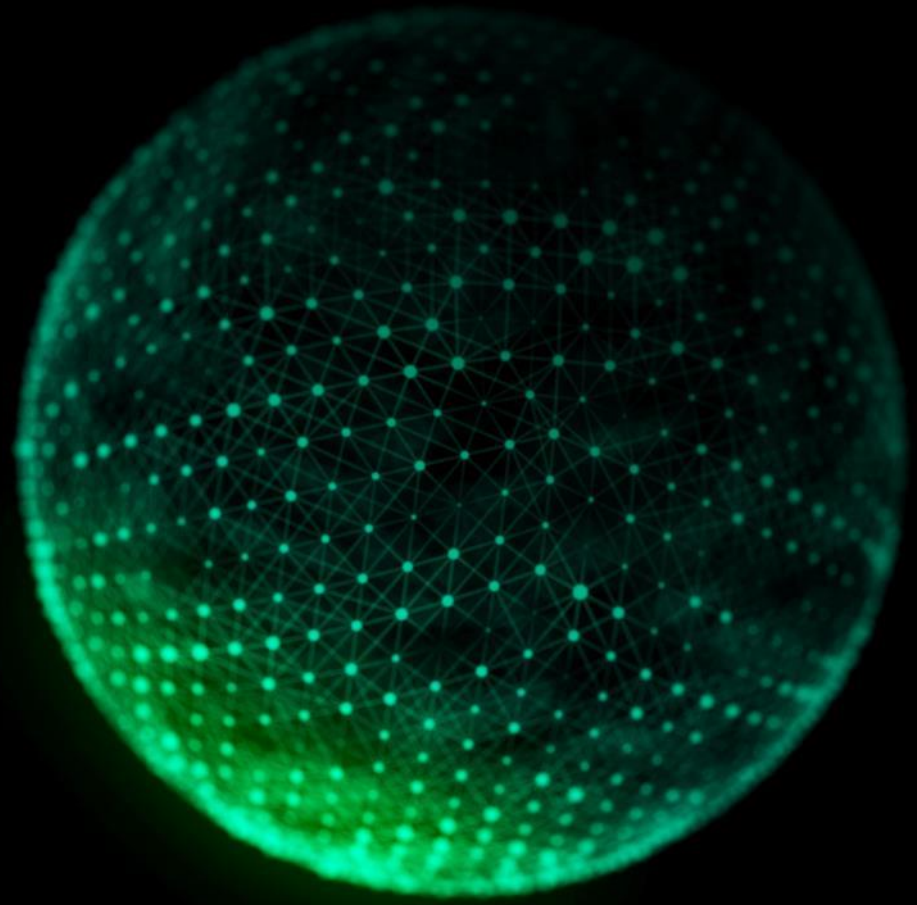
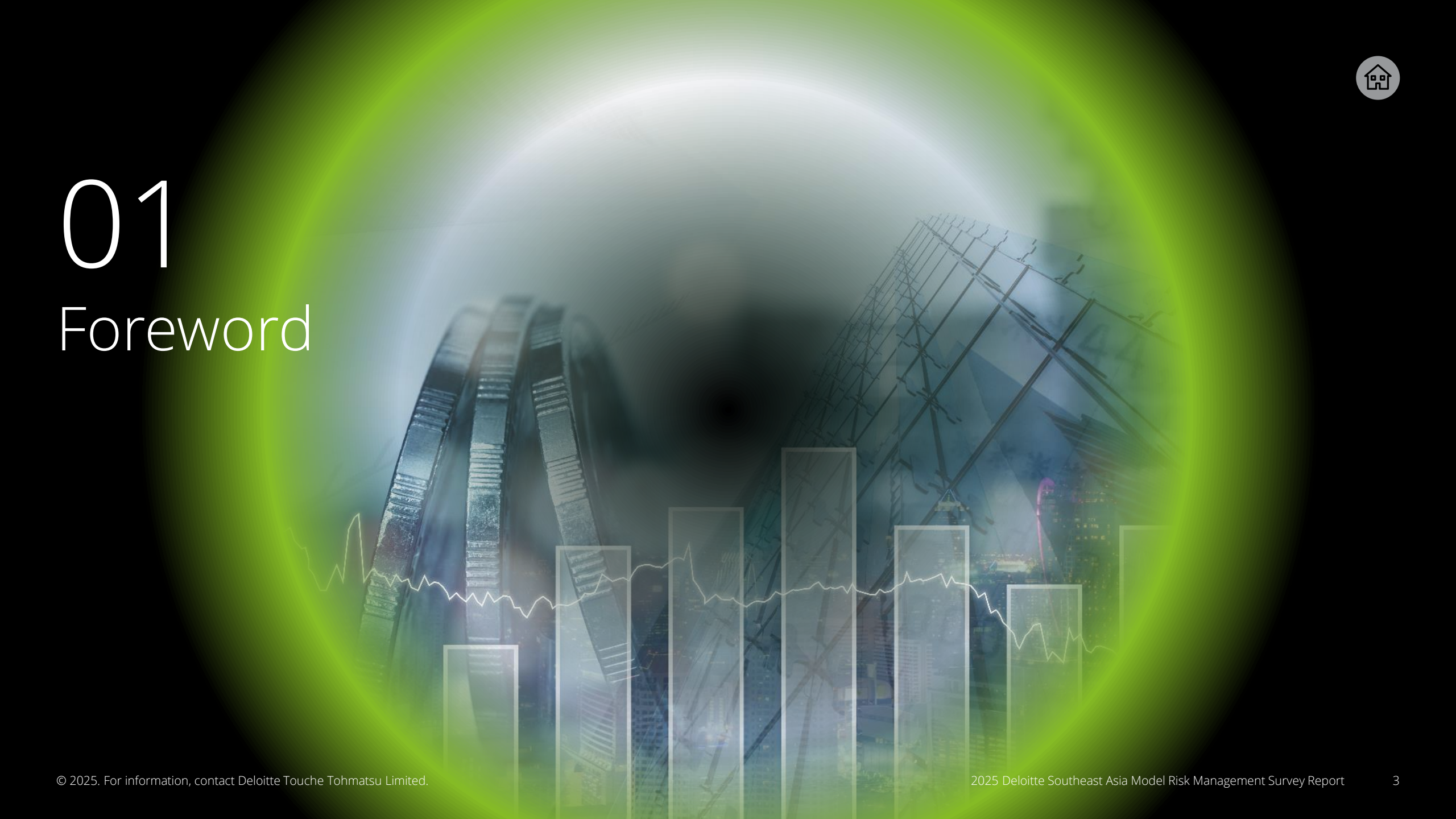
Deloitte.



2025 Deloitte Southeast Asia Model Risk Management Survey Report

Table of Contents

01
Foreword



Foreword

On behalf of Deloitte, we are pleased to present the 2025 Deloitte Model Risk Management Survey, offering a fresh perspective on the evolving landscape of model risk management (MRM). This report provides key insights into the latest model risk management (MRM) practices and challenges faced by banks across Southeast Asia.

We extend our deepest gratitude to the survey participants and institutions for their valuable time and input to participate in this survey. Their responses have been instrumental in shaping this report, offering a comprehensive view of the current MRM landscape and the evolving challenges within the industry.

At Deloitte, we acknowledge the increasing significance of model risk in decision-making. Models serve as a cornerstone in banking operations, shaping critical decisions that impact customers and the broader financial ecosystem. As reliance on models grows, effective MRM becomes imperative for ensuring resilience, transparency, and long-term sustainability. A well-developed MRM framework enhances visibility across the entire model lifecycle, strengthens risk awareness, and mitigates emerging threats. The importance of model risk management continues to rise as financial institutions integrate Artificial Intelligence and Machine Learning (AI/ML) into their business. These advanced techniques introduce new complexities, attracting increased scrutiny from regulators and risk practitioners worldwide. Addressing these evolving risks requires a structured and robust MRM framework that ensures responsible, transparent, and accountable model usage.

This survey contributes to both a systemic and business-specific understanding of model risk, equipping firms with the insights necessary to enhance their MRM frameworks and foster responsible model governance. Based on inputs from a diverse set of banks varying in size and complexity, the survey explores key aspects of model risk management across two key themes:

1. Model Risk Management Framework (Covers model landscape, inventory management, and overall MRM best practices)
2. Governance & Accountability in AI/ML Models. (Encompasses governance, model accountability, and the ethics and process of AI/ML,)

We hope the findings in this report provide valuable perspectives to guide financial institutions in strengthening their MRM practices. As the financial landscape continues to evolve, the importance of sound model governance, accountability, and resilience cannot be overstated. A well-developed MRM framework not only supports regulatory compliance but also promotes sustainable innovation and risk-aware decision-making.

02
Overview of Model Risk Management Survey

Overview of survey

The 2025 Deloitte Model Risk Management (MRM) Survey captures key insights from financial institutions across Southeast Asia, shedding light on the current state of MRM practices and the evolving challenges institutions face. As banks continue to adapt to rapid regulatory developments, technological innovation, and growing model complexity, MRM has become an essential component of strategic risk oversight and operational resilience.

This report highlights the survey's findings across four core areas:

Organizational and Professional Background

This section collects information about the organization's country of operation, balance sheet size, and the participant's role related to model management.

Model Risk Management Framework

This section explores whether organizations maintain a model inventory, model risk policy, tools and governance practices for managing model-related risks.

Model Risk Management Operating Model

This section explores the use of models in the organization, focusing on their role in model risk management as well as how they support in managing model-related risks.

Artificial Intelligence and Machine Learning (AI/ML) Model Governance and Accountability

This section explores the use of AI/ML models in the organization, and focuses on ethical, fairness, and accountability frameworks for AI/ML models to ensure responsible practices and model transparency.

Together, these areas provide a holistic view of how Southeast Asian financial institutions are building MRM frameworks in response to an increasingly dynamic risk and regulatory environment.

Why is Model Risk Management important?

As financial institutions increasingly rely on models to drive decision-making, the importance of robust MRM has become more pronounced than ever. Models are no longer limited to traditional financial forecasting; they are now embedded in a wide range of business functions, from credit risk assessments and capital allocation to fraud detection and strategic planning.

The Growing Role of Models

Modern banking operations are heavily dependent on complex models to enhance efficiency, accuracy, and competitiveness. These models are used to inform high-impact decisions such as loan approvals, risk-weighted asset calculations, capital planning, pricing strategies, and customer behavior analysis.

The rise of advanced technologies and advanced modeling techniques, including Artificial Intelligence (AI) and Machine Learning (ML) has further expanded the capabilities of models but also introduced new dimensions of risk and complexity. These developments have made it essential for institutions to establish formal frameworks to govern and control model usage throughout their lifecycle.

Key Risks in Inadequate MRM

While models offer numerous benefits, poor model governance or misuse can lead to significant adverse outcomes. If not properly managed, models may lead to inaccurate outputs due to flawed assumptions, poor data quality, or inadequate validation. Such errors can result in poor strategic decisions, operational inefficiencies and financial losses that are amplified by the volume and speed of model usage.

Furthermore, model failures can attract regulatory scrutiny and lead to non-compliance with industry standards, resulting in fines, enforcement actions, or mandatory remediation efforts.

Beyond financial and regulatory consequences, organizations also face reputational damage when high-profile model failures undermine stakeholder trust.

What is the approach to MRM in financial institutions?

The landscape of mathematical models is undergoing continuous evolution, driven by increasing complexity, sophistication, and diverse applications across financial institutions. As reliance on models grows, institutions must proactively recalibrate their MRM frameworks to address emerging risks, regulatory expectations, and technological advancements effectively.

Regulatory Drivers of MRM

Recognizing the critical role of models in financial decision-making, global regulatory bodies have introduced comprehensive guidelines to strengthen financial stability and model governance. Institutions must align their MRM frameworks with these evolving standards to enhance model reliability, accuracy, and transparency. Key focus of regulators include:

01 European Central Bank (ECB) Guidelines

These guidelines outline fundamental model lifecycle requirements, emphasizing governance, risk assessment, and control mechanisms to mitigate model-related risks.

02 Federal Reserve System – SR 11-7

This Supervisory Letter establishes foundational principles for model development, validation, and monitoring, ensuring financial institutions effectively manage model risks.

03 Prudential Regulation Authority (PRA) – SS1/23

The UK PRA issued Supervisory Statement SS1/23, setting expectations for how banks should handle model risk, ensuring models are robust, well-validated, and transparent.

04 Monetary Authority of Singapore ("MAS") – Artificial Intelligence (AI) Model Risk Management Paper

The paper outlined the best practices carried out by banks and offers guidance to financial institutions ("FIs") on managing AI-related risks, particularly in light of the growing adoption of Generative AI ("Gen AI").

Over the past two decades, these regulatory frameworks have evolved significantly, reinforcing the importance of structured governance, rigorous validation, and transparent oversight of models in financial institutions.

How do financial institutions implement and manage model risk?

Expanding MRM to AI/ML Governance

The integration of AI/ML into financial modeling has introduced new dimensions of risk, requiring institutions to broaden their MRM frameworks. In response, regulators have started addressing the unique challenges posed by AI/ML, including:

- **Ethical considerations and fairness** – Ensuring models do not introduce bias or discriminatory outcomes.
- **Transparency and explainability** – Enhancing interpretability of complex AI-driven models.
- **Accountability and governance** – Establishing clear ownership and oversight mechanisms for AI/ML models.

To mitigate these risks, financial institutions are embedding AI/ML governance into their existing MRM frameworks, incorporating responsible AI principles, model explainability, and independent validation processes to ensure AI-powered models operate safely and ethically.

Key Components of a Robust MRM Framework

Beyond regulatory compliance, a comprehensive MRM approach in financial institutions should encompass:

Model Governance & Oversight – Clearly defined roles, responsibilities, and accountability structures within the organization.

Model Inventory & Classification – A centralized repository of all models with risk-based categorization to prioritize oversight efforts.

Model Development & Documentation – Standardized methodologies for model design, assumptions, and limitations to ensure consistency and transparency.

Model Validation & Testing – Independent validation teams should conduct rigorous performance testing and back-testing to ensure accuracy and reliability.

Ongoing Model Monitoring – Continuous performance assessments to detect model drift, deteriorating accuracy, and emerging risks.

Technology & Automation in MRM – Leveraging AI-driven validation techniques, automation tools, and data analytics to enhance model monitoring efficiency.

03
Background of Surveyed Entities

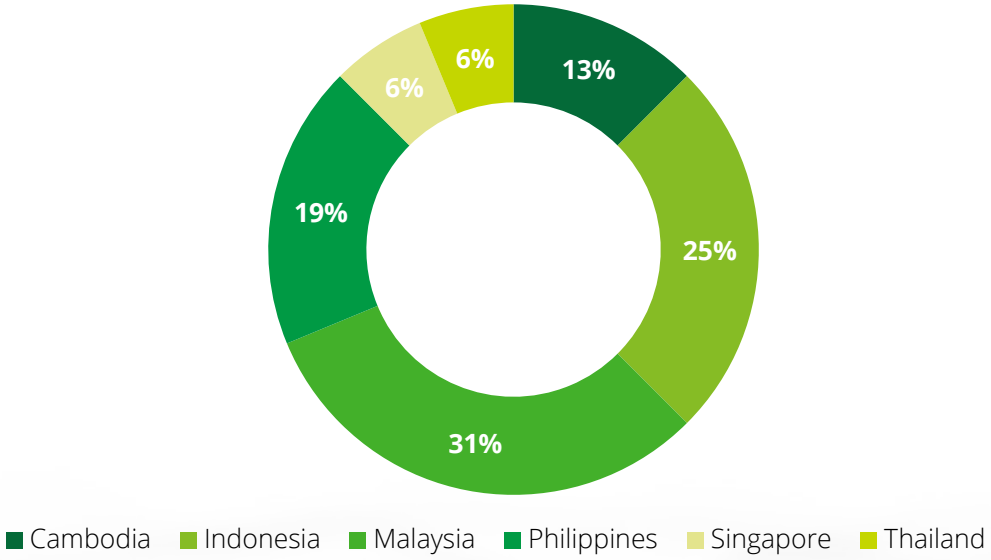
Background of Surveyed Entities

Deloitte conducted an in-depth survey on MRM from November 2024 to April 2025, gathering MRM insights from banks and financial institutions across Southeast Asia.

The participating institutions were geographically distributed across Southeast Asia Region, with participation from Malaysia, Thailand, Singapore, Philippines, Indonesia and Cambodia.

This report presents observations from Deloitte's assessment of model risk management practices based on the information gathered from the Banks. The survey captures a diverse range of perspectives, providing a comprehensive analysis of key MRM areas. These insights serve as valuable benchmarks for financial institutions across Southeast Asia, supporting their efforts to enhance risk management frameworks and industry best practices.

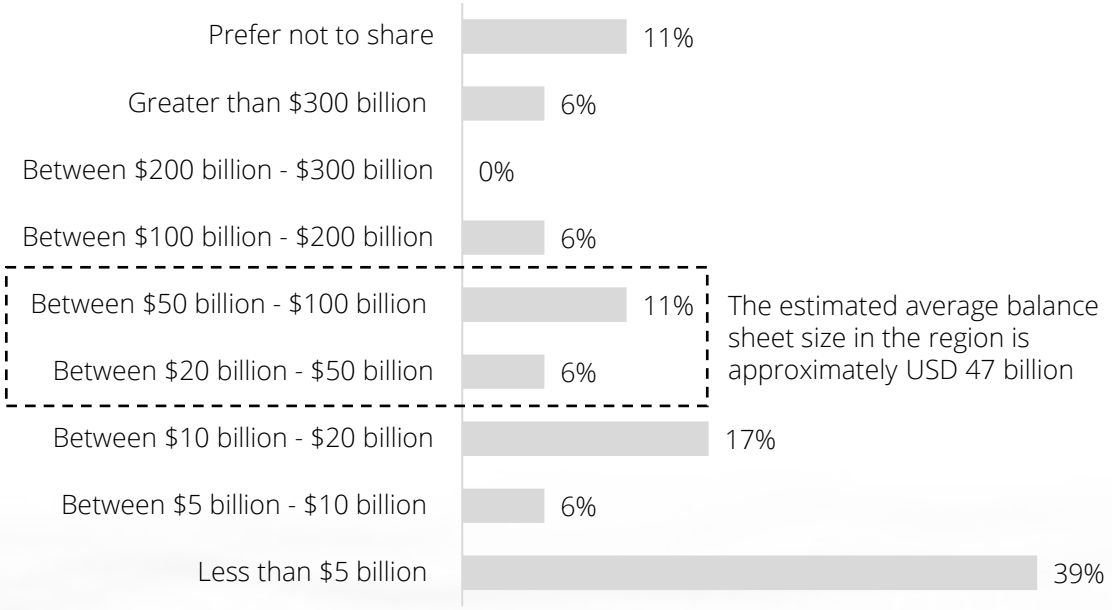
Figure 1. Distribution of Survey Respondents by Country across Southeast Asia



Respondent's Approximate size in the region

The survey participants represent a diverse range of financial institutions in Southeast Asia, varying in size and scale of operations. Based on self-reported data, the approximate balance sheet sizes of participating banks as of Q1 2023 (or the most recent available figures) are distributed as follows:

Figure 2. Approximate Size of Balance Sheet as of Q1 2023 or recent figure (in billions, USD)



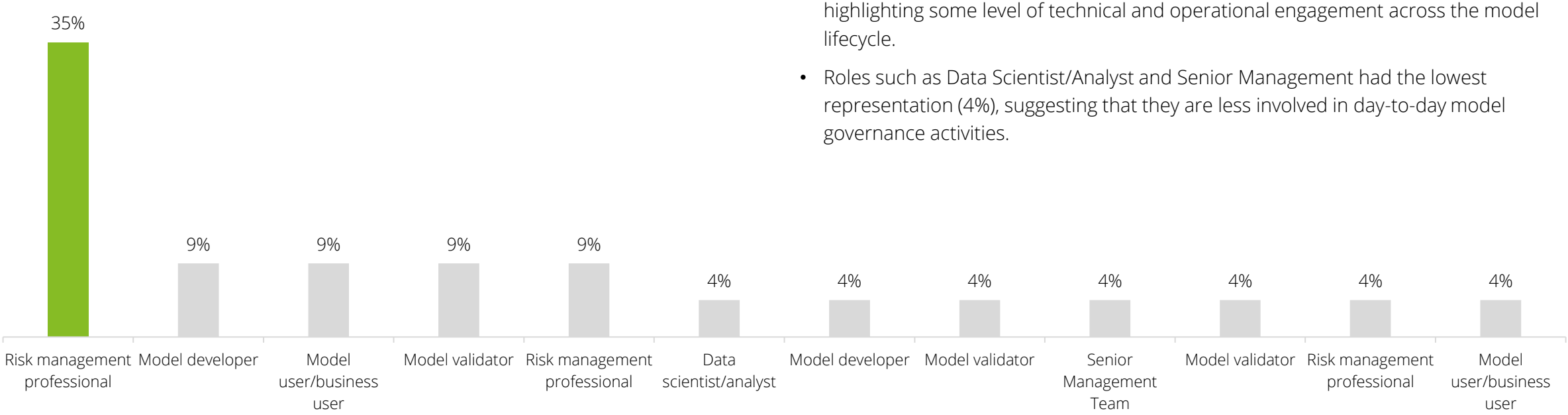
Based on the survey, the estimated average balance sheet size in the region is approximately USD 47 billion. This distribution indicates that the survey captures insights from institutions of varying sizes, with a significant portion comprising small to medium-sized banks and the inclusion of larger banks with assets exceeding $300 billion.

By incorporating a mix of smaller banks, regional players, and large institutions, the survey findings provide a balanced view of MRM practices across different scales of financial operations to ensure that the insights remain relevant for institutions with varying levels of model complexity and risk exposure.

Role within the organization in relation to model management

The survey gathered insights from professionals across various functions within the banking sector, ensuring a well-rounded perspective on MRM. By incorporating views from model developers, validators, users, and risk professionals, the findings provide a comprehensive overview of MRM challenges, governance practices, and current trends in Southeast Asian banks. Participants held diverse roles, reflecting the multidisciplinary nature of MRM. The distribution of respondents' roles are as follows:

Figure 3: Role within the organization in relation to model management



The responses indicate that model risk management is primarily driven by risk and governance-focused professionals, with limited representation from technical or executive roles:

- **Risk Management Professionals** accounted for the largest share, representing **35%** of respondents. This reflects the central role of the risk function in overseeing model governance, policy adherence, and regulatory alignment.
- **Model Developers, Validators, and Users** each accounted for **9%** respectively, highlighting some level of technical and operational engagement across the model lifecycle.
- Roles such as Data Scientist/Analyst and Senior Management had the lowest representation (4%), suggesting that they are less involved in day-to-day model governance activities.

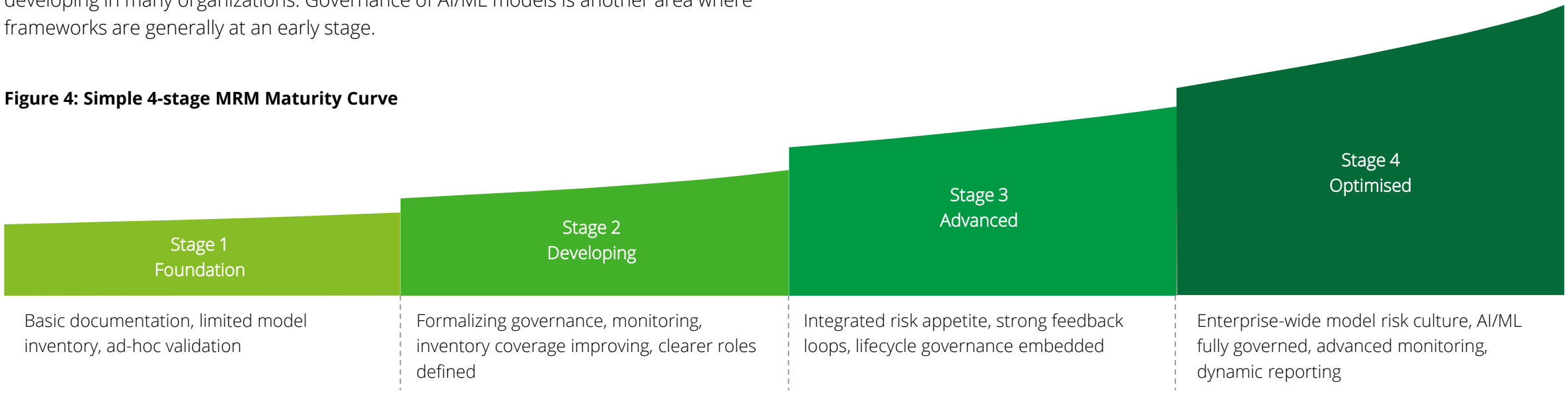
Model Risk Management (MRM) Maturity Landscape

Survey responses show that financial institutions in the region are at **different stages of maturity** in managing model risk. Many have established important foundational elements, such as maintaining model inventories, implementing core policies, and conducting model risk assessments. However, practices remain inconsistent across institutions.

Areas such as clearly defined model ownership, setting a formal risk appetite for model risk, and establishing structured feedback loops to monitor model performance are still developing in many organizations. Governance of AI/ML models is another area where frameworks are generally at an early stage.

Overall, the results suggest that most institutions are currently operating between an early (Stage 1) and developing (Stage 2) level of MRM maturity. Encouragingly, there is **clear momentum** toward building more robust practices where many institutions looking to strengthen model governance, improve monitoring and reporting, and broaden the scope of MRM to cover newer model types such as AI/ML. This reflects an ongoing shift from compliance-focused practices toward more integrated and proactive model risk management.

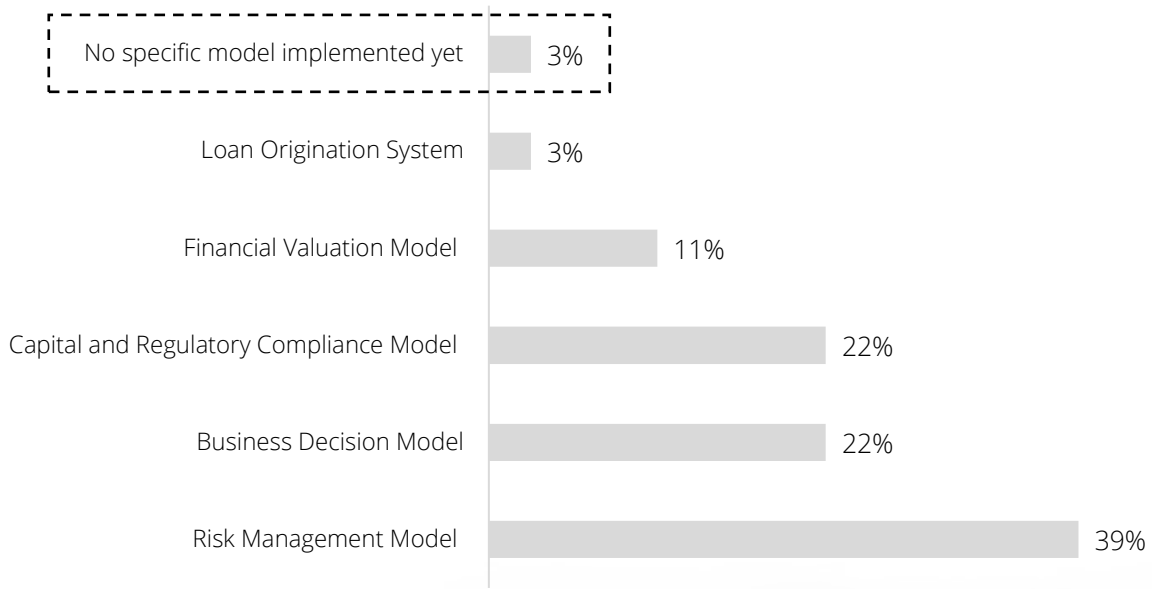
Figure 4: Simple 4-stage MRM Maturity Curve



Model usage within the organisation

The survey results highlight the various purposes that models serve within participating financial institutions. The distribution of model usage is as follows:

Figure 5. Purposes of the models within the organization

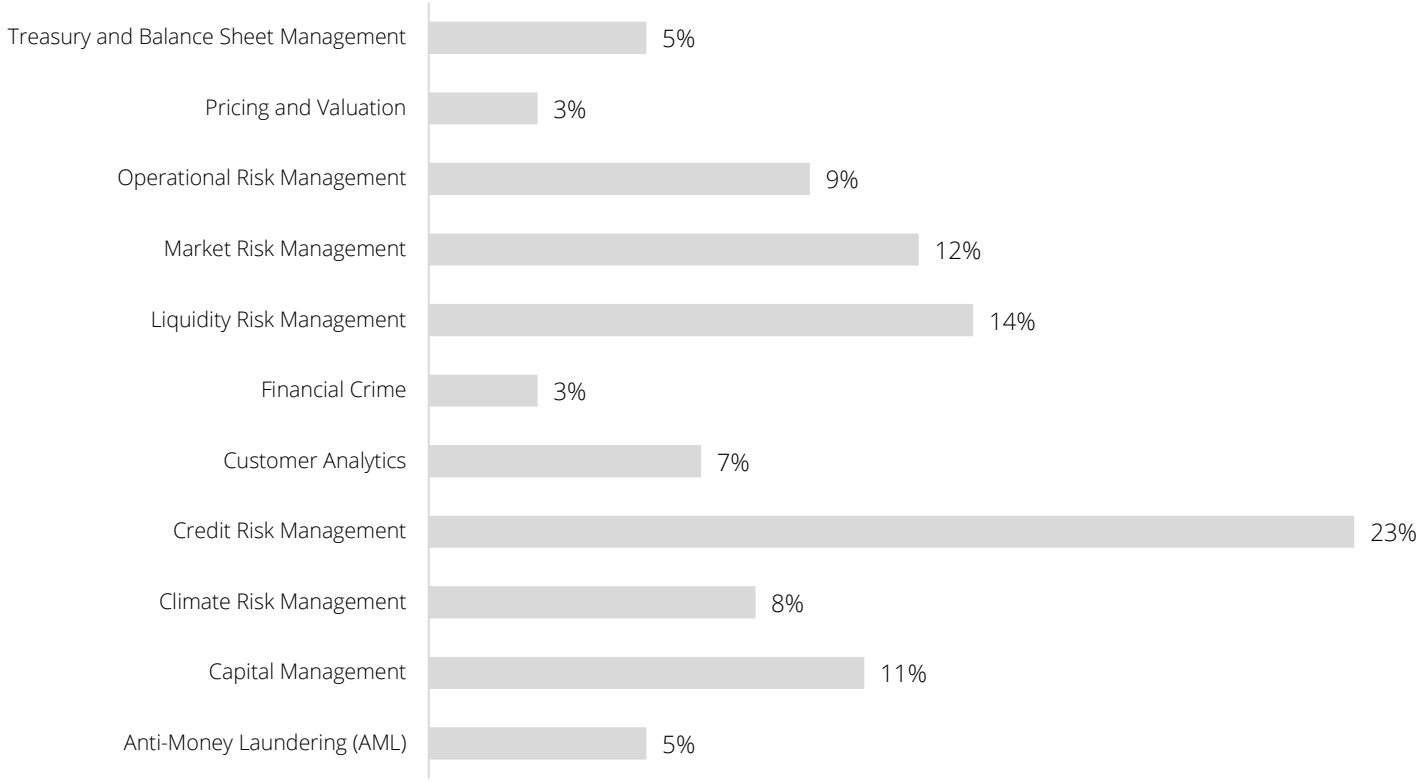


- The majority of institutions use models primarily for risk management (39%).
- Approximately 44% of institutions also utilize models to support strategic business decision-making and regulatory reporting. Meanwhile, a small portion use models for financial valuation (11%) or loan origination (3%).
- Only 3% of institutions report no model use - showing high model adoption overall.

Model usage within the organisation

The survey results highlight the various purposes that models serve within participating financial institutions. The distribution of model usage is as follows:

Figure 6. Function or Area Where Models Are Currently in Use by the Organization



The responses show that model usage is heavily concentrated in core risk areas especially credit, liquidity, market, and capital management. Meanwhile, areas like AML, financial crime, and pricing show lower levels of modeling activity, potentially due to data limitations or specialist tooling. This perspective is consistent with the profile of survey respondents, who are primarily risk professionals, and therefore reflect current risk management priorities within their institutions.

The moderate presence of climate risk and customer analytics models suggests that these areas are gaining traction, potentially indicating a shift in institutional priorities toward broader risk domains and data-driven decision-making.

04

Model Risk Management Framework

Model landscape and Inventory

The Foundation of Effective Model Governance

A well-maintained model inventory is a core pillar of effective MRM. It acts as a centralized repository for capturing key information across the model lifecycle. It supports risk oversight by providing transparency on model usage, type, and validation outcomes. A dynamic inventory also helps align model risk with the institution's risk appetite, supporting informed decision-making and regulatory compliance.

Current Landscape of Model Inventory Implementation

62% of the respondents do not maintain a formal Model Inventory.

Of the organizations that maintain a model inventory:

33% of the respondents manage >150 models.

83% of the respondents documented ≤ 20 model attributes.

- 62% of the respondents indicated that their organizations do not maintain a formal model inventory, highlighting a potential gap in model governance practices.
- Among organizations with a model inventory in place, 33% manage more than 150 models. In contrast, 67% maintain fewer than 50 models, reflecting either early-stage MRM practices or limited model reliance. Notably, no respondents reported inventories in the 51–150 range.
- The level of detail captured within model inventories also varies significantly.
  - 83% of the respondents document 20 or fewer model attributes, implying that many organizations maintain only basic model records.
  - Only 17% report documenting 21–40 attributes.
- Despite the variations in scale and attribute depth, most organizations with a model inventory demonstrate high levels of inventory coverage. All the respondents indicated that 75% to 100% of their models are inventoried.

MRM Framework/Policy

A strong foundation for MRM begins with the establishment of a policy that outlines the principles, responsibilities, and scope of model governance.

67% of respondents indicated that their organization has a formal MRM policy. However, 33% of the respondents do not have such a policy highlights a significant gap in model governance practices, especially as the use of models (including AI/ML models) continues to expand across financial and non-financial sector

Among those with a policy in place, the survey responses show that the scope of coverage is heavily concentrated on Risk Management Models (41%), followed by models used for Capital and Regulatory Compliance (26%), Business Decision-Making (23%), and Financial Valuation (11%).

Figure 10. Adoption of MRM Policies Among Institutions

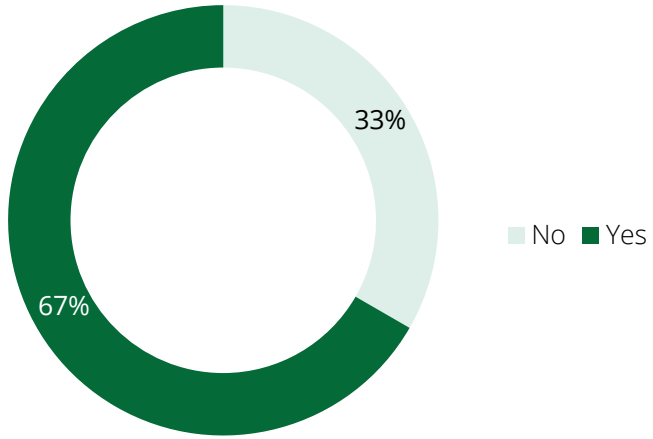
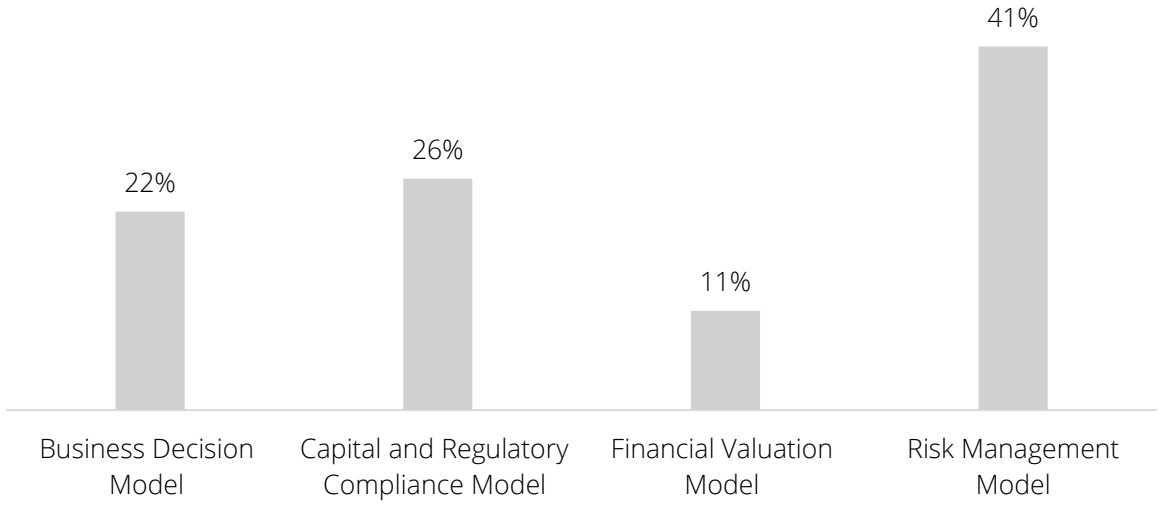


Figure 11. Scope of Models Covered Under MRM Policies



MRM Framework/Policy

Among those with MRM policy, **58%** of the respondents think that their current MRM framework is adequate, while another 42% of the respondents feels it is only partially sufficient. This highlights a maturity gap in implementation where the organizations may have policies in place but recognize shortcomings in coverage, execution, or adaptability to emerging risks (e.g., AI/ML models, rapid model proliferation).

The survey also shows that the Governance and Control (11%), Model Definition (11%), Model Monitoring (10%) and Model Validation (10%) are the core MRM elements in an MRM policy. In contrast, technical and operational components such as Model Inventory (4%), Model Calibration (5%) and Model Application (5%) are less emphasized, which suggest that many organizations have not fully institutionalized operational tracking and technical refinement of models.

Figure 12. Adequacy of Current MRM Framework/Policy

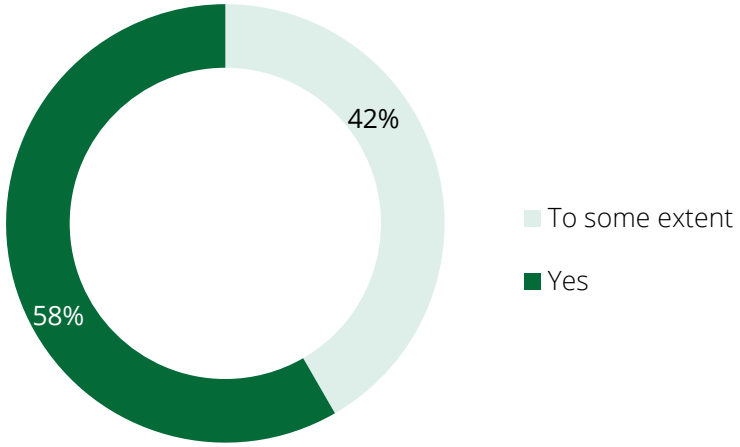
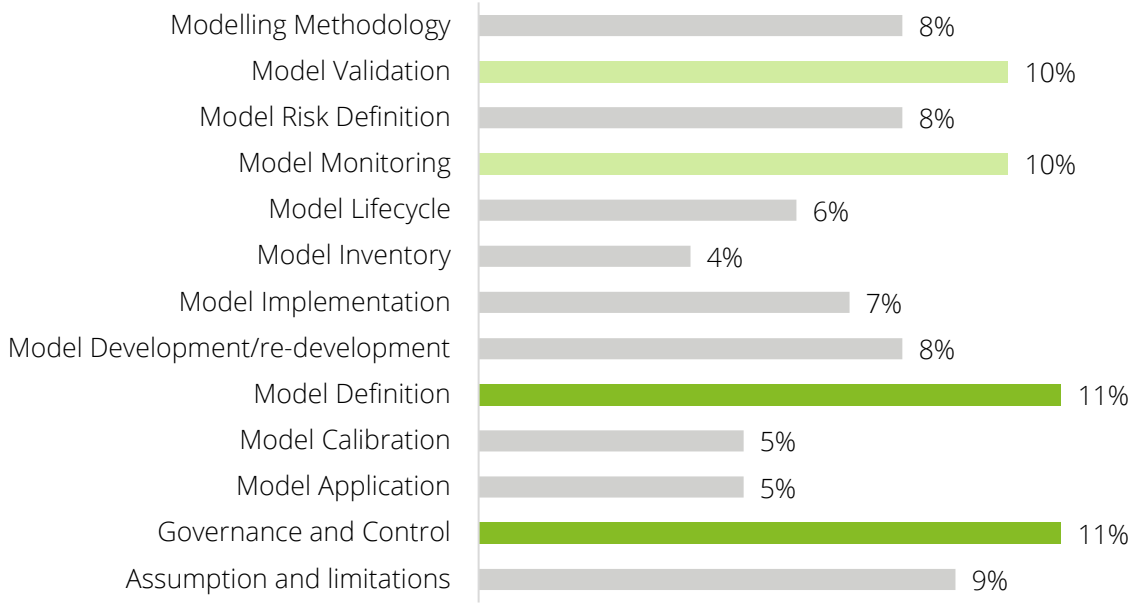


Figure 13. Elements of MRM Policy



Functionality and Effectiveness of MRM Tools

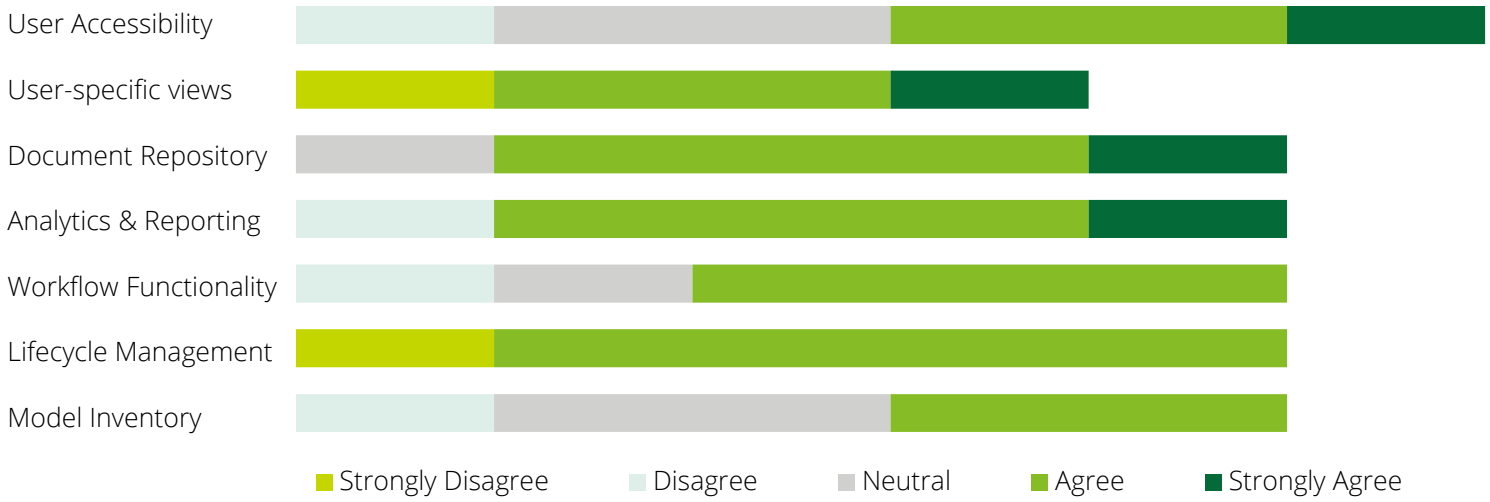
The survey explored whether organizations have a dedicated MRM tool or system and further assessed the functionality and effectiveness of these tools across key capabilities.

Adoption of MRM Tools

Only **28%** of respondents indicated that their organization has a tool or system in place for managing model risk which indicating a low adoption of MRM Tools/System.

72% of surveyed organizations do not have a dedicated MRM system, suggesting that MRM processes are still largely manual or decentralized.

Figure 14. Tool's capabilities across 7 core features



Respondents were asked to indicate their level of agreement with specific statements about the functionalities of their MRM tools including whether the tool provides a centralized model inventory, tracks the model lifecycle, supports workflow planning, offers analytics and reporting, stores documentation, provides user-specific views, and is accessible to relevant personnel.

Most respondents confirmed their tools effectively support core functionalities such as inventory management, lifecycle tracking, workflow planning, and reporting. However, responses were more varied for user-specific views and accessibility, with a higher proportion indicating disagreement or neutrality. While documentation capabilities were generally rated positively, there was no clear consensus, suggesting opportunities for further enhancement in these areas.

Model Ownership and Governance Structure in MRM

The role of Model Owner is critical in ascertain accountability, proper usage, and oversight of models, and must be clearly defined in MRM documentation to support effective governance throughout the model lifecycle.

Among respondents with MRM documentation in place, around 67% have clearly defined the model owner role within their documentation. However, the assignment of model ownership remains inconsistent. While 50% of these organizations reported that majority of their models have designated owners, the remaining half indicated that only a quarter of models have assigned owners, or they were unable to provide an estimate. Additionally, the survey indicates that model ownership is typically held by individuals from model use, reporting functions, or business lines.

Only 28% of respondents have a dedicated MRM team, while the majority (66%) rely on model users, developers, or validators to manage model risk. This highlights a lack of independent oversight in the organizations, raising concerns about the consistency, and effectiveness of model risk governance. The absence of a centralized MRM function may also result in fragmented practices, increased risk exposure on MRM.

Figure 15. Definition of Model Owner

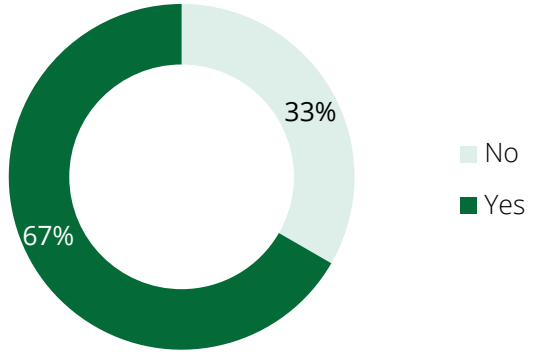
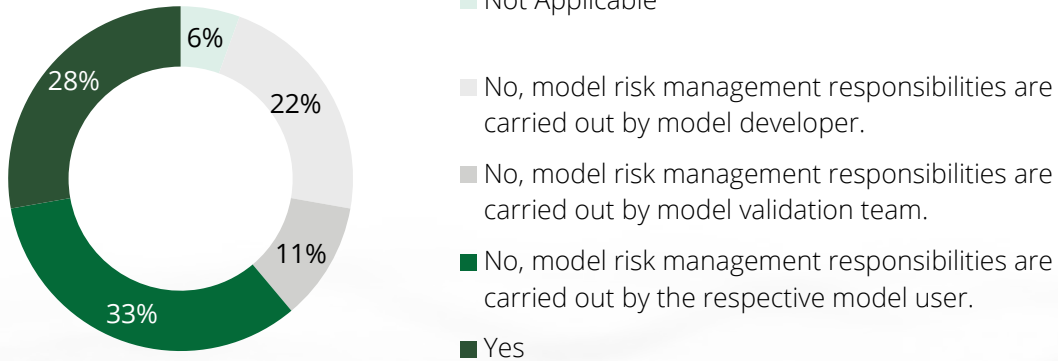


Figure 16. MRM department/team

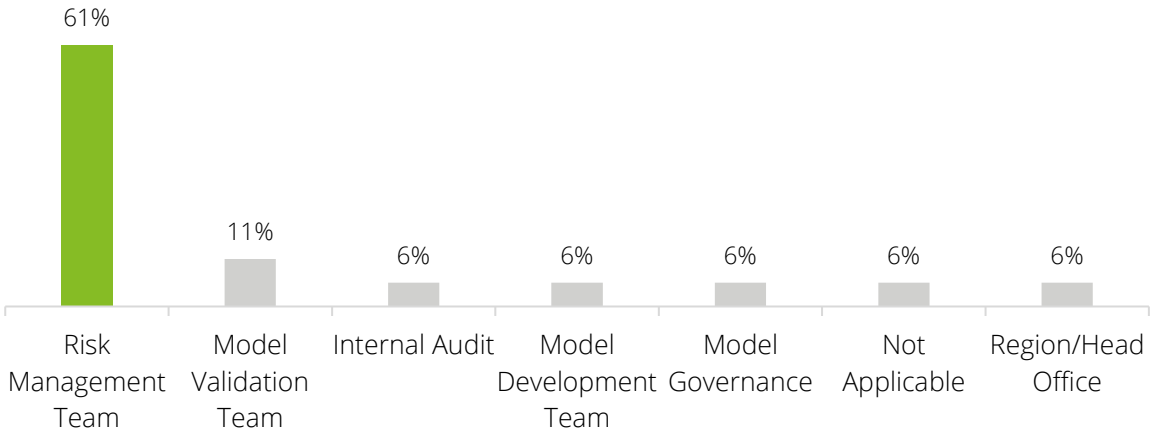


Model Risk Oversight and Risk Appetite Governance

Survey responses show that primary responsibility for model risk oversight typically lies with Risk Management teams.

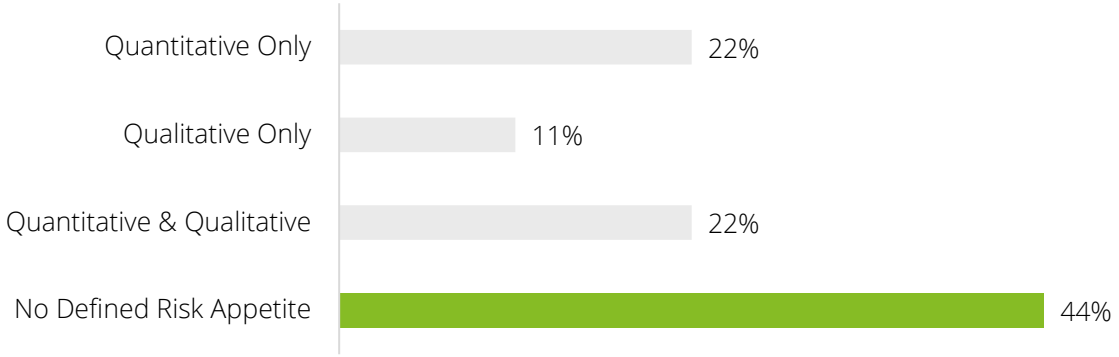
The majority of organizations (61%) place MRM oversight under the Risk Management Team, reflecting a maturing view of model risk as a second-line responsibility. However, only 11% have assigned this responsibility to Model Validation teams, and the limited involvement of dedicated governance bodies. The presence of decentralized oversight and limited role clarity highlights the need for clearer accountability and stronger organizational alignment to ensure consistent and effective MRM.

Figure 17. Functions to oversee MRM



44% of respondents reported that their organization do not have a defined model risk appetite.

Figure 18. Model Risk Appetite Framework



Of the organizations that do define model risk appetite:

22% use a combination of quantitative and qualitative measures

22% use quantitative metrics only

11% rely on qualitative, non-numeric definitions

A defined risk appetite for model risk is essential to set clear boundaries for acceptable risk exposure, guide decision-making, and ensure consistent oversight across the model lifecycle.

Model Risk Assessment & Feedback Loop

Model risk assessment (MRA) is a key component of a MRM framework, helping organizations to identify, evaluate, and prioritize risks across their model landscape.

Based on the survey, the majority of organizations (61%) conduct regular model risk assessments. However, 28% either do not conduct assessments or do so only on an ad-hoc basis, and 11% are unaware, highlighting inconsistencies in MRM execution and awareness across organizations.

A feedback loop in MRM refers to the structured process where model users evaluate model performance during use and provide input or observations back to the model developers or owners.

93% of the respondents have feedback loop in place for users to evaluate model performance and provide feedback to model developer. Credit Risk Management (36%) shows the most mature feedback integration. Treasury and risk functions (e.g., Liquidity and Market Risk) show moderate adoption. In contrast, Climate Risk, AML, Customer Analytics, and Operational Risk show minimal integration (3–5%).

Figure 19. Model Risk Assessment Practices in Organizations

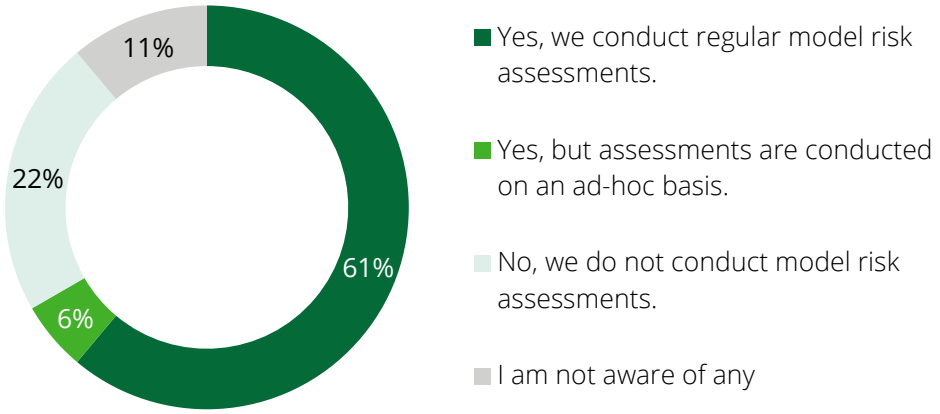
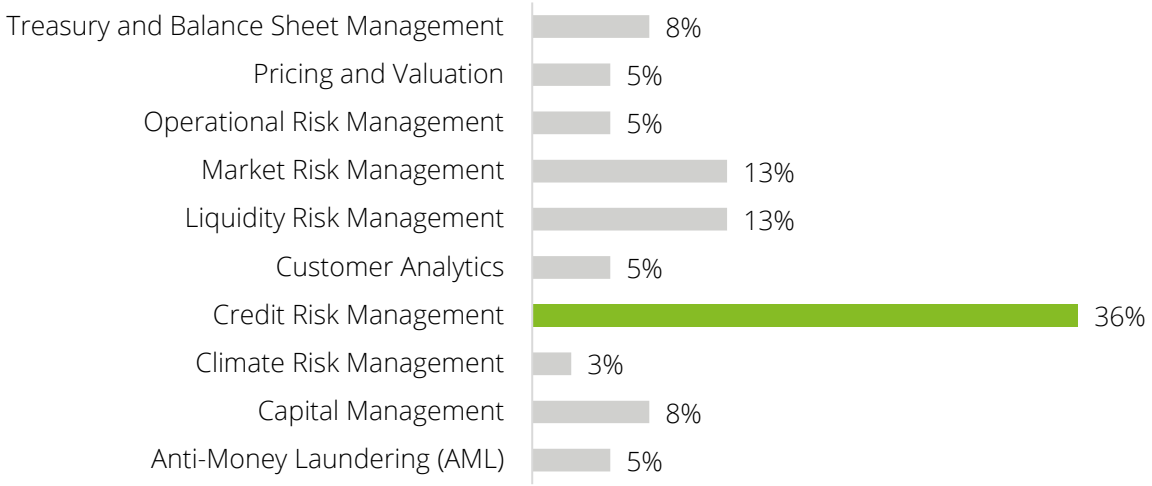


Figure 20. Functional Areas with Feedback Loops for Model Performance Evaluation

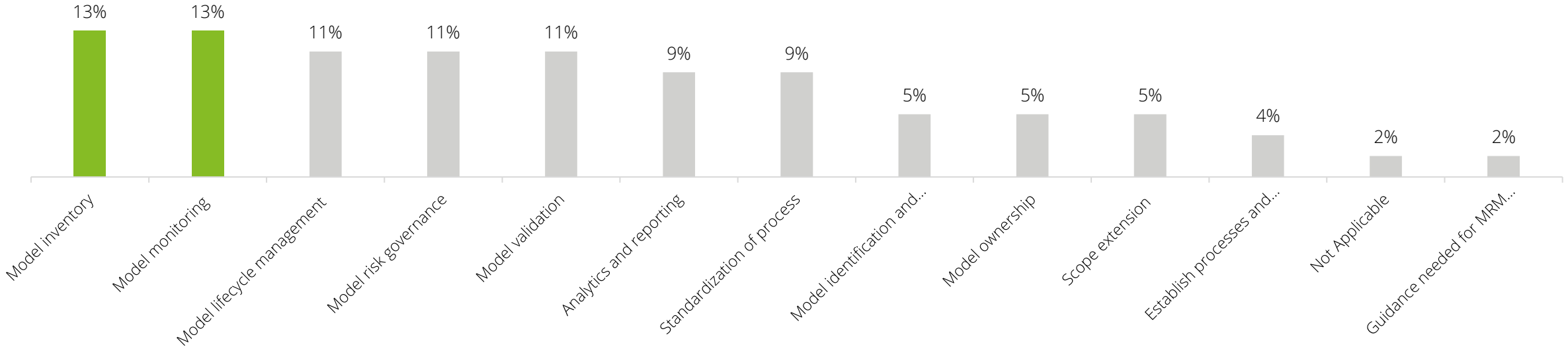


MRM improvements

As model risk continues to gain attention, banks are increasingly recognizing the need to strengthen their internal frameworks. Going forward, there are several areas where institutions have indicated plans to enhance their MRM practices over the next few years.

- Strengthening model inventory and monitoring: Majority of the organizations plan to focus on strengthening model inventory (13%) and monitoring (13%) as top priorities over the next 1–2 years, reflecting the growing need for greater oversight, transparency, and lifecycle control.
- Advancing lifecycle governance, validation, and model development: Lifecycle governance (11%), validation (11%), and model development (9%) reflect a move toward more structured MRM practices.
- Embedding model governance into daily operations: While model ownership and framework design receive less attention, the trend shows a growing effort to embed model governance into daily operations. Notably, a small portion of respondents (2%) indicated they are still in the early stages and need guidance in developing their MRM framework.

Figure 21. Intended improvement areas for MRM



05

AI / ML – Model Risk Management

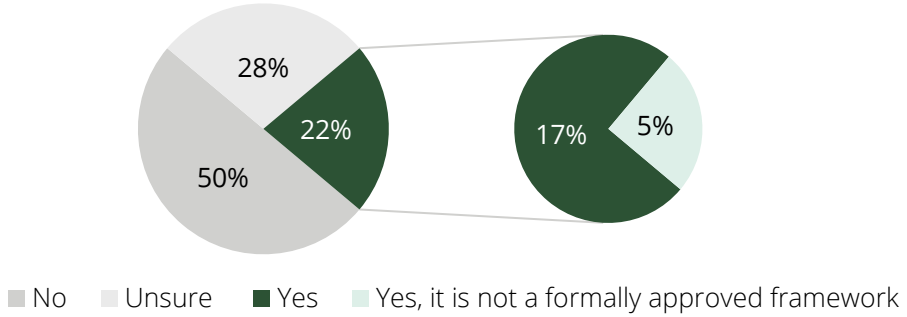
Managing risk in AI/ML

AI/ML models are increasingly being integrated into financial institutions and are now widely used across various business functions. Compared to traditional models, AI/ML-driven models often deliver higher accuracy by uncovering patterns and predictors in data that may not be evident through conventional methods.

While AI/ML models are fundamentally still models and should fall under the broader MRM framework, in practice, many institutions treat them separately due to their complexity and evolving nature. This often results in additional governance or parallel oversight processes being applied.
Despite their benefits, AI/ML models raise critical concerns around bias, fairness, transparency, and explainability, which require deliberate oversight.

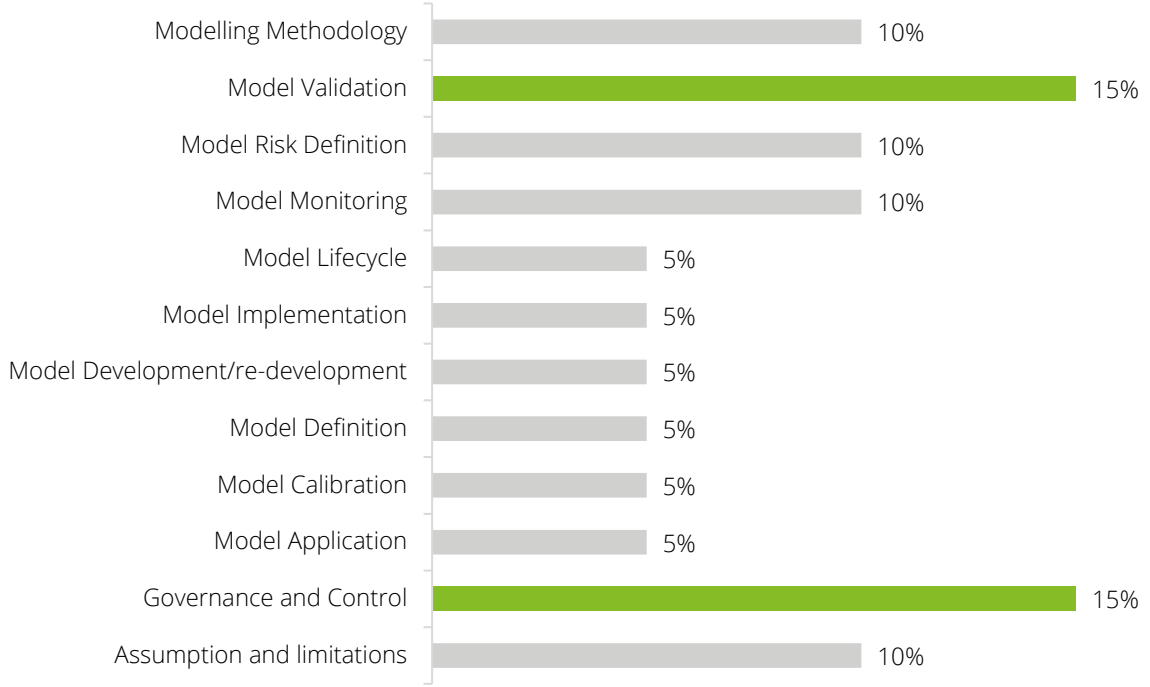
Yet, over **70%** of respondents either lack or are uncertain about having a formal AI/ML model framework or policy, highlighting a significant gap in governance.

Figure 22. MRM framework in place for AI/ML models



Only **17%** of respondents confirmed the presence of a formal AI/ML framework or policy, while an additional **6%** indicated that a framework exists but is not yet formally approved.

Among those with a framework in place, the following elements were reported as currently included:



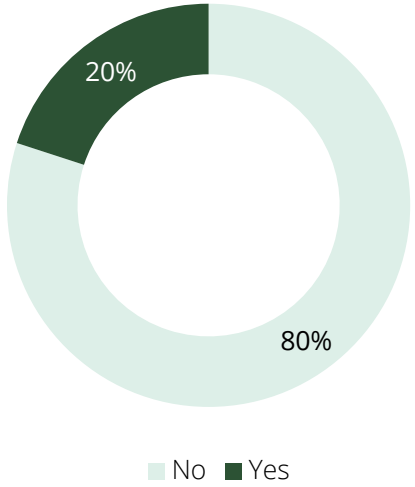
Documentation, and Oversight of AI/ML Models

Despite the growing adoption of artificial intelligence (AI) and machine learning (ML) across industries, only **28%** of the surveyed banks responded that they are aware that artificial intelligence (AI) or machine learning (ML) models are used in their organisation. Of those, only 6% stated that models using AI/ML techniques are formally included and documented in the model inventory.

For institutions that are aware of AI/ML adoption, adoption is primarily concentrated in business decision-making (40%) and risk management (30%) models. This suggests that AI/ML is primarily being deployed to support strategic or operational decision-making.

Figure 23. Models where AI/ML being utilized within the organization

Figure 24. Additional processes to address the unique aspects of AI/ML models



Of that 6%, only **20%** of the organizations **have established** additional processes to address the unique characteristics and risks associated with AI/ML models.

Validation and monitoring of AI/ML model

AI/ML models are highly data-driven and face increased risks from evolving data patterns and bias, requiring more robust and dynamic validation than traditional models.

Among banks using AI/ML models, 82% conduct independent validations, primarily by internal validation teams or internal audit (48%). However, a significant portion have not performed independent validation, revealing a major gap in governance and oversight.

Besides, Model Owners are most often tasked with monitoring AI/ML performance.

Based on the survey, AI/ML performance monitoring is primarily assigned to Model Owners (47%).

However, 29% of institutions report having no monitoring process, revealing a significant governance gap. Involvement from independent functions such as Model Validators or Developers remains limited.

Figure 25. Independent AI/ML audits or model risk validations

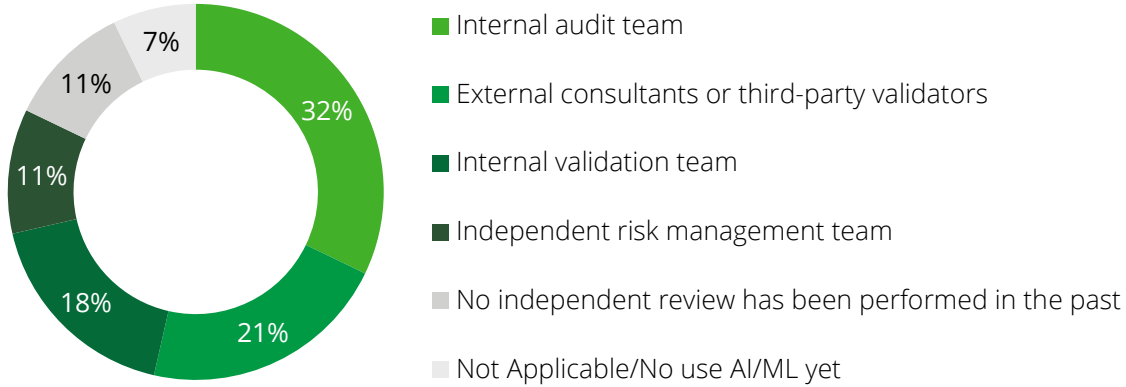
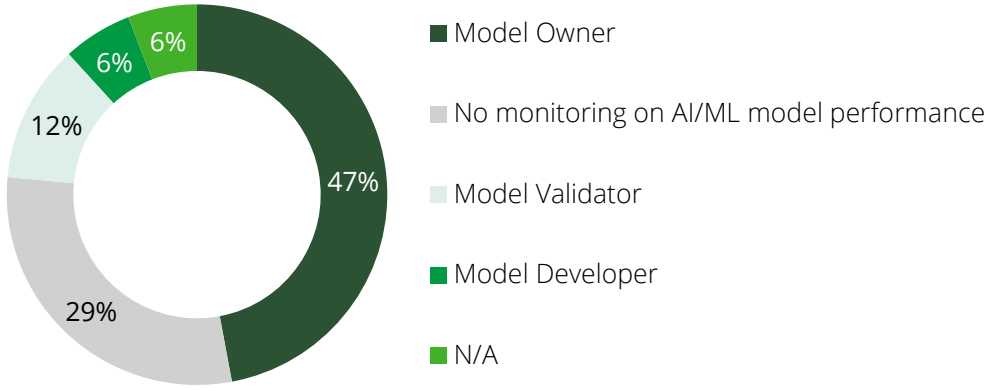


Figure 26. Monitoring of the performance of AI/ML models in use



06
AI / ML – Model Governance & Accountability

Ethics for AI

The survey highlights that ethical governance in the use of AI/ML models is still in its early stages across the banking industry.

67% of respondents lack a formal ethics framework, and only 6% have implemented a comprehensive framework. 11% are in the development stage, highlighting a clear oversight gap.

This lack of formal governance is further reflected in the fact that only 33% have assigned a dedicated role or committee to oversee AI/ML ethics.

In terms of model fairness, only **22%** have implemented fairness checks. 28% are working on it, and 6% plan to implement within a year.

Notably, 44% have no fairness-related tools or processes, indicating that fairness remains an emerging priority.

Figure 27. Ethics framework in place for AI/ML models

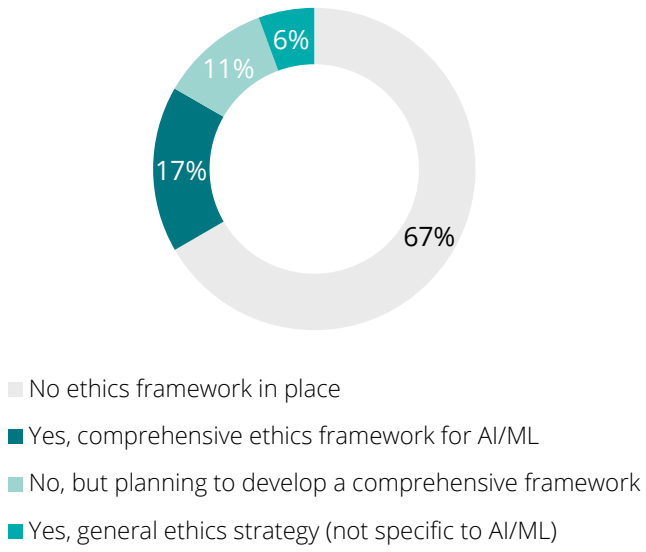


Figure 28. AI/ML Committee

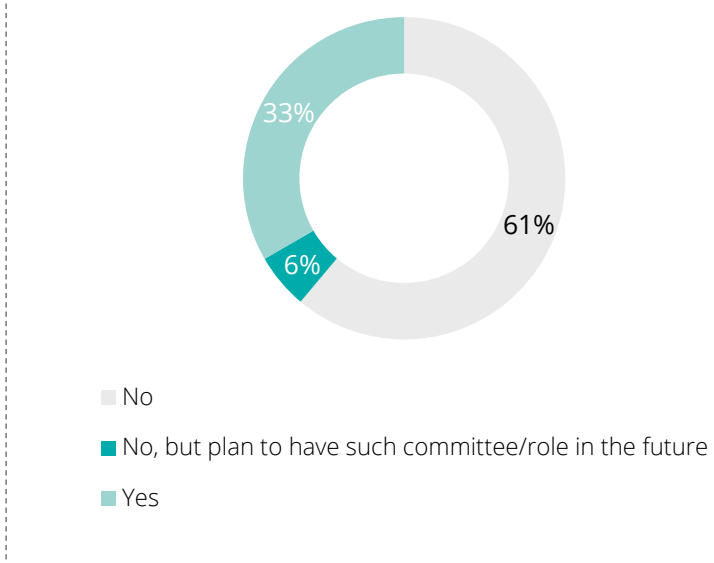
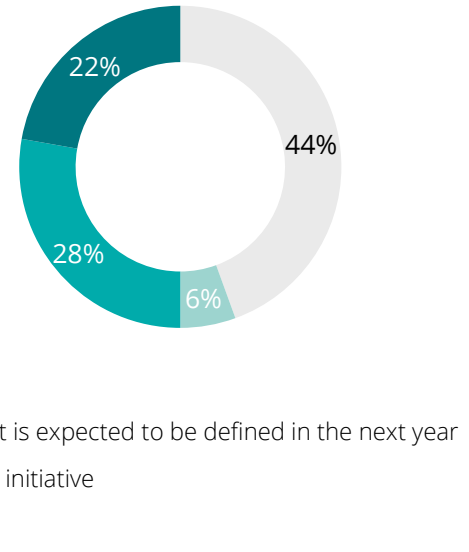


Figure 29. Processes and Tools for AI/ML Model Fairness

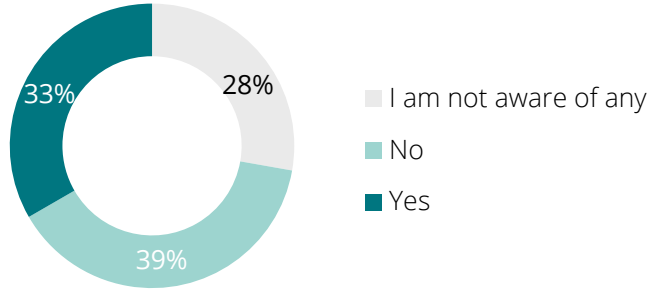


Significant challenges of using AI/ML models and Accountability

The rising use of AI/ML in financial services has brought about significant opportunities, but it has also introduced new challenges in ensuring effective model governance and accountability. As institutions move toward scaling or integrating AI/ML models into their operations, many are realizing that their existing frameworks and capabilities are not fully equipped to manage the unique risks these models bring.

Among the surveyed banks, **17%** cited a lack of skills and capabilities, along with issues around transparency and explainability, as key challenges. Another 13% pointed to difficulties in ensuring model robustness and reliability, reflecting concerns about maintaining model performance and stability over time. Fewer respondents identified fairness, impartiality, and identifying suitable use cases as major concerns, suggesting that while these areas are recognized, they may not yet be prioritized to the same extent.

Figure 31. Accountability for Oversight of AI/ML Models



67% of the surveyed institutions indicate that they either have no defined accountability for AI/ML model oversight or lack awareness of such a role.

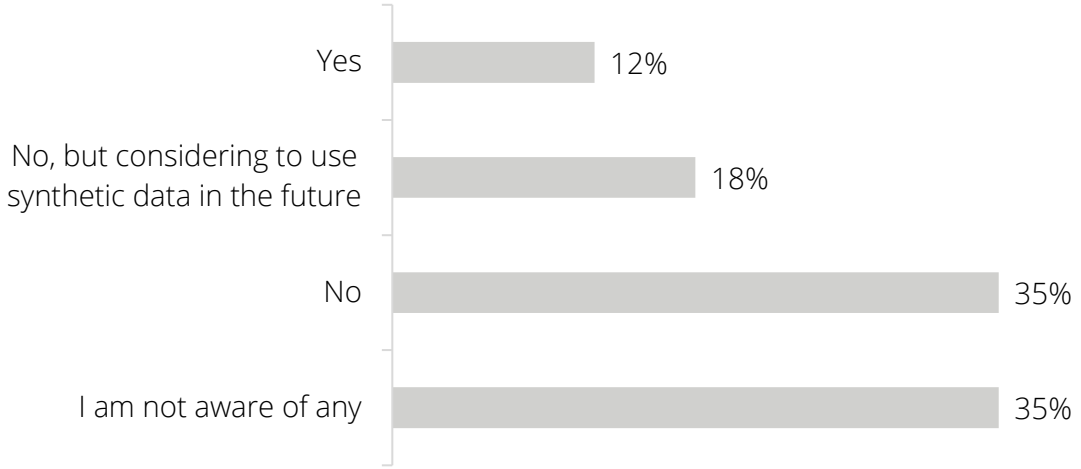
Figure 30. Significant challenges of using AI/ML models

Synthetic Data Use and Customer Disclosure Practices

While synthetic data is increasingly recognized in the industry as a tool for improving fairness, privacy, and support model testing, its actual use remains relatively limited in practice.

Survey responses reveal that around **70%** of institutions either do not use synthetic data or are unaware of its use within their organization. This points to a generally low level of maturity and awareness, particularly when it comes to applying synthetic data for purposes such as bias detection, scenario testing, or enhancing model robustness.

Figure 32. Use of Synthetic Data in AI/ML Model Development and Bias Detection



Despite growing regulatory expectations around AI transparency and data ethics...

71% of the institutions do not inform customers about how AI is used in decision-making or how personal data is processed.

Only **29%** of institutions indicated that they communicate with their customers about the use of these models and personal data through publishing their AI and data use policies through formal channels.

Role of AI/ML models in the future success of the organisation

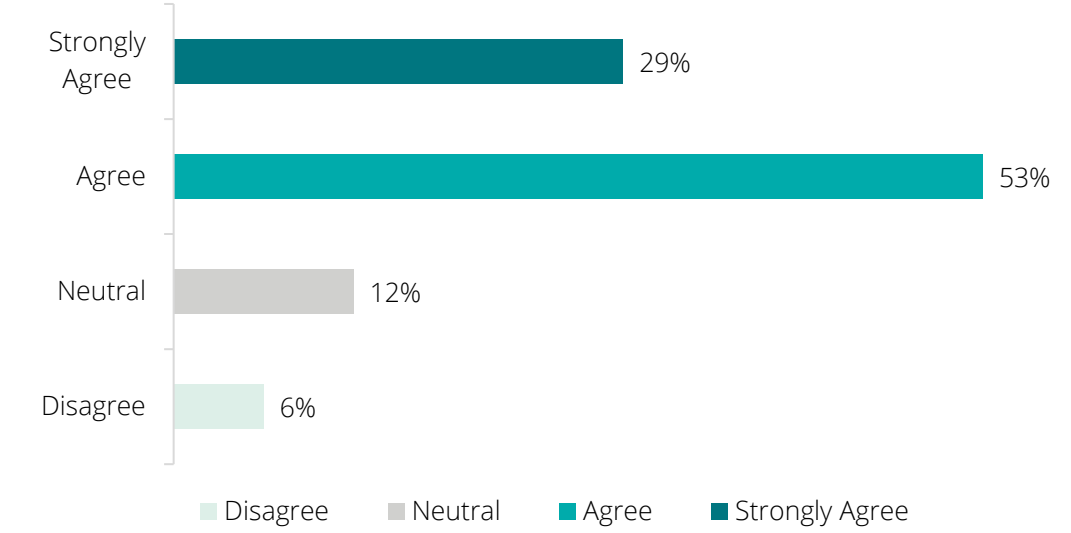
The survey results indicate a strong level of confidence in the importance of AI/ML over the next 5 years:

Approximately **82%** of respondents selected 'Agree' or 'Strongly Agree,' indicating that most institutions see AI/ML as an important contributor to their future growth and success.

12% of respondents were neutral, indicating uncertainty toward AI/ML's long-term value.

Only **6%** of respondents disagreed, highlighting minimal skepticism.

Figure 33. Importance of AI/ML to Organizational Success Over the Next 5 Years



07
Conclusion

Conclusion

Key Takeaways from the Survey

The 2025 Deloitte Model Risk Management Survey provides a comprehensive view of MRM practices across financial institutions, highlighting both progress made and emerging challenges in the industry. Based on insights from participating banks, the survey underscores the following key themes:

Model risk governance: Most institutions lack a dedicated Model Risk Management (MRM) team, with responsibilities often falling to model developers or users. This setup blurs the lines between ownership and oversight, raising concerns about independence, accountability, and the effectiveness of model governance practices.

Model inventory: Many organizations still lack a formalized model inventory or maintain inventories with limited coverage and incomplete information. Common gaps include missing documentation, unclear model ownership, and weak lifecycle tracking, which hinder transparency and oversight across the model landscape.

Model policy and framework: While some institutions have established MRM policies, some remain partial, outdated, or lack of awareness with the needs of model risk governance. This is particularly concerning as the use of models including AI/ML is rapidly expanding across both financial and non-financial areas which requiring clearer policies, stronger oversight, and broader applicability to keep pace with emerging risks.

AI/ML model governance: Awareness and oversight of AI/ML models remain limited across most institutions. Few have formally documented these models in their inventories, and even fewer have taken concrete steps to implement ethical guidelines or fairness controls, leaving a significant governance gap as adoption of AI/ML models quietly accelerates.

Model validation and monitoring: Validation practices across institutions are often ad-hoc, inconsistent, or lack formal structure, especially outside regulatory models. Ongoing performance monitoring particularly for AI/ML models is either absent or insufficiently developed, raising concerns about the ability to detect model drift, bias, or performance degradation over time.

Model risk culture: The limited awareness and absence of structured practices indicate that model risk management is not yet fully embedded as a strategic priority in many institutions. In most cases, MRM is still treated as a compliance exercise rather than a core component of enterprise risk management.

Conclusion

Opportunities for Financial Institutions

Moving forward, financial institutions should focus on:

- Centralizing MRM Function – establish or strengthen centralized MRM functions to enhance accountability and independence.
- Modernizing Model Inventories – Improving transparency, lifecycle tracking, and enterprise-wide risk visibility.
- Enhancing AI/ML Governance – Strengthening oversight, interpretability, and fairness in AI-driven models.
- Investing in Advanced Model Risk Technology – Leveraging AI-powered validation, automation tools, and cloud-based solutions to improve efficiency.
- Building a Sustainable MRM Framework – Integrating model risk into broader enterprise risk management strategies for long-term resilience.

Final Thoughts

As financial institutions increasingly rely on models for critical business decisions, the importance of a well-structured, transparent, and resilient Model Risk Management framework cannot be overstated.

This survey serves as a valuable benchmark for organizations aiming to enhance model risk governance, meet regulatory expectations, and adopt best practices for sustainable growth. By proactively refining their MRM strategies, institutions can not only mitigate risks but also unlock new opportunities, ensuring models remain accurate, reliable, and ethically sound in an ever-evolving financial landscape.

08
Acknowledgement

Acknowledgment

We would also like to express our gratitude to the team for their dedication and expertise in conducting the survey, analyzing the findings, and compiling this report. The commitment to delivering meaningful industry insights has been instrumental in the success of this initiative.

Deloitte Team Member

Dr. Chee Wei Yen
Deloitte Malaysia Business Advisory Leader
wechee@deloitte.com

Gokaldas, Dishell
Deloitte Singapore Business Advisory Leader
dgokaldas@deloitte.com

Jirapanich, Narumol
Deloitte Thailand Business Advisory Leader
njirapanich@deloitte.com

Su Je Hui
Deloitte Malaysia FSI Director
jehusu@deloitte.com

Hansel, Hansel
Deloitte Indonesia FSI Director
hhansel@deloitte.com

Lim Chinn Yiing
Deloitte Malaysia Manager
chilim@deloitte.com

Lastly, we acknowledge the efforts of regulatory bodies and industry leaders who continue to drive advancements in Model Risk Management. The ongoing work in establishing best practices and regulatory frameworks helps financial institutions navigate the complexities of model governance, ensuring responsible and sustainable growth. We hope this report serves as a valuable resource for financial institutions seeking to strengthen their MRM frameworks and enhance risk management practices in an increasingly model-driven world.

Our Thought Leadership On AI For Industry Leaders

We have published innovative thought leadership along with informative data-driven global research reports that influence worldwide discussions surrounding AI

AI visioning & strategy


The State of AI in the Enterprise (2024)

Tech Trends 2025


AI Board Governance Roadmap


AI and the CEO of the Future

Managing Agentic AI Risks

AI adoption in the C-suite


Leading a AgenticAI Enterprise for CEOs


Deloitte's 2024 ethical technology report

Oversight of AI in the Boardroom


Today's Leaders on Workforce Decisions on Ethical AI


A CEO's guide to scaling the AI Enterprise

Agentic AI and the future enterprise

IP and Open Innovation Strategies


AI and the Brightest Future for Humanity

The Chief Experience Officer's Top 5 Challenges

Industry specific


Unlocking Industry Advantage Through Tech Investment


Artificial Intelligence Insights for Internal Audit

Future of Software Engineering in Banks


AI in M&A: 4 Key Trends and 4 Key Actions


AI for Internal Audit: Risks and Rewards

AI technologies & solutions


AI Agents and Multi-Agent Systems

Digital Ecosystem Value Creation


AI Agent Architecture and Design

AI and Software Development Quality


Mainframe Modernisation: The AI-Human Synergy


Scaling Agentic AI: 13 Elements for Sustainable Growth and Value

Deloitte.

Designed by CoRe Creative Services. RITM2143794

MAKING AN IMPACT THAT MATTERS since 1845