more rapid and accelerated due to the speed of technological evolution. Hence, I believe organizations shall start revising the procurement process of on-prem-

ise infrastructure. Cloud adoption opens the doors to standardize and enhance such procurement processes, however, it also requires developing extensive processes and revising the current data classification approaches.”

A VP from Mobily, highlighting the organizational challenges in scaling AI infrastructure:

“As with most orgs, there is a lack of forward-thinking mindset necessary to address the immense infrastructural demands of growing AI. The challenge isn’t just technical; it’s a deep-seated underestimation rooted in an organizational culture unprepared for the scale of this transformation. One of the ways resistance manifests is pilot project dependency, which makes companies stay stuck in costly proof-of-concept stages.”

Scaling AI in Saudi Arabia requires aligning infrastructure, governance, and culture with strategic objectives. Cross-functional collaboration, forward-looking procurement, and governance by design are critical to moving beyond pilots to enterprise-wide AI solutions. Organizations that integrate these elements can deliver measurable business impact, ensure compliance, and build scalable, resilient, and sustainable AI ecosystems that support sectoral goals and the Kingdom’s Vision 2030. ■



Conclusion

THIS WHITEPAPER HAS explored a critical dimension of Saudi Arabia's AI journey: the extent to which enterprises are prepared to scale AI adoption and the capacity of national infrastructure to support or constrain that ambition. In recent years, the Kingdom has transitioned from strategic intent to operational execution. Backed by Vision 2030, SDAIA's leadership, and coordinated public-private investment, Saudi Arabia is positioning itself as a regional and global leader in AI innovation.

Survey findings indicate that 51% of organizations have progressed beyond pilot phases and are embedding AI across core business functions. This reflects a broader shift: AI is no longer treated as an isolated innovation initiative but as a foundational enterprise capability. However, many organizations report barriers such as limited in-house expertise (40%), legacy infrastructure (34%), and fragmented data systems (20%) that hinder full-scale deployment.

Across the survey, a consistent pattern emerges: infrastructure maturity is the key differentiator between organizations that effectively scale AI and those still limited by foundational gaps. Enterprises

that embrace hybrid and sovereign cloud models, modernize data architecture, and operationalize MLOps are seeing faster time-to-value, improved scalability, and measurable business outcomes. In these environments, infrastructure serves as an enabler of transformation, not merely a support layer.

Technology, however, is not self-sufficient. Scaling AI requires governance frameworks that embed accountability, talent strategies that bridge capability gaps, and leadership alignment that ties infrastructure to business performance. Where this alignment exists, organizations build operational resilience, mitigate risk, and accelerate trust in AI outcomes. Where it is lacking, scaling efforts remain fragmented and constrained.

For Saudi Arabia, the path forward is clear. As AI becomes embedded across sectors, the next phase demands focused execution: aligning infrastructure investment with enterprise outcomes, institutionalizing governance, and accelerating talent development. Done effectively, these imperatives will convert AI from a strategic ambition into a system-wide capability, positioning the Kingdom as a global benchmark for trusted, scalable, and sustainable AI innovation. ■

Appendix

Executive Summary

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Introduction

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Executive Insights and Use Cases

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