



Artificial Intelligence for Financial Sector Supervision: An EMDEs Perspective

**Report submitted to the G20 Finance Ministers
and Central Bank Governors**

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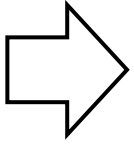
Finance, Competitiveness and Investment
World Bank Group

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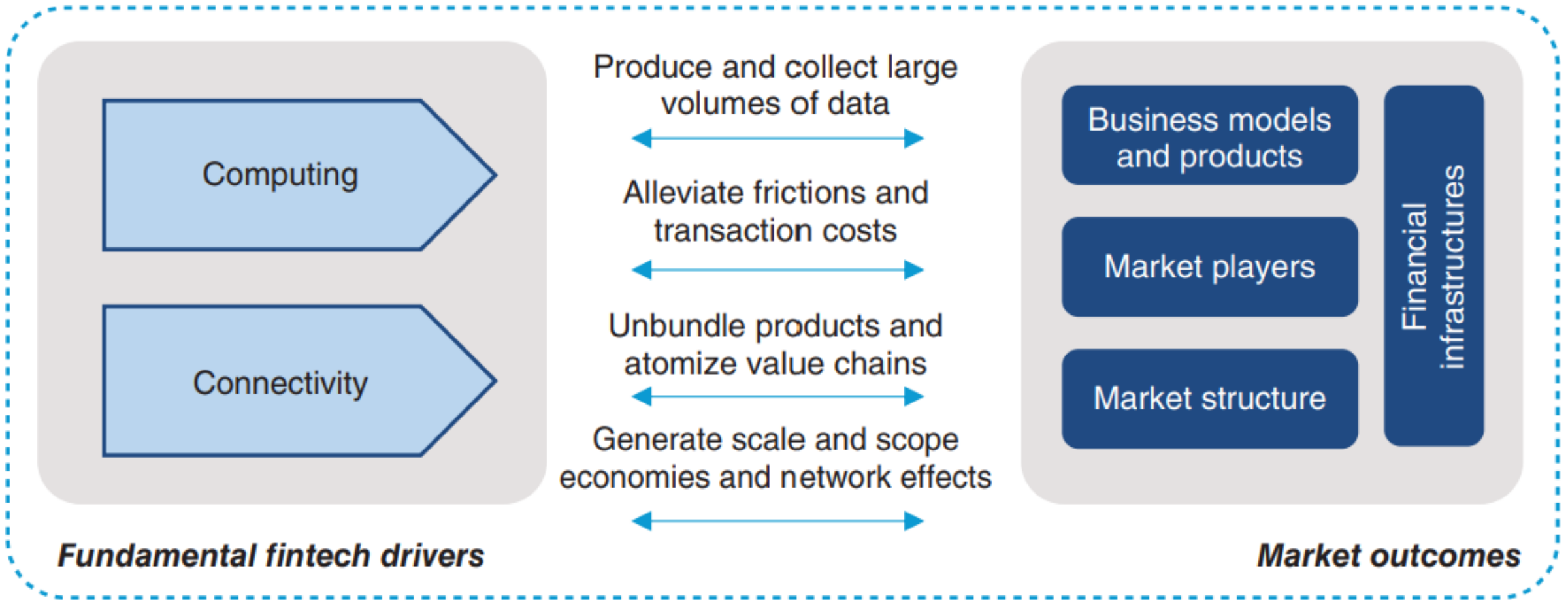
Agenda



- **Context**

- **State of AI adoption**
- **AI risks and implementation challenges for financial authorities**
- **The road ahead for financial authorities**

Information technology is transformative since information processing is at the core of finance



Source: Feyen, Natarajan, and Saal (2023)

Ongoing leaps in AI potency now make it suitable for tasks that previously required human intelligence

MORE DATA + MORE COMPUTE + BETTER MODELS

=

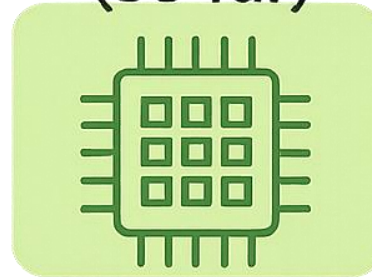
MORE POWERFUL AI

(so far)



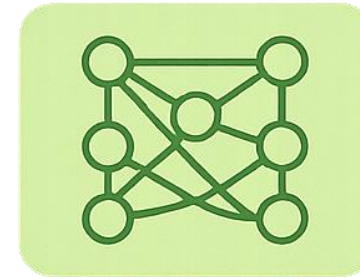
MORE DATA

Multimodal web data
financial sector data



MORE COMPUTE

Specialized hardware
data centers
supercomputers



BETTER MODELS

Larger networks
Transformer architecture
Mixture of Experts
Chain of thought
Reinforcement Learning (RLHF)

By the way, AI
still has some
way to go!

Conceptual framework

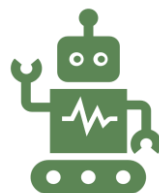


Who uses AI?

Private sector: Banks, insurers, asset managers, payment providers

Public sector: Central banks, regulators, resolution authorities, ministries

Consumers: Borrowers, depositors, investors



What kind of AI?

Traditional AI: Credit scoring, fraud detection, forecasting

Generative AI: LLMs for code, research, documentation, customer interaction

Agentic AI: Emerging, more autonomous systems



Impact level?

Consumer level: New financial habits and behaviors

Micro / institution level: Front office (customer onboarding, trading), back office (compliance, risk management)

Macro / system level: Inclusion, market structure, 3rd party dependencies, correlations, cyber risks

Opportunities, challenges and financial stability risks of AI in the financial sector

	Payments	Lending	Insurance	Asset management
General opportunities	Back-end processing, virtual assistants, co-pilots, fraud detection, regulatory compliance			
Sector-specific opportunities	Liquidity management, AML/KYC	Credit risk analysis, financial inclusion	Risk assessment, pricing, claims processing	Portfolio allocation, algorithmic trading, robo-advising, asset embeddings
General challenges	Lack of explainability, data silos, third-party dependencies, algorithmic collusion, hallucinations, cyber security risks			
Sector-specific challenges	Liquidity crises, sophisticated fraud and cyber attacks	Algorithmic discrimination, privacy concerns	Zero-sum arms race for private gains, herding, algorithmic coordination	
Financial stability challenges	Herding, network interconnectedness and procyclicality, single point of failure, incorrect decisions based on short samples of non-representative data, spillovers from real sector			

Source: Adapted from Aldasoro, Gambacorta, Korinek, Shreeti and Stein (2024).

Selected work of international organizations on AI in finance

•IOSCO

- Artificial Intelligence in Capital Markets: Use Cases, Risks, and Challenges (2025)

•FSB

- Monitoring Adoption of Artificial Intelligence and Related Vulnerabilities in the Financial Sector (2025)
- The Financial Stability Implications of Artificial Intelligence (2024)

•IAIS

- Application Paper on the Supervision of Artificial Intelligence (2025)

•BIS

- The Use of Artificial Intelligence for Policy Purposes (2025)
- Regulating AI in the Financial Sector: Recent Developments and Main Challenges (2024)

•IMF

- Advances in Artificial Intelligence: Implications for Capital Market Activities (GFSR 2024)

World Bank report for G20: Objective and scope



Objective

The report assesses AI adoption in financial supervision across emerging and developing economies to fill knowledge gaps.



Focus on SupTech

Emphasizes supervisory technology use in resource-constrained environments to manage risks and operational challenges effectively.

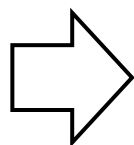


Target Audience and Methodology

27 financial authorities in EMDEs using surveys and structured interviews.

Agenda

- **Context**

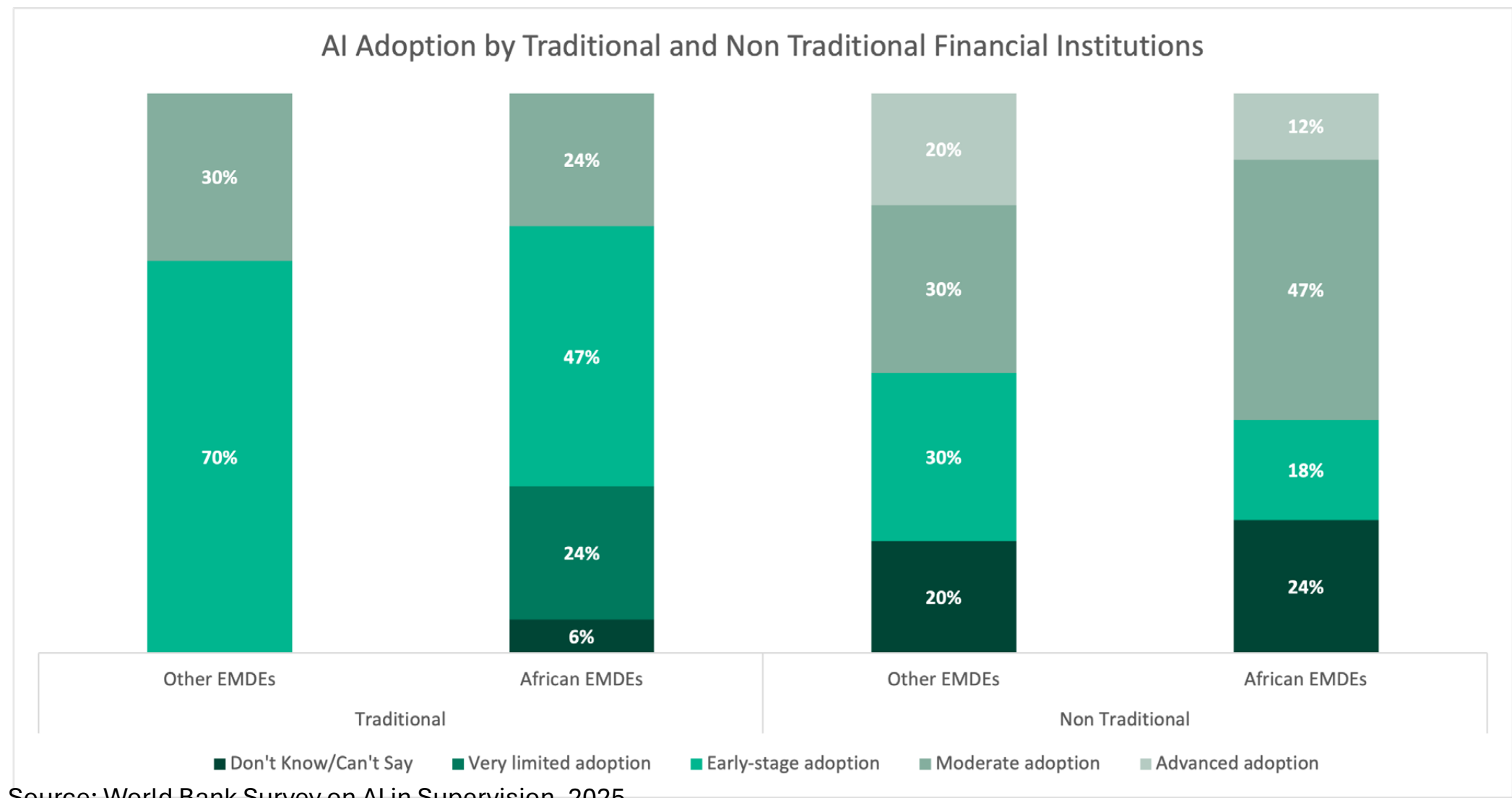


- **State of AI adoption**

- **AI risks and implementation challenges for financial authorities**

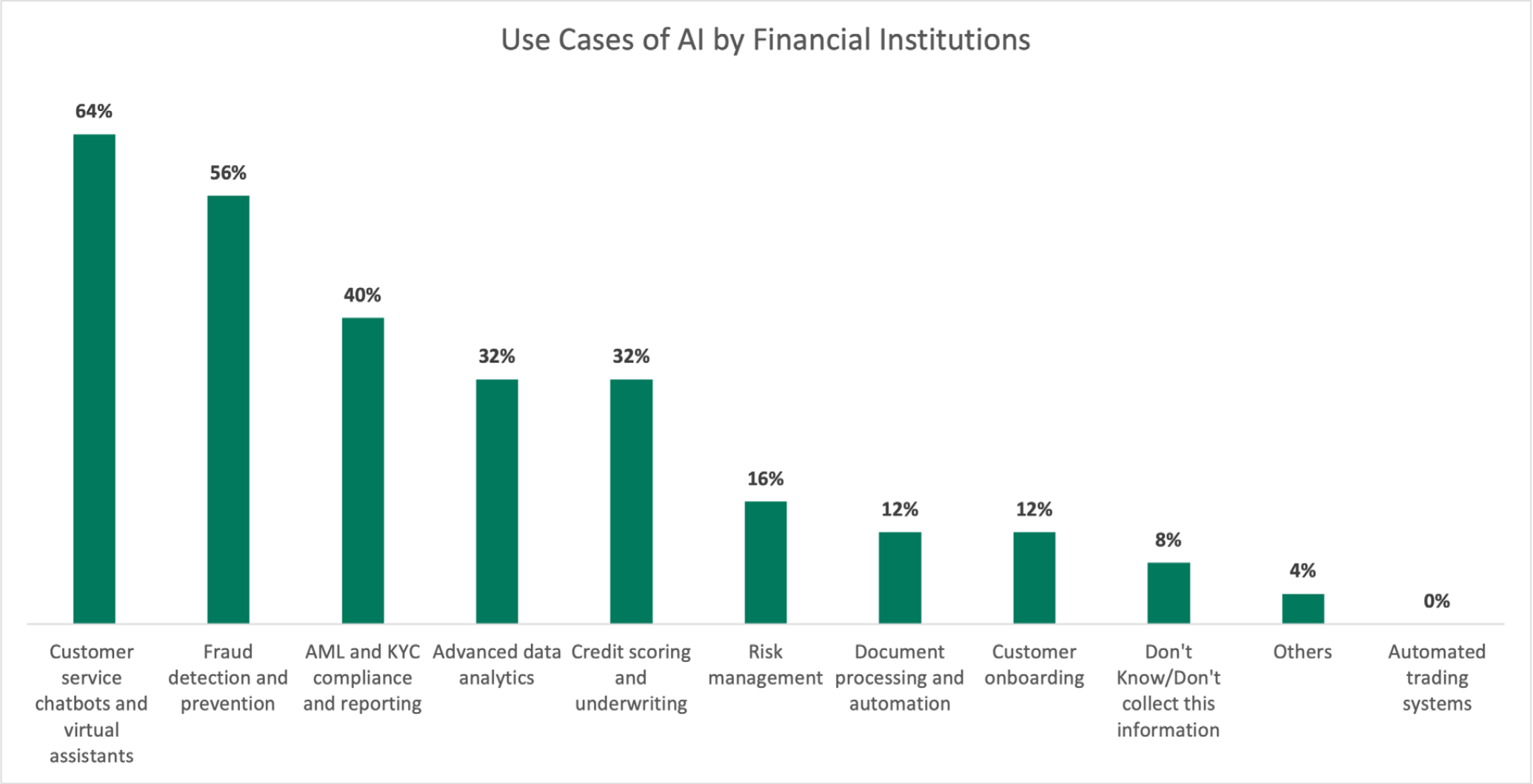
- **The road ahead for financial authorities**

Traditional financial institutions are perceived to have lower AI adoption levels compared to non-tradition firms such as Fintechs (n= 27)



Source: World Bank Survey on AI in Supervision, 2025.

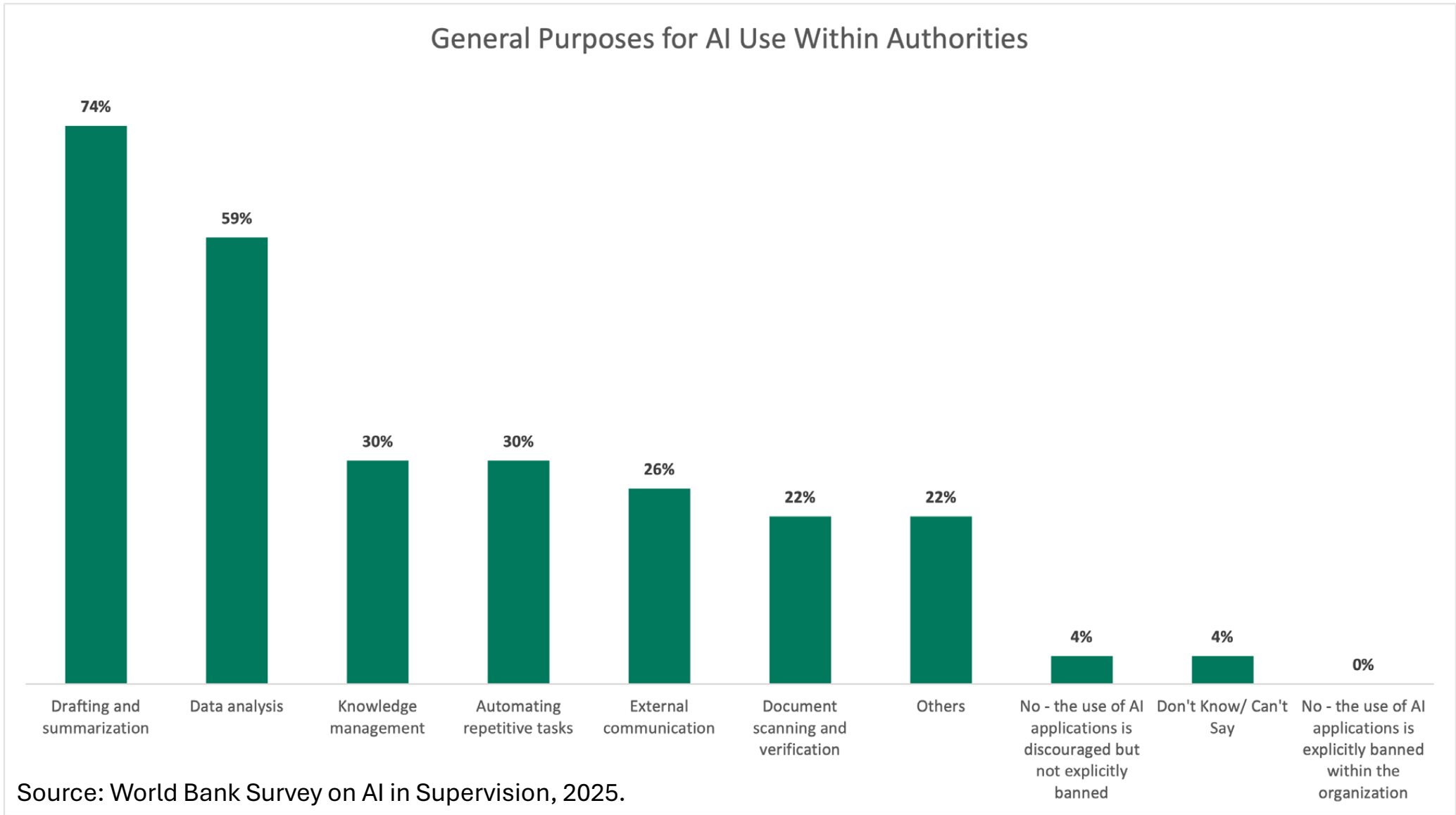
In jurisdictions with AI adoption, financial institutions most commonly use AI for fraud detection, customer service, and AML/CFT and KYC compliance (n=25)



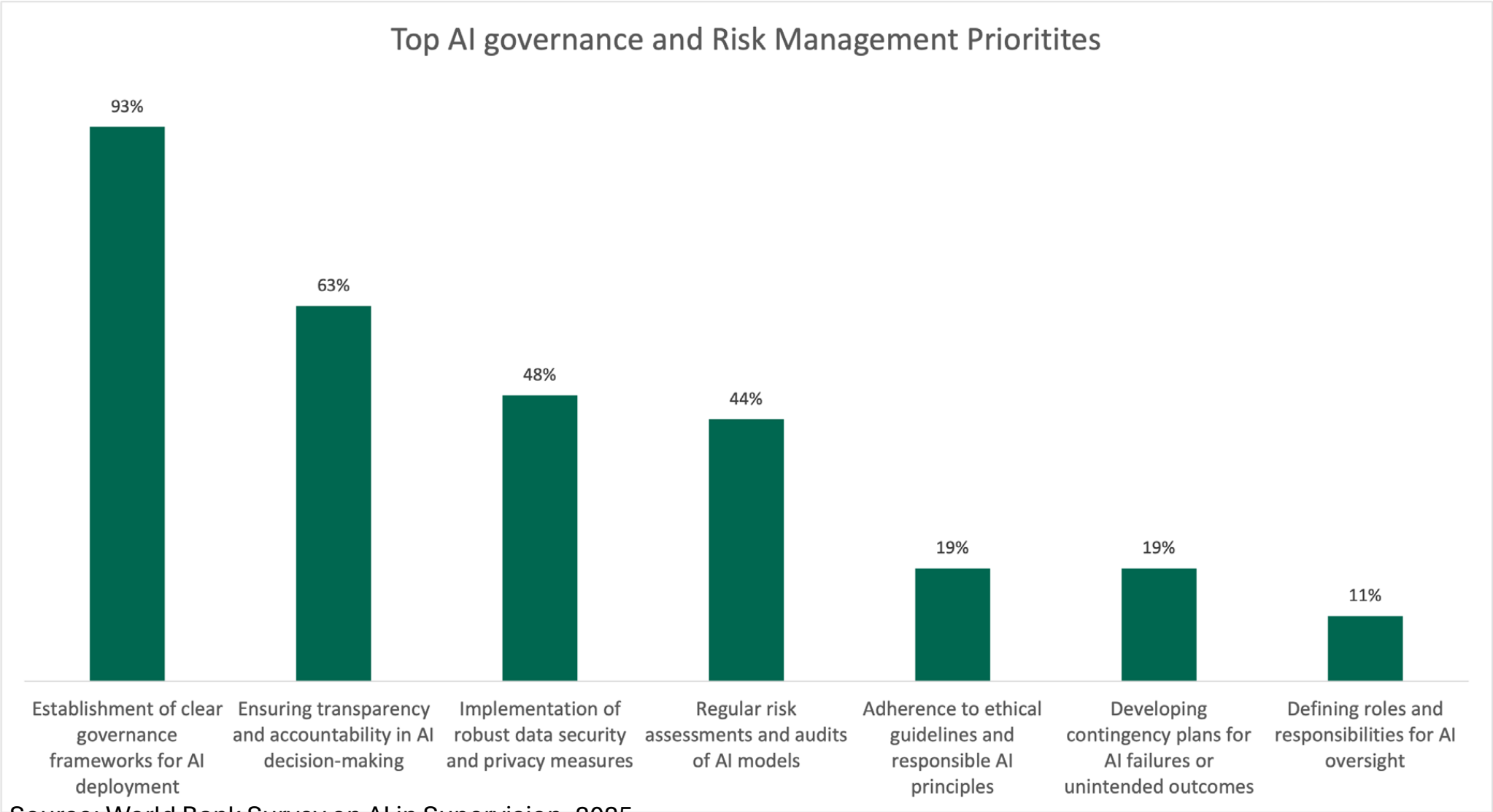
Source: World Bank Survey on AI in Supervision, 2025.



Most authorities use GenAI for drafting, summarizing, and data analysis (n=27)



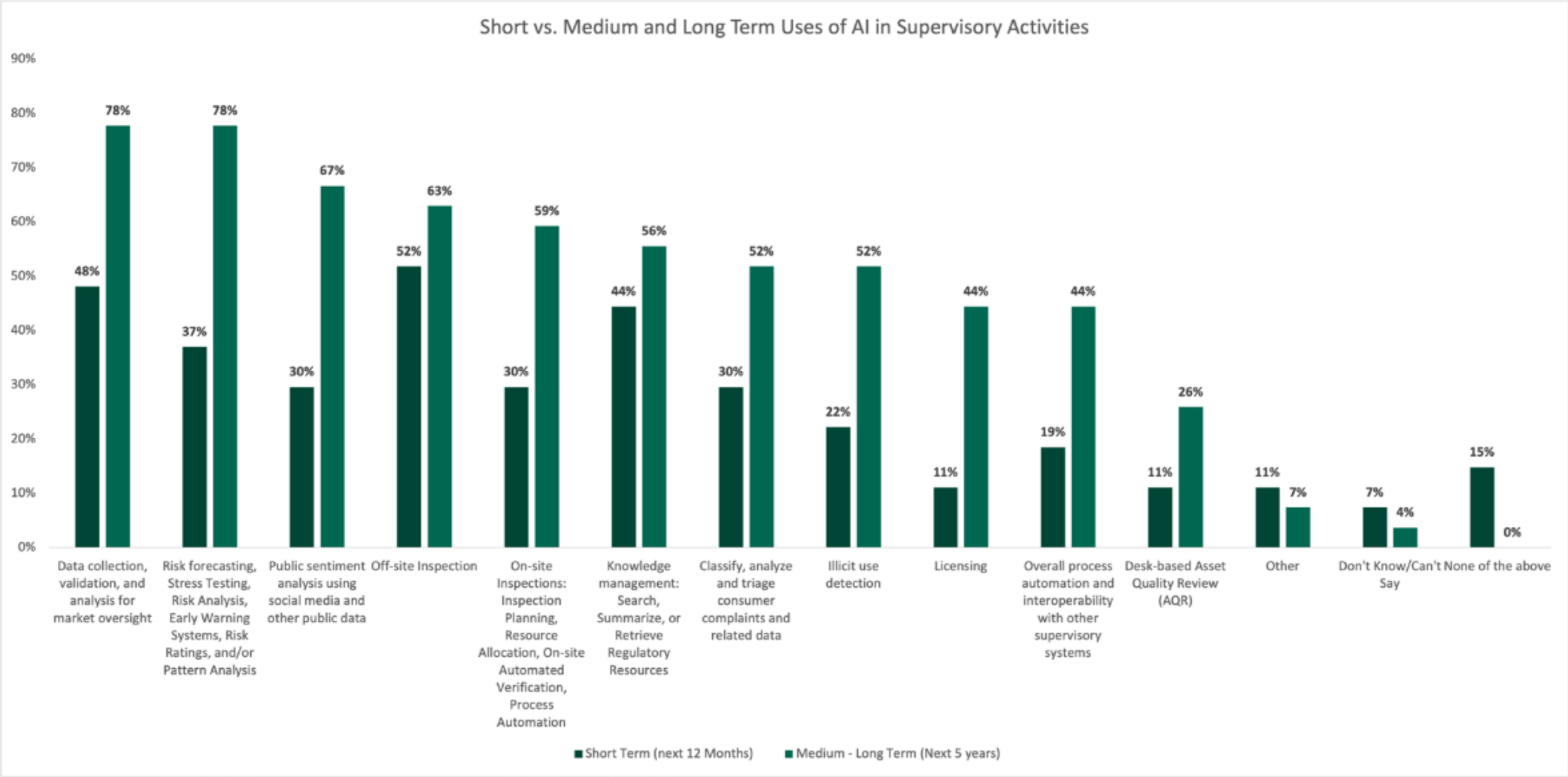
Authorities are largely focused on establishing clear governance frameworks for AI deployment and ensuring transparency and accountability in AI decision making (n=27)



Source: World Bank Survey on AI in Supervision, 2025.



AI adoption by authorities is likely to increase significantly in the medium to longer term across a wide range of supervisory tasks (n = 27)

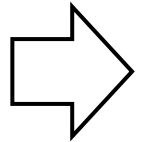


Source: World Bank Survey on AI in Supervision, 2025.

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- **AI risks and implementation challenges for financial authorities**

- **The road ahead for financial authorities**

Data privacy and security, internal skills gaps, AI model-related challenges, and integration challenges are the **top barriers** to AI adoption in supervision among survey respondents (n=27)

Challenges and Barriers	Overall rank	Score	No. of rankings
Data privacy and security	1	63	18
Internal skills gaps and workforce readiness	2	53	18
AI and model-specific challenges (training, validation, testing, transparency and explainability, governance and risk management)	3	50	14
Integration of AI-enabled tools with existing technology and processes	3	50	14
Finding reliable and context-appropriate SupTech technology providers	5	32	11
Accessing high-quality data	6	28	11

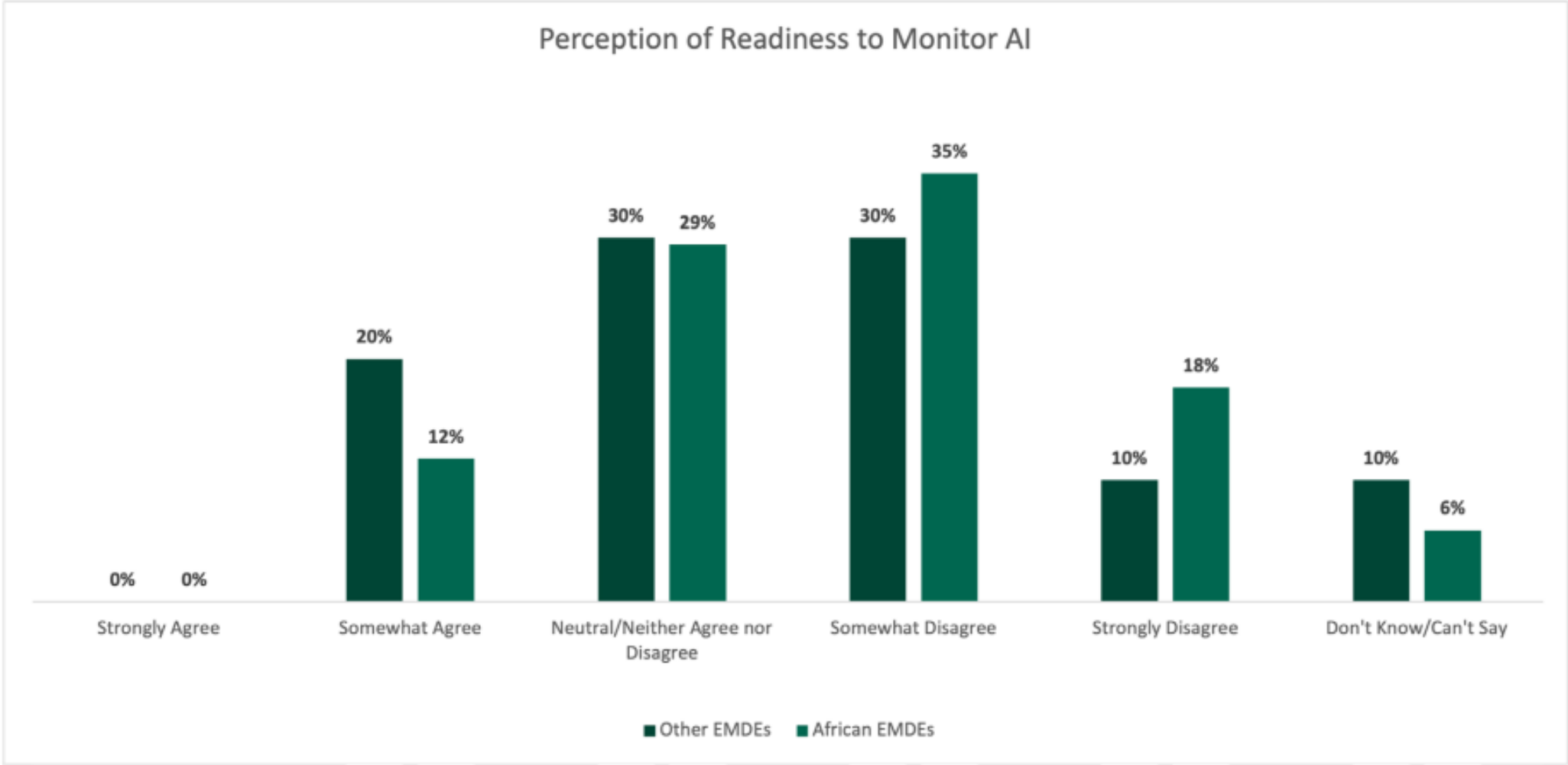
Source: World Bank Survey on AI in Supervision, 2025.

Authorities consider data security and privacy, cybersecurity, lack of transparency, and operational risks as the **top risks** associated with AI adoption in supervision (n=27)

Risk	Overall rank	Score	No. of rankings
Data security and privacy	1	71	18
Cybersecurity risks	2	69	16
Lack of transparency in AI systems (explainability or “black box” risks)	3	55	19
Operational risks due to overreliance on AI or malfunctioning of AI-enabled systems	4	42	13
Excessive reliance on third-party or external AI providers / Concentration risks	5	41	14
Inaccurate model outputs (e.g., hallucinations)	6	37	14

Source: World Bank Survey on AI in Supervision, 2025.

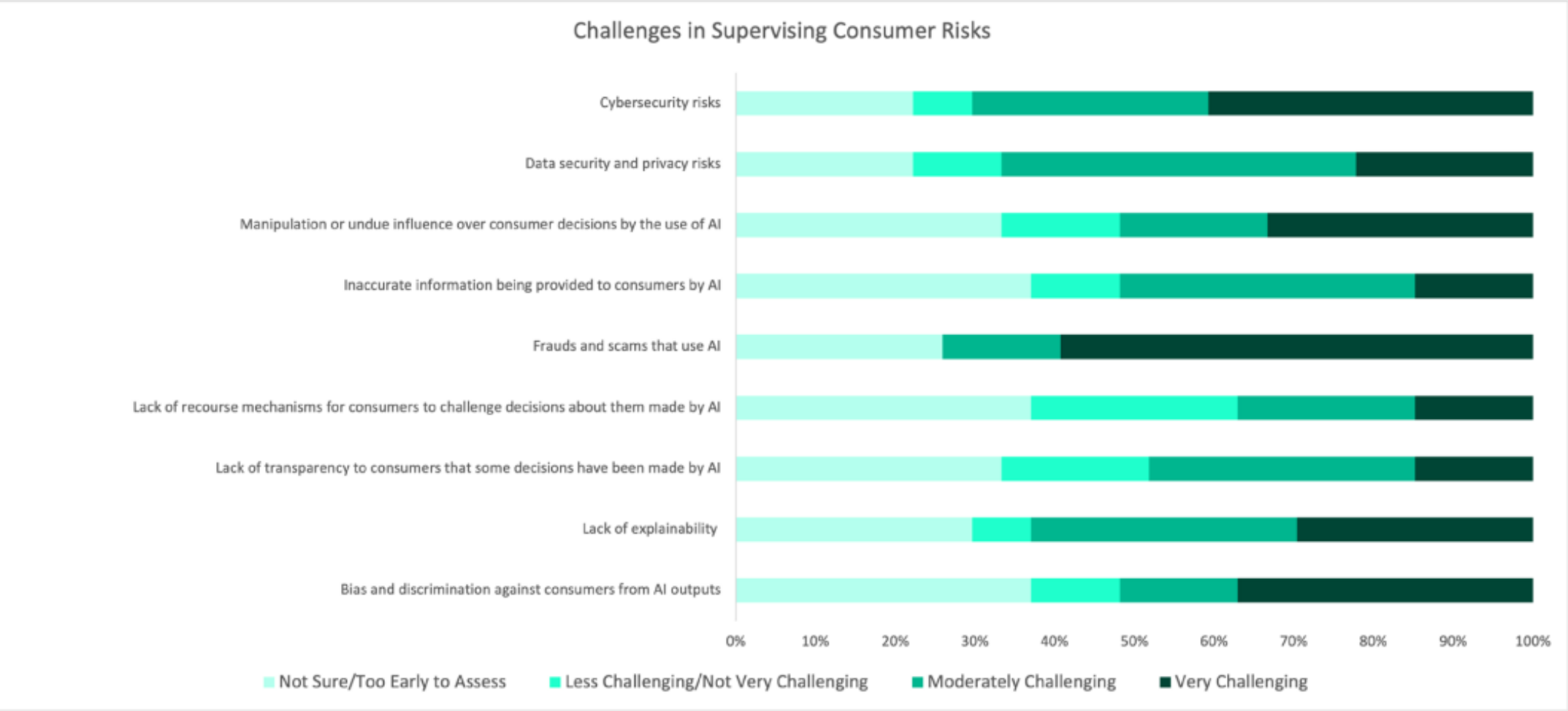
Almost half of authorities reported lacking sufficient systems, resources, and processes to monitor AI developments and their impacts (n = 27)



Source: World Bank Survey on AI in Supervision, 2025.

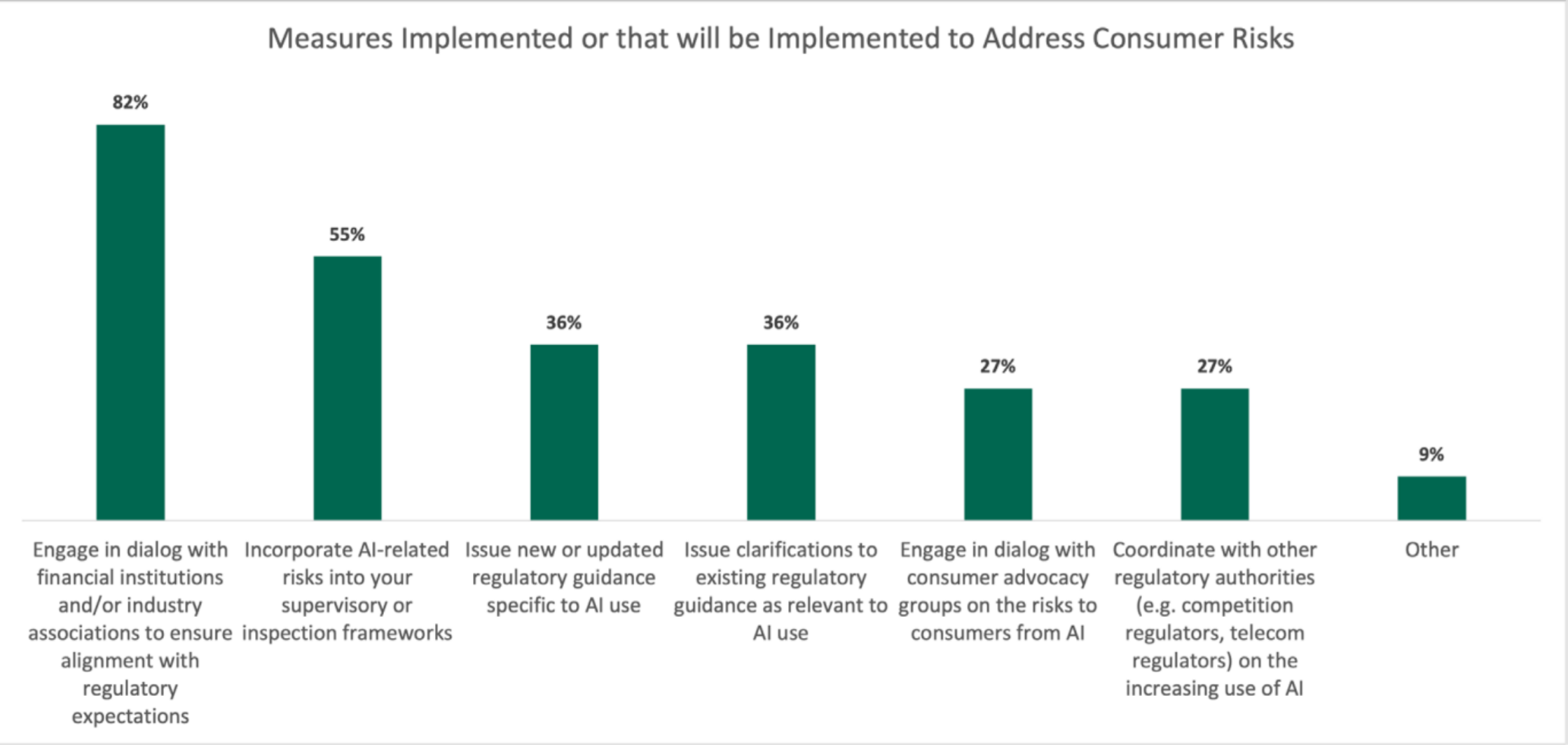


Supervision of AI-related consumer risks relating to fraud and scams is viewed as challenging by most authorities (n=27)



Source: World Bank Survey on AI in Supervision, 2025.

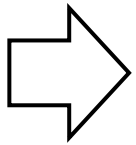
Most authorities are not taking specific steps to address AI consumer risks, but some do (n=11)



Source: World Bank Survey on AI in Supervision, 2025.

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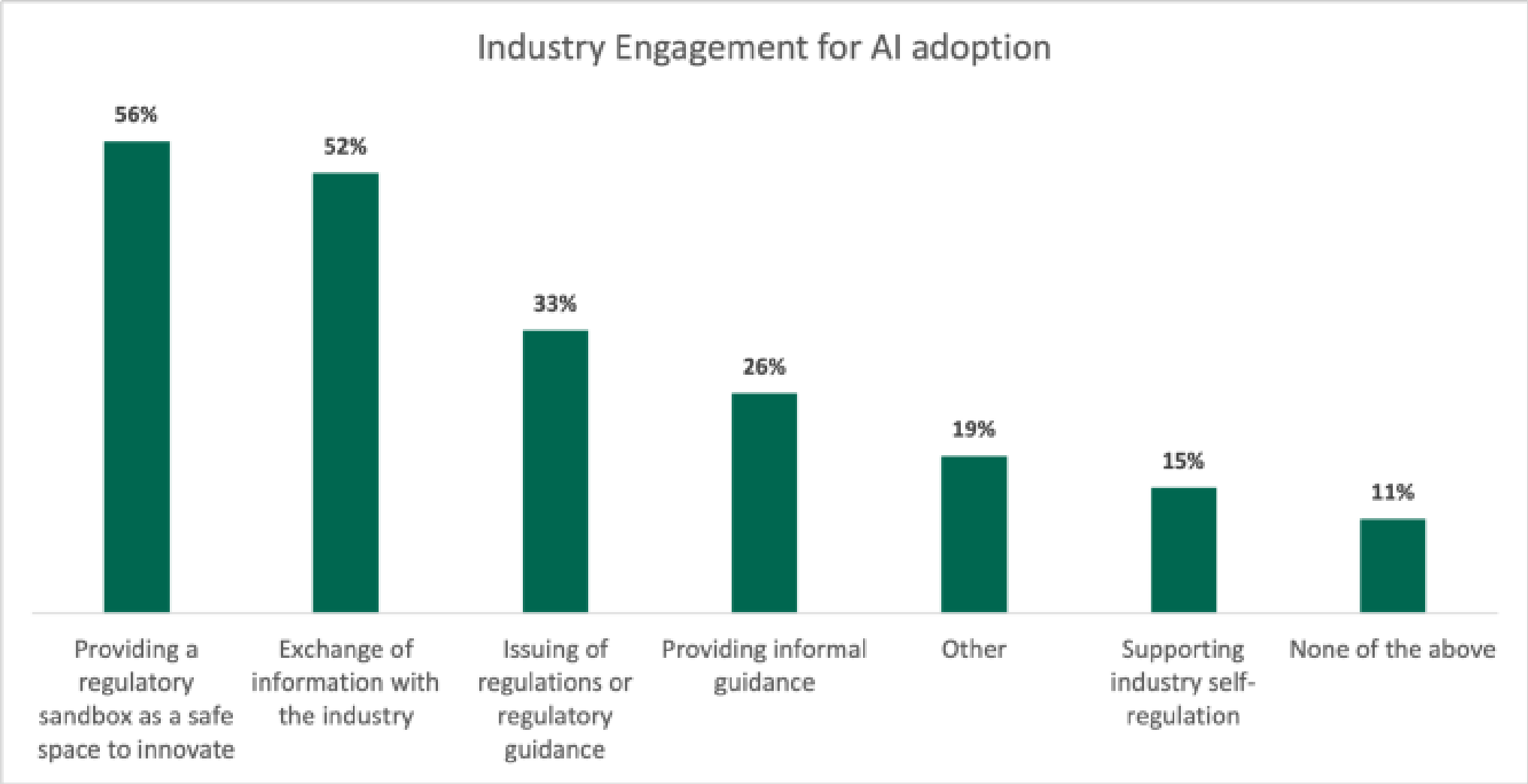


- **The road ahead for financial authorities**

Main takeaways from World Bank report

- AI adoption by financial institutions in EMDEs is still at an early stage, particularly GenAI
- GenAI for basic tasks is widely used by financial authorities. Few use AI for core supervisory tasks, but some are working on pilots
- Few financial authorities have board-level AI strategy and policy frameworks in place, but most expect to have one in the next 12 months
- Nearly half of surveyed authorities are not yet monitoring AI developments
- Key challenges to adopt AI by financial authorities relate to data quality, fragmentation, and privacy; legacy IT infrastructures; and skill gaps
- Cloud and vendor dependence raise data sovereignty and operational risk concerns

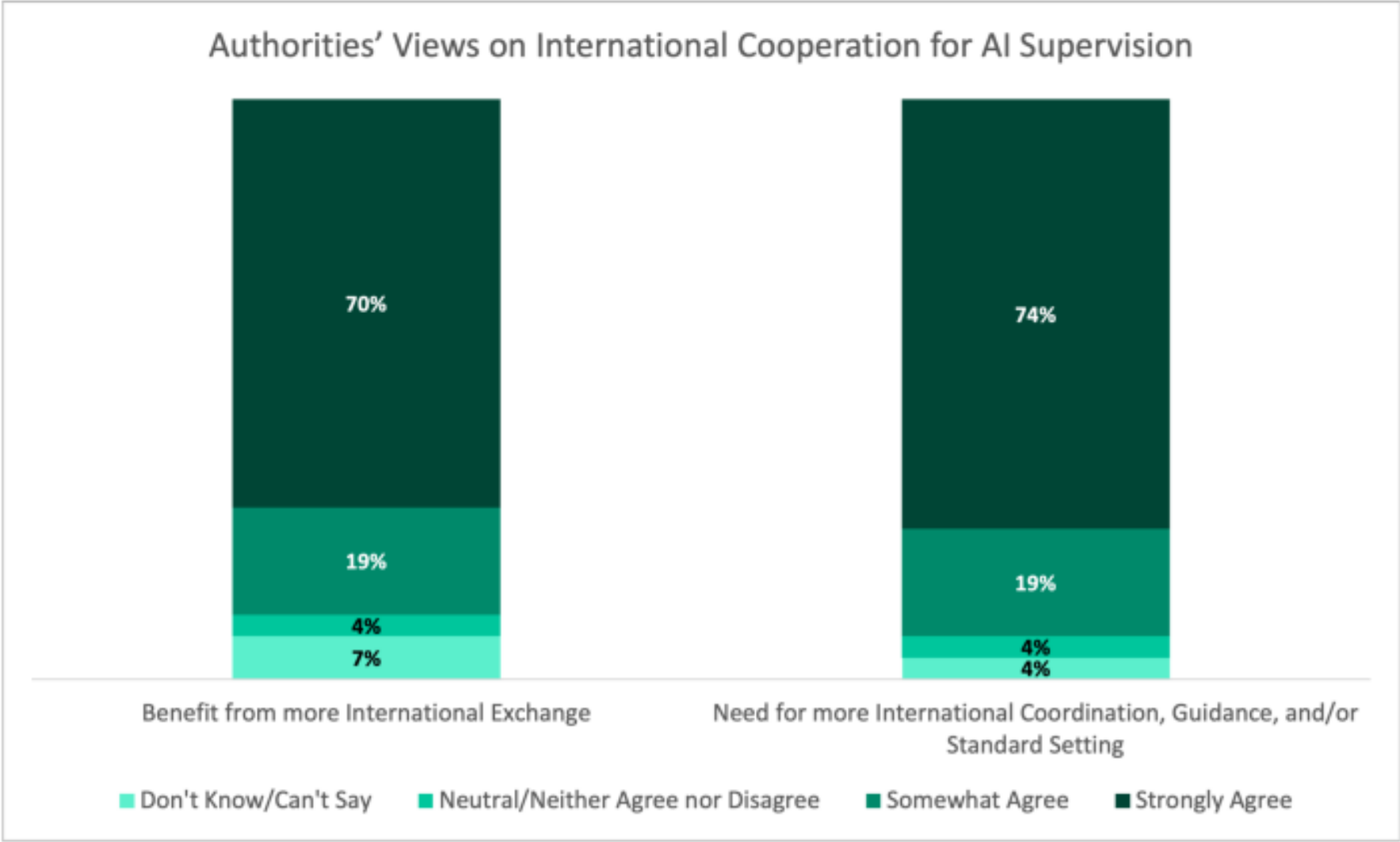
Many jurisdictions are engaging with the industry (n=27)



Source: World Bank Survey on AI in Supervision, 2025.



Jurisdictions see a need for international exchange of information and international guidance and standard setting regarding AI adoption for supervision (n=27)



Source: World Bank Survey on AI in Supervision, 2025.

Collaboration and coordination: domestic and across borders



Domestic Coordination

Strong domestic collaboration across sectors is vital to address regulatory gaps and unify AI oversight expectations.



Public-Private Engagement

Engagement between public authorities and private sector supports monitoring AI adoption and encourages responsible innovation.



International Collaboration

Cross-border cooperation prevents regulatory arbitrage and harmonizes standards for supervising multinational institutions.



Knowledge Sharing & Capacity Building

Collective efforts focus on sharing knowledge, aligning supervisory approaches, and building capacity for AI oversight.

Selected basic principles for financial authorities as they supervise AI in financial institutions or adopt it themselves



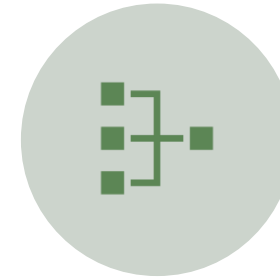
MAINTAIN PUBLIC
TRUST



EXERCISE
SUPERVISORY
JUDGEMENT AND
DISCRETION



ENSURE PRIVATE
SECTOR
ACCOUNTABILITY



APPLY EXISTING
FRAMEWORKS



RISK-BASED AND
PROPORTIONATE

Main focus areas for financial authorities in EMDEs as they adopt AI



GOVERNANCE
FRAMEWORKS



IT AND DATA
INFRASTRUCTURES



SKILLS AND
EXPERTISE



SURVEILLANCE



COLLABORATION

Download the AI report here:



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