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Scaling model risk management to facilitate responsible growth leveraging advanced technology

EMEA Model Risk Management Survey

2025

Contents

Foreword

On behalf of Deloitte, we are pleased to present the latest edition of the EMEA Model Risk Management Survey. This report draws on the valuable contributions of 87 banks across Europe, the Middle East, and South Africa, providing a detailed view of current model risk management practices and challenges.

At Deloitte, our mission is to support clients in scaling their model risk management to facilitate responsible growth. Models—whether directly or indirectly—play a crucial role in informing key decisions within banks that affect customers and society at large. As these models become more deeply embedded in business operations, ensuring their appropriate use is essential to building organisational resilience and sustaining long-term success.

Banks with a mature model risk management framework can deliver comprehensive insights across the entire model landscape, enabling teams to raise awareness and mitigate risks throughout the model lifecycle. This enables management functions to implement effective safeguards, support better decision-making and enable sustainable outcomes for customers.

Reflecting on the survey findings, we see that the adoption of AI and other advanced technologies continues to accelerate. Banks are increasingly leveraging these innovations to enhance their modelling capabilities, even as they navigate the new complexities and risks that come with them. This trend highlights the critical need for robust governance and risk controls, particularly in relation to emerging technologies.

Sustainability considerations are also becoming more prominent, with ESG models playing an ever-larger role in decision-making processes. This development underscores how responsible business practices are being woven more deeply into banks' strategies.

While maintaining a comprehensive model inventory remains a foundational element of model risk management, fewer banks now name model identification and discovery as a top priority for improvement. This suggests meaningful progress in this area and a shift in focus towards optimising the model risk framework in other areas.

In line with this evolving focus, we observe a growing preference for in-house developed tools. Banks are increasingly seeking customised solutions that better align with their unique risk profiles and operational needs. This shift supports greater control and agility. This is essential for institutions to scale model risk management capabilities to meet the demands of a rapidly changing environment.

We have highlighted only a few of the key trends shaping model risk management today, but they only scratch the surface of what this year's survey reveals. We invite you to explore the results further in the full report, so you can uncover the findings that can best inform you in how to scale your model risk management effectively, leveraging advanced technology to drive responsible growth in an increasingly complex environment.

Koen Dessens
Partner
Model Risk Management lead
North and South Europe

Tom Clifford
Partner
Trustworthy AI lead
North and South Europe

Viki Styrbæk
Partner
Model Risk Management lead
Nordics

Executive Summary

This report presents findings from Deloitte's 2025 EMEA Model Risk Management (MRM) Survey, conducted between July and September 2025, covering 87 banks across Europe, the Middle East, and South Africa. The survey examines the current state and evolution of MRM across four key themes: model landscape and inventory, technology and tooling, governance, and artificial intelligence (AI) and machine learning (ML). While MRM practices continue to mature, important gaps and urgent priorities remain as banks expand model usage and leverage advanced technology.

The 2025 EMEA MRM Survey highlights the ongoing evolution and strengthening of MRM practices across EMEA banks. There is clear progress in model inventory management, tooling adoption, governance frameworks, and AI/ML integration. However, banks must continue to address emerging risks and invest in capabilities to manage increasingly complex modelling environments effectively.

Model landscape and inventory

The model inventory remains the cornerstone of effective MRM, serving as the central repository for all model-related information. Banks are broadening their MRM scope beyond regulatory financial models to include Pillar 2 financial models, compliance, ESG, cyber, HR, and marketing models. **Notably, ESG model adoption has grown significantly, with approximately 75% of banks now using ESG models** (compared to 39% in 2023), while financial crime models are included in about half of banks' MRM scope.

Three-quarters of banks include at least 75% of their models in a formal inventory, reflecting improved model identification and risk visibility. The number of models varies by bank size, with small banks averaging 58 models, medium banks 132, and large banks 365. The survey results show that for all banks, regardless of size, the number of models have stabilised since 2023, indicating maturity in inventory management.

Technology and tooling

Effective MRM frameworks increasingly rely on integrated tooling platforms that combine inventory management, documentation, lifecycle workflows, analytics, and reporting. **There is a clear shift away from unmanaged spreadsheets towards more structured tooling**, with in-house solutions rising sharply to 40% in 2025, up from 24% in 2023. Despite this progress, 24% of banks still rely on MS Excel. While 90% of the banks agree that their inventory collates landscape information in one place, more than one third report that current tools do not fully support lifecycle automation or monitoring. Investment in more capable tooling is a priority to enable scalable monitoring and reduce manual effort, though cost and return considerations influence decisions.

"There is a clear shift away from unmanaged spreadsheets towards more structured tooling"

Executive Summary

Governance

Strong governance across the model lifecycle remains critical to effective MRM. Governance frameworks have strengthened, with 94% of banks having a model risk policy, up from 89% in 2023, and 95% defining clear model owner roles, up from 87%. **The separation of model owner and developer roles is increasing, supporting better business knowledge and more effective model use.**

Dedicated MRM teams are common in large banks, with 65% operating stand-alone teams, though organisational positioning varies. The head of MRM reports directly to the Chief Risk Officer in 44% of banks. Insights into the validation practices show that 39% of the models are being validated annually and the rest on multi-year cycles. Regulatory requirements continue to expand geographically and in scope, driving banks to invest in closing gaps and enhancing MRM capabilities.

Artificial intelligence and machine learning

Adoption of AI and ML modelling techniques continues to grow, especially among larger banks. 67% percent of banks now use AI/ML models, up from 56% in 2023, with 90% of large banks adopting these techniques compared to just over half of small banks. Awareness of the EU AI Act has increased, with only 15% of banks not yet analysing its impact, down from 33% in 2023. Most banks expect moderate updates to their MRM frameworks, though some anticipate significant changes

AI/ML is most commonly applied in anti-money laundering and transaction monitoring, customer experience, and credit decisioning, with growing use of generative AI and large language models. **Policy coverage for generative AI has improved dramatically, with only 18% of banks lacking policies compared to 58% in 2023.**

The top challenges include transparency and explainability, data quality and availability, and skills shortages. Although challenges have lessened since 2023, AI/ML requires adaptation across all model lifecycle phases. Around 60% of banks have developed additional MRM processes for AI/ML, a significant increase from 40% in 2023, yet only 29% consider their frameworks fully adequate for AI/ML governance.

Most banks include AI/ML models within their MRM frameworks; 35% maintain distinct AI/ML model definitions, and 61% flag AI/ML models in inventories. Validation challenges focus on model complexity, and interpretability. Over half rely on existing MRM tools rather than dedicated AI governance platforms.

"Adoption of AI/ML modelling techniques has continued to grow compared to 2023."

About the survey

This report presents findings from Deloitte's assessment of model risk management practices. The survey is based on information gathered from 87 banks across Europe, the Middle East and South Africa and was conducted from July to September 2025. The survey has roughly even split between large, medium and small banks with the majority being in Europe.

Figure 1. Percentages of banks in each of three size categories. Small banks with a balance sheet total of less than EUR 30 billion, medium banks between EUR 30 and 100 billion and large banks with more than EUR 100 billion.

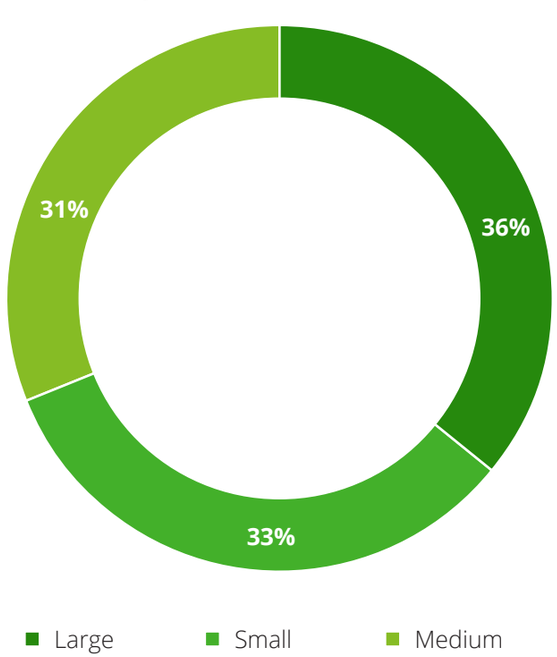
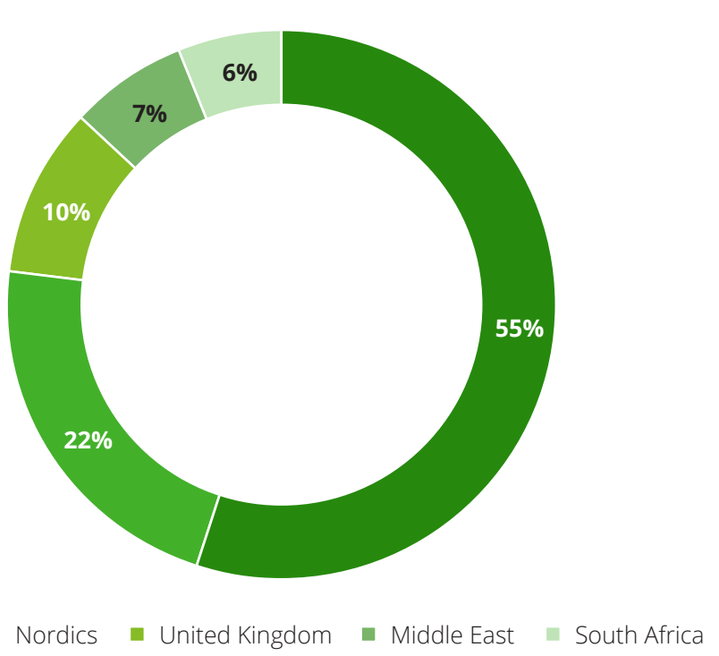


Figure 2. The survey included an even mix of banks from eighteen countries with the majority (87%) being in Europe



About the survey

Figure 3. Number of banks in each country

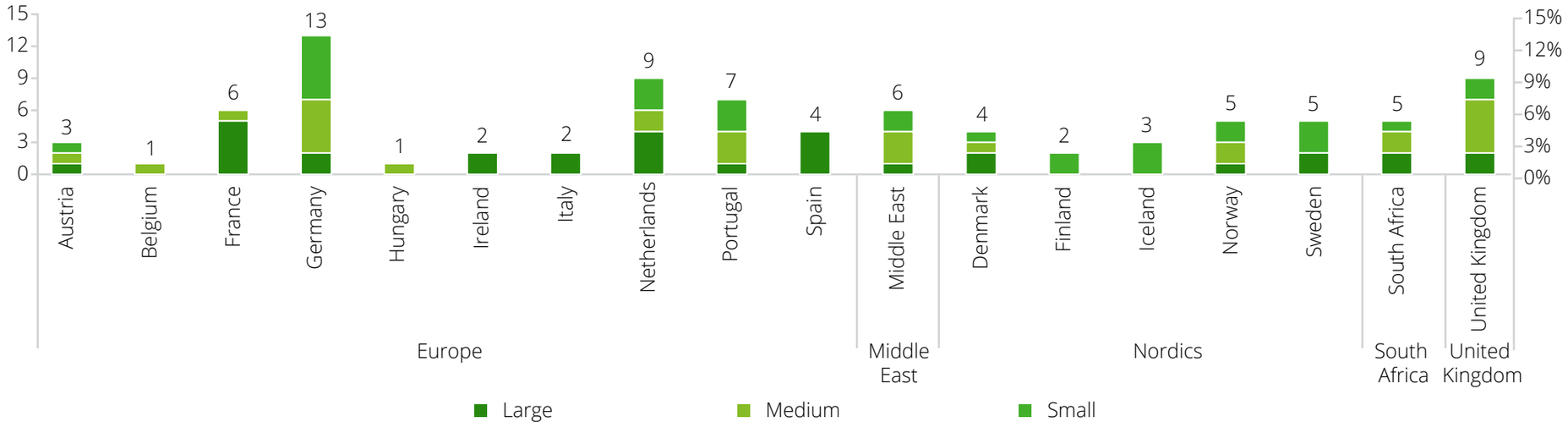
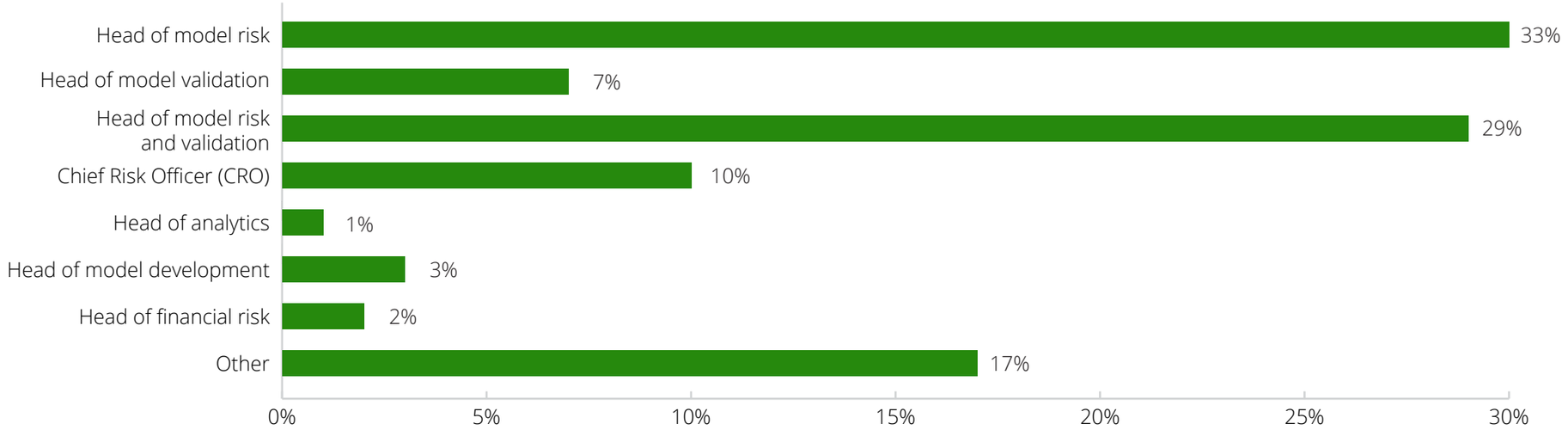


Figure 4. Role within the bank of the participant that completed the survey



Model landscape and inventory

Model landscape and inventory

The model inventory is the central repository for model-related information and the foundation for efficient model risk management. It sets the scope for model risk management, but it is also the source for the vast majority of information about model risk. This includes, for instance, information about the position of the model in the model lifecycle, information about the quality of the model such as validation results, and the overall risk appetite statement of the bank for model risk.

A clear and bank-wide model definition

The model inventory starts with a clear and bank-wide definition of a model. This defines the scope of the models included in the model inventory. The definition of a model varies across banks, and there is no single definition that works for all of them. As stated in the 2023 Deloitte EMEA MRM Survey and from the 2021 edition, the large majority of banks used the regulatory definition from SR 11-7, in most cases enriched with additional guidance or enhancements.

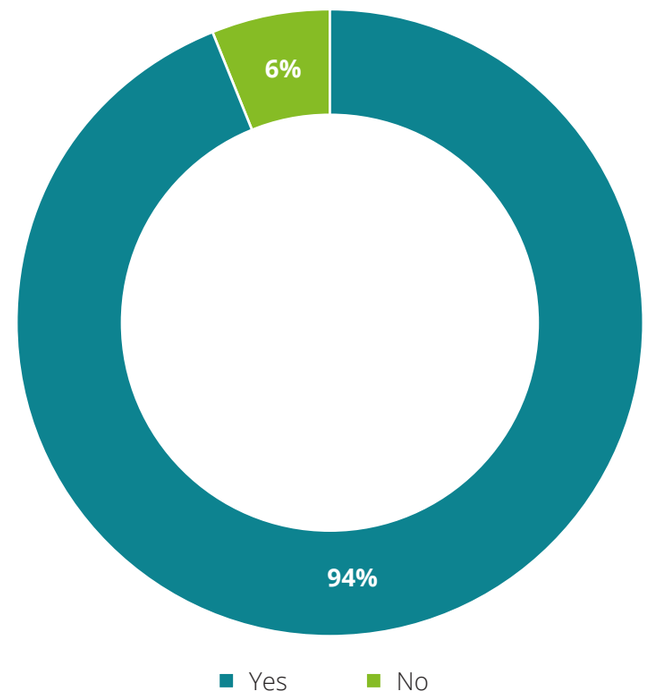
The SR 11-7 definition states that "the term model refers to a quantitative method system, or approach that applies statistical, economic, financial, or mathematical theories, techniques, and assumptions to process input data into quantitative estimates".

Model risk policy

94% of the banks answered "yes" to the question of whether there is an existing model risk policy in their organisation, this means a further increase compared to the 89% from 2023. This model risk policy specifies, amongst others, the (risk-based) processes, standards, governance, roles and responsibilities relating to the management of model risk in the organisation.

Based on the current (2025) and previous (2023) edition of the survey, it is evident that the need for a model risk policy is acknowledged by the industry in general. Our survey results show that the existence of a model risk policy is a systematic trend among the participating banks. Four out of the five participating banks who indicated that they do not have a model risk policy, are from the Nordics and are mainly classified as EMEA Small banks with a balance sheet below EUR 30 billion.

Figure 5. Banks with existing model risk policy



Model landscape and inventory

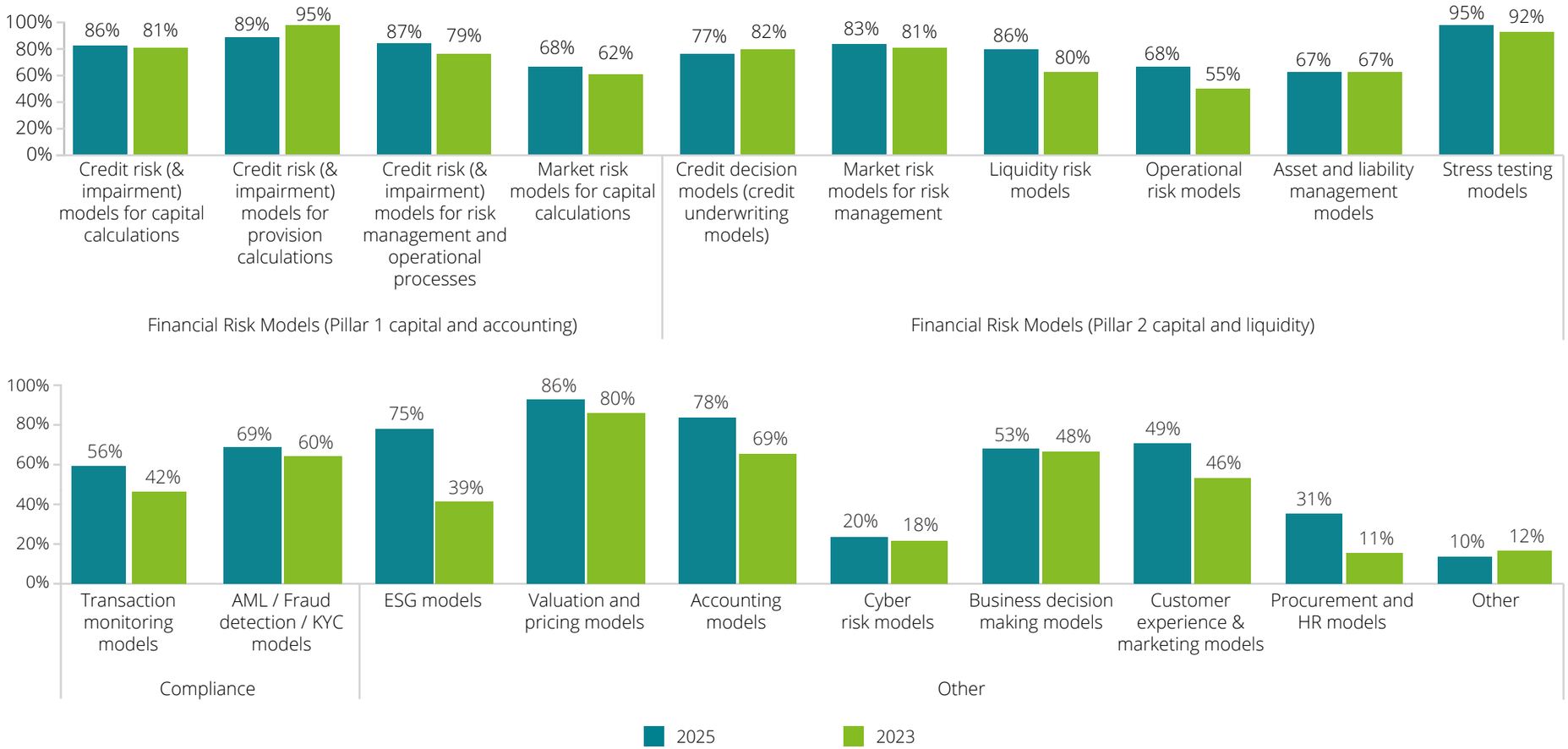
Use of models

Pillars 1 and 2 (capital and accounting, capital and liquidity respectively) models are used by most of the banks. In fact, more than two thirds indicate use of models classified as Pillar 1 or Pillar 2 models.

Compared to the MRM survey from 2023, ESG models have shown the biggest increase for this time as 75% of banks have developed models for this purpose (compared to 39% in 2023). Large banks tend to use ESG models more often than the medium and small sized banks, but the medium sized banks are catching up.

Only one in five banks employ cyber risk models and this number is almost unchanged since 2023.

Figure 6. Proportion of respondents who have the model type in question in use



Model landscape and inventory

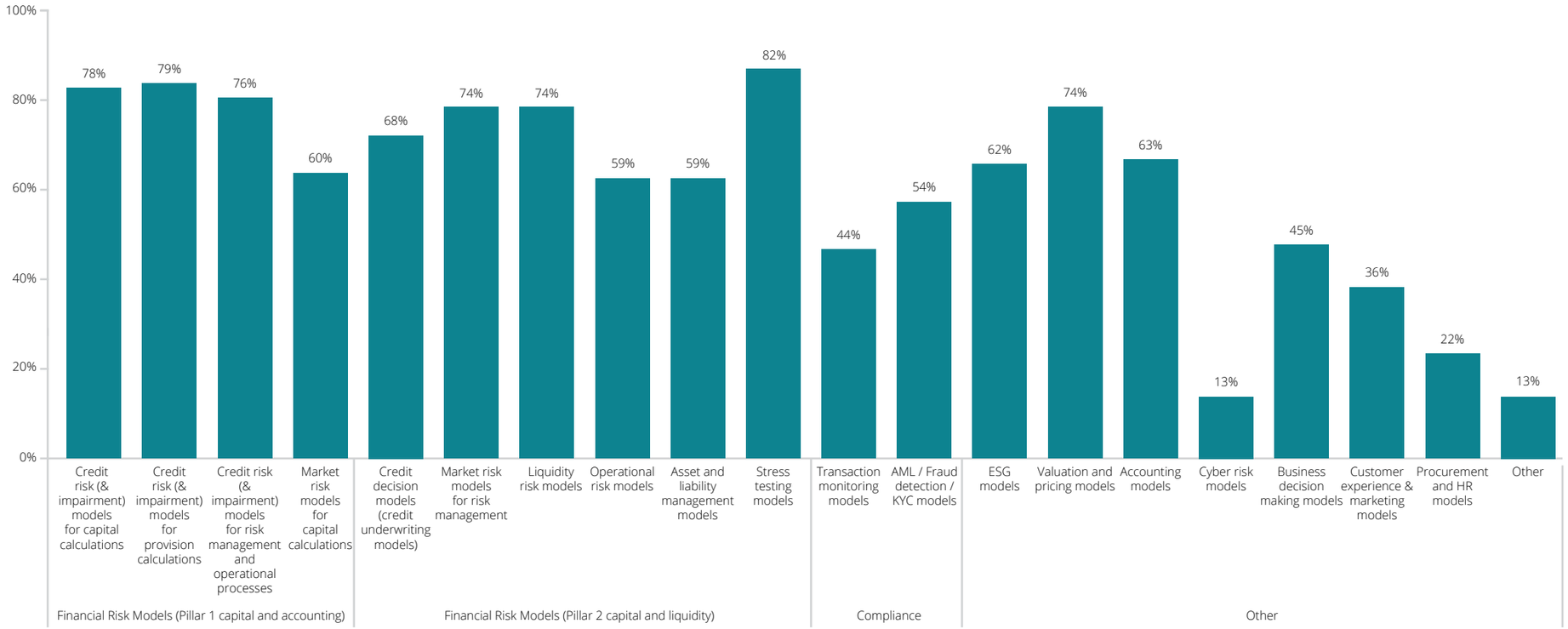
Scope of the model risk management framework

Similarly to the 2023 MRM survey banks continue to include a wider variety of models in scope of their model risk management framework. Compared to 2023, there is a growing tendency to include operational risk and ESG models.

Compliance-related and other model types such as cyber risk, procurement, business decision and HR models and customer experience & marketing models still need to be included under the scope of the model risk management framework for a significant share of the banks. The banks that include financial risk models (Pillar 2 capital and liquidity), compliance and other models in scope of their model risk management frameworks are mostly large and medium banks with mature model risk management frameworks.

Financial risk models (Pillar 1 capital and accounting) are most often in scope of the model risk management framework. It is not surprising, given regulatory attention, that these models for credit risk and market risk are most often in scope.

Figure 7. Scope of the model risk framework for each of the model types as a percentage of respondents that use the model type in question



Model landscape and inventory

Financial Crime models in scope

Just below half the banks in this survey respond "yes" to including Financial Crime (FC) models in their organisation. The FC models most commonly subject to MRM validation processes are Fraud detection and Transaction Monitoring Models. Despite their specialised nature, 83% of banks use the same risk tiering approach as for other models in their inventory.

Difficulties associated with measuring performance, lack of data quality and industry benchmarks are cited as the main issues with validation of FC models. Only 40% of respondents indicate they have dedicated MRM staff with requisite expertise for validating FC models.

Figure 8. Use of Financial Crime models

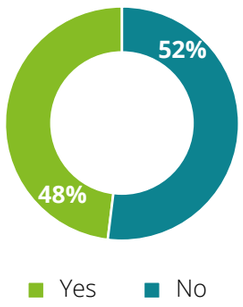


Figure 9. Average number of FC models validated per bank per domain

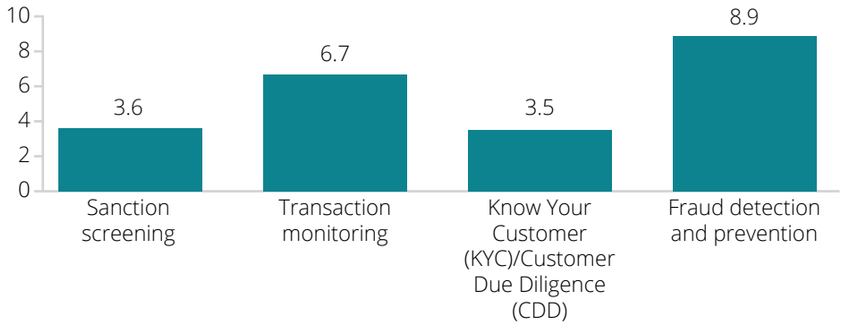


Figure 10. Banks' approach to tiering FC models

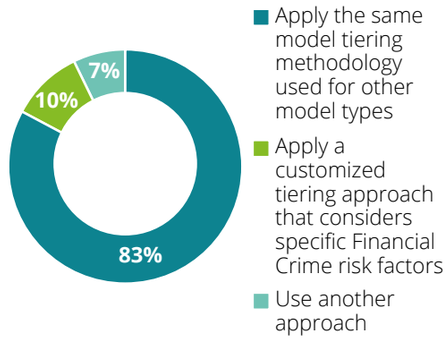


Figure 11. Significant issues and challenges in the validation of FC models

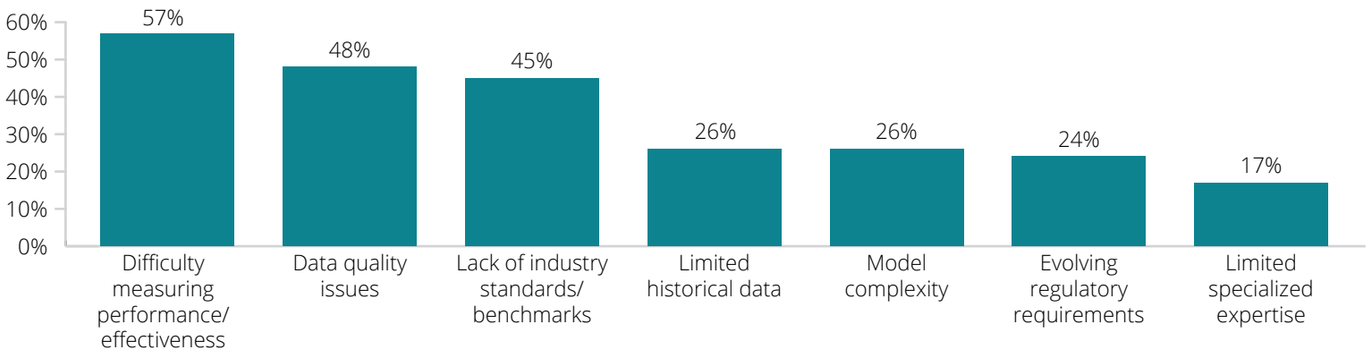
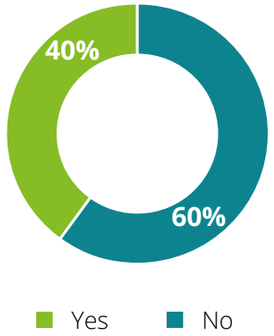


Figure 12. Banks with dedicated MRM staff having FC expertise to validate FC models



Model landscape and inventory

Model inventory size

The number of models in a bank's model inventory is constantly subject to change. The survey results show that practices diverge widely between small, medium and large banks. This is not unexpected, as large banks tend to have more mature model risk management frameworks and also include more model types, as shown in the previous figures.

Small banks indicate that they have an average of 58 models in their model inventory, medium banks have 132 models and large banks 365 models, with largest outliers excluded. For small and medium sized banks, these numbers represent a slight decrease compared to 2023 while for large banks, it has been a large increase. These figures should be compared cautiously, as the model definition used by each bank can vary, for example in a credit risk context a model can be a single rating system or an individual PD model.

However, even between large banks the size of inventories is seen to vary considerably. The lowest quartile of the large banks have a maximum of 150 models and for the top quartile the number of models is, 800 when including the outliers. This indicates that as the model inventory and process for model identification becomes established, within a more mature MRM set up, the reported scope of models grows. This enables management to assess previously "unknown" model risks.

Six large banks have more than 1000 models in their model inventory. Therefore, these banks are considered outliers in the current dataset and thus have not been included in the chart for Figure 13. These banks have 1.205, 1.350, 2.000, 2.700, 3.000 and 3.774 models in their inventories. Similarly, three medium sized banks have been excluded in Figure 13 due to their inventory size being considered large outliers.

Medium sized banks also have a wider range of inventory sizes. Lower quartile of these banks have a maximum of 44 models, and the upper quartile have more than 160 models in their inventory. For small banks, these numbers are 19 models for the lowest 25% and 70 models for the highest 25%.

Figure 13. Do you have a model inventory?

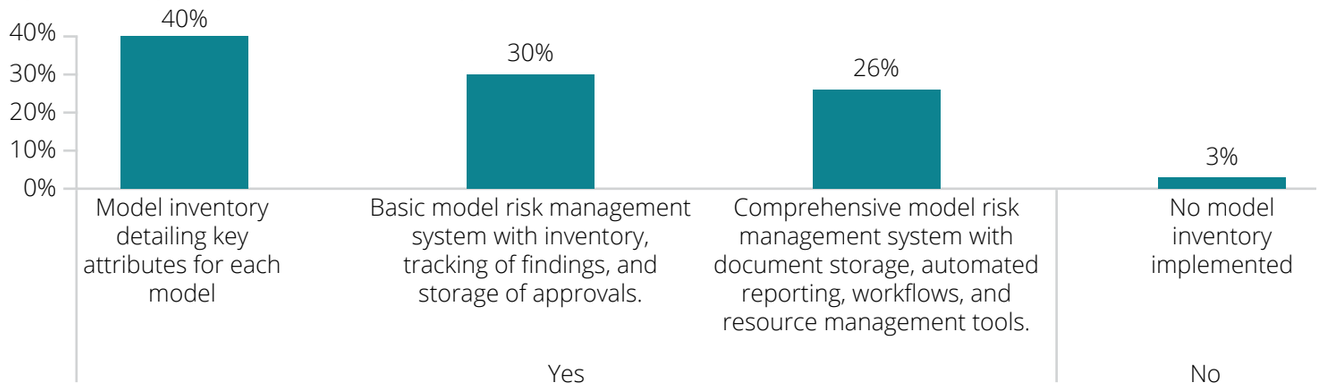
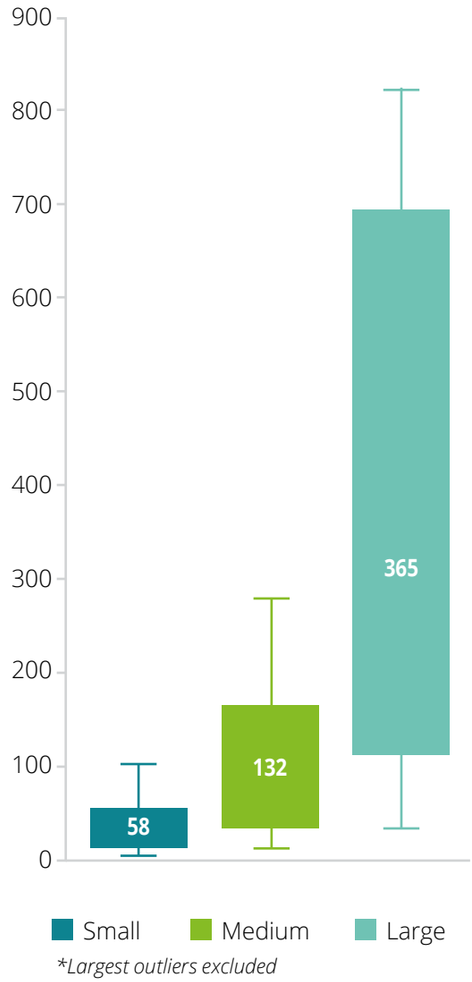


Figure 14. Number of models in the model inventory*



**Largest outliers excluded*

Model landscape and inventory

Model inventory information

A model inventory can store large amounts of information at the individual model level. Structured and high-quality information is the foundation of efficient model risk management. Small, medium, and large banks store on average 30, 48, and 63 data fields in their model inventory, respectively. These differences indicate that larger banks store and maintain more than twice as many data fields in their model inventory compared to smaller banks.

Three out of four banks included at least 75% of their models in the model inventory. 86% of the banks included at least 50% of their models in the model inventory.

Figure 15. Number of data fields in model inventory

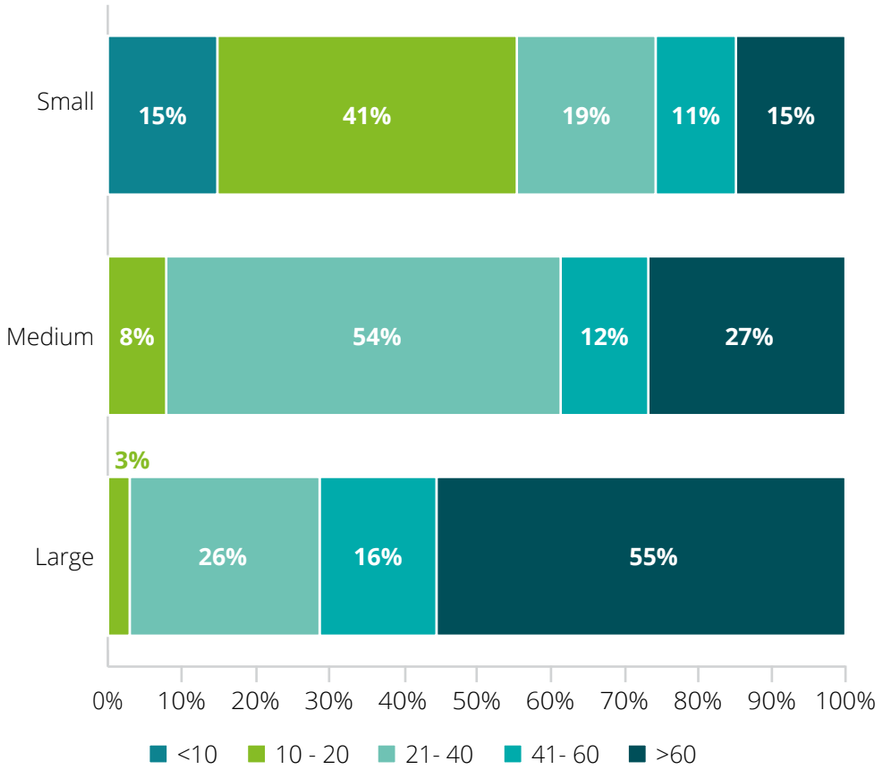
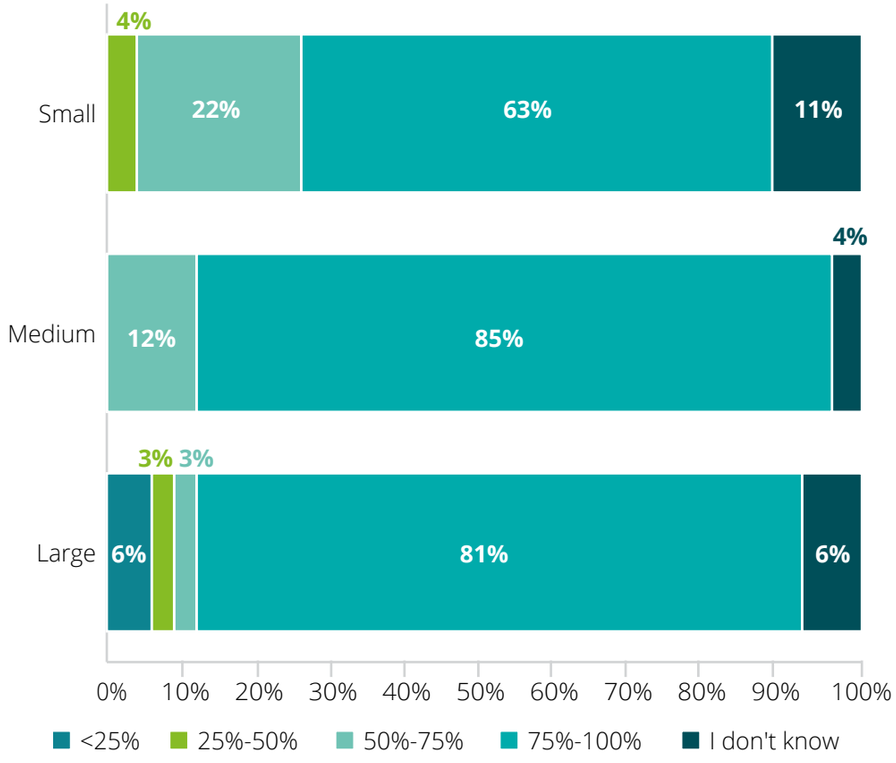


Figure 16. Proportion of models included in the model inventory



Technology and tooling

Technology and tooling

Successful model risk management framework implementations are often supported by model risk management tooling. Model risk management tools integrate the model inventory, document repository, lifecycle management and workflow, analytical and reporting capabilities into a single platform. The use of a singe tool with shared functionalities can greatly contribute to the effectiveness of the model risk management activities.

Tooling types: From MS Excel to solutions developed in-house

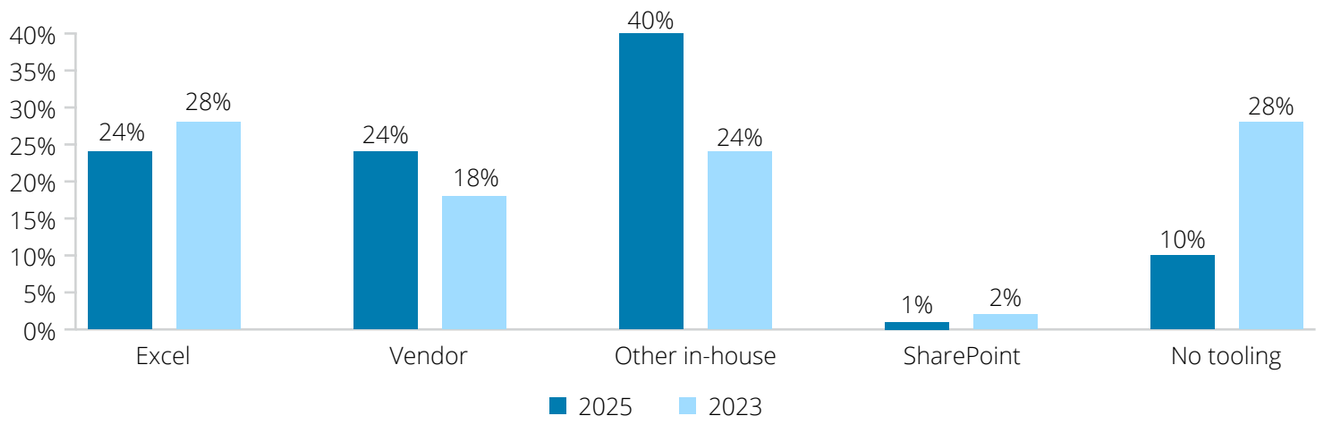
The survey results showed 24% of respondents use MS Excel as their model risk management tool. In 2025, only 1% of banks use SharePoint, and we see an increase in in-house developed solutions. Previously MS Excel was the most wildly used tool, but in 2025 more banks have moved towards in-house developed solutions instead.

Large banks apply vendor solutions more than medium and small banks. Our analysis shows that almost half of the banks using vendor solutions are large banks. This could reflect both the higher number of models and increased regulator scrutiny for larger banks, making investments more easily justified.

Compared to 2023, we observe a large decrease in respondents that do not use tooling for model risk management. The large number in 2023 was mainly driven by a higher population of small banks and banks from the Middle East that indicated no use of tools for risk management practices. This year, the sample composition is different so banks from the Middle East constitute a smaller part of the total sample.

"Model Risk Management tools shifted from MS Excel or no tooling to more in-house developed solutions"

Figure 17. Tool or system used for model risk management practices

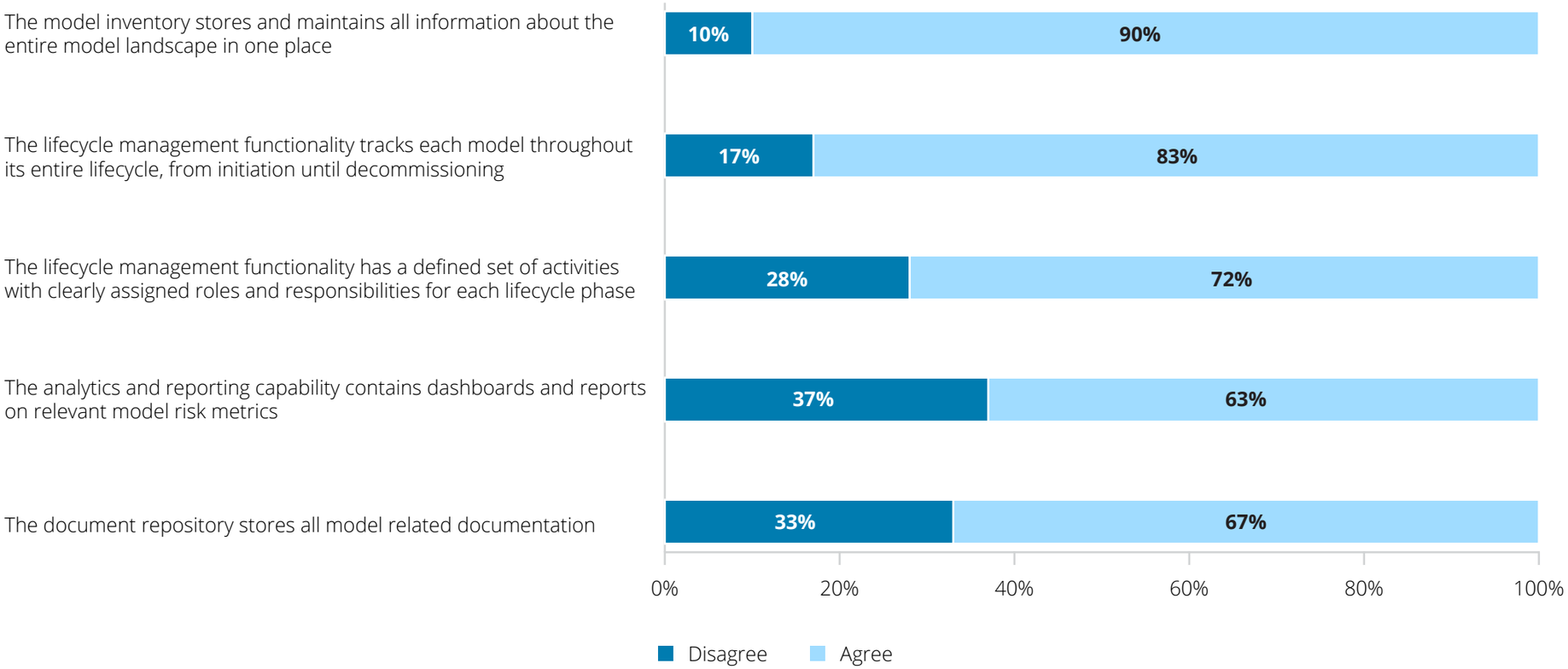


Technology and tooling

Tooling in practice

Although qualitative feedback from banks indicate that most of them are aware of the benefits of using model risk management tooling, the answers to the statements show that such tooling does not yet support all building blocks of model risk management for a large part of the banks. The overwhelming majority (90%) of the participating banks agree that the model inventory stores and maintains all information about the entire model landscape in one place. The results are similar for the functionalities of the lifecycle management relating to both tracking of the models and defining their activities, roles, and responsibilities.

Figure 18. Agreement with statements regarding model risk management tooling



Governance

Governance

The role of model owner remains important, with 95% of respondents having clearly defined and documented the role of the model owner. The model owner role is separated from the model developer role in 48% of the cases.

Model owner

One of the key roles for effective model risk management is that of the model owner. The model owner is responsible and accountable for a specific set of models, including the quality of those models. The model owner also acts as a bridge between the first line of defence and others, for instance by ensuring that findings from independent model validation are resolved with appropriate resources on a timely basis. Most banks (95%) have indicated that the role of the model owner is clearly defined and documented.

This number is up from 87% in 2023. Large and medium banks have clear definitions in almost all the cases while around 10% of small banks responded that they do not have a clear definition for the role of "model owner".

Compared to 2023 the number of model owners from the model development team has increased from 50% to 52%. Model owners identified among model users and/or reporting is slightly higher at 34% compared to 31% in 2023.

Figure 19. Percentages of banks that clearly defined and documented the role of the model owner in the model risk management documentation

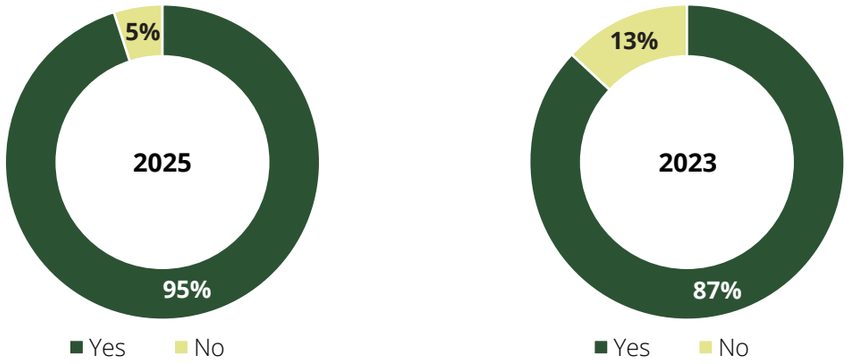
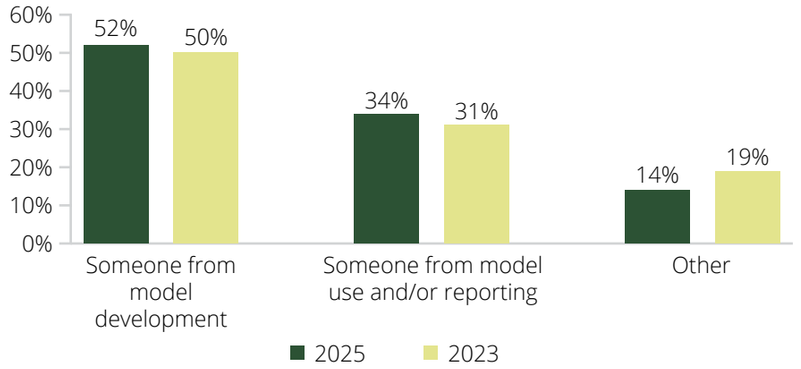


Figure 20. Most often appointed model owner



Governance

Model risk management teams and responsibilities

Years after the publication of the SR11-7 MRM document, stand-alone model risk management departments or teams have emerged, especially at the larger banks. 65% of large banks indicate that model risk management responsibilities are carried out by separate teams, with the remaining 35% indicating either the model validation team or another team. For medium sized banks, the split is roughly equal between separate teams and the model validation team, whereas for smaller banks, this responsibility is mainly with the model validation team. In an ideal model risk management framework, model risk management responsibilities and model validation responsibilities are separated to manage competing priorities from all three lines of defence.

Figure 21. Model risk management team structure

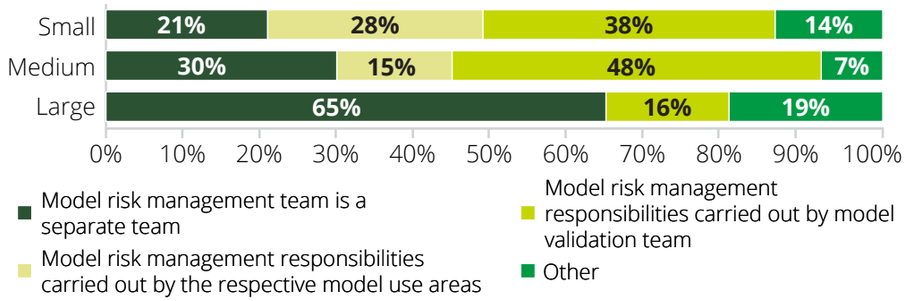
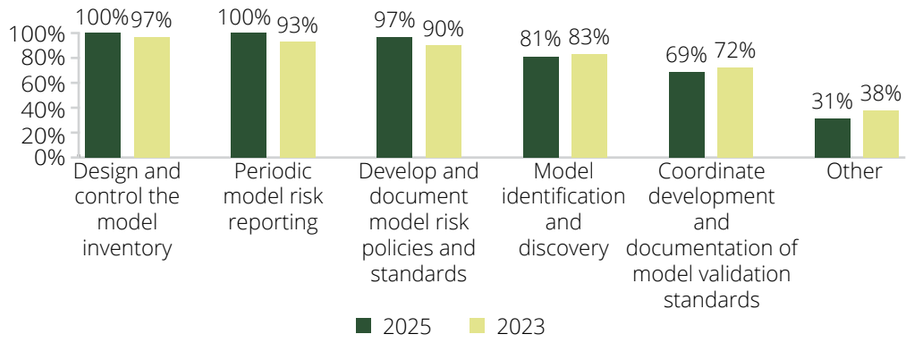


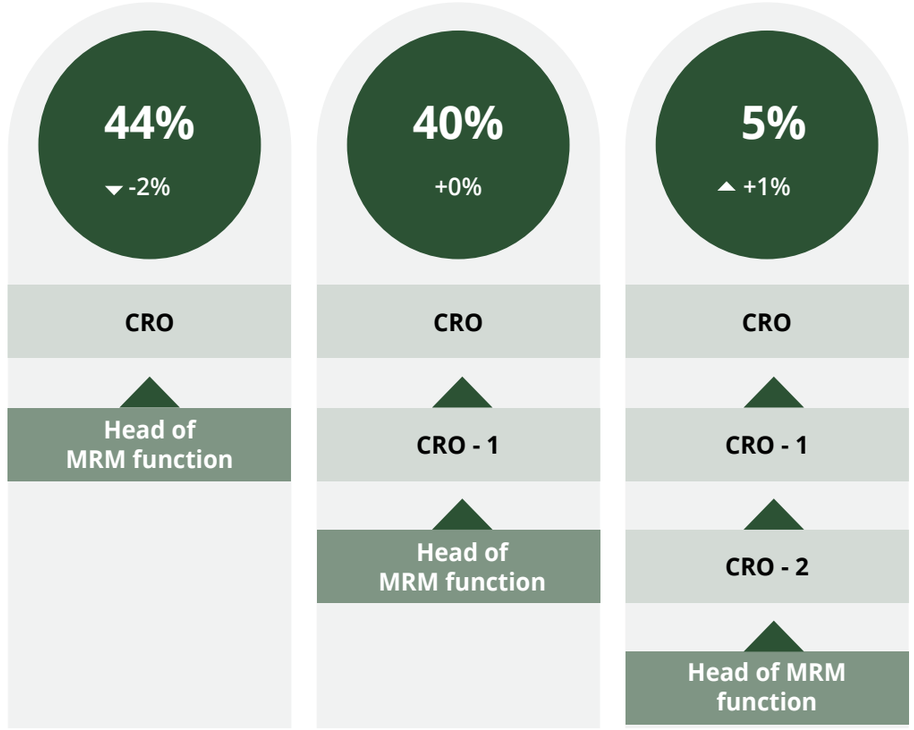
Figure 22. Model risk management team structure



Model risk management reporting lines

Used by slightly less than half of the respondents and evolving as best practices for banks, the reporting structure involves the head of of model risk management reporting directly to the CRO. Another 40% of participants indicate that the head of model risk management reports just one level below the CRO. Only a very limited number of banks indicate that the head of model risk management reports to a level that is two levels below the CRO.

Figure 23. Reporting lines to the CRO (compared to 2023)



Governance

Model development and model validation teams

Generally, small banks have fewer full-time employees (FTEs) dedicated to model development and model validation than larger banks. 76% of small banks have at most 10 full time employees dedicated to model development while for large banks this number is 3%. 54% of the largest banks have above 100 FTEs dedicated to model development, whereas for medium sized banks this number is 7%.

The numbers of FTEs are generally smaller for model validation than model development. For small banks, 93% have less than 10 FTEs dedicated to this tasks while for medium sized banks this number is 67%. 84% of large banks have less than 100 FTEs dedicated to model validation.

Several regulatory frameworks prescribe the validation of AI models to ensure fairness and reliability, such as the EU AI Act, PRA SS1/23, and BCIS. Survey findings indicated 75% of banks had less than 5% of FTEs dedicated to the validation of AI models. This number is similar for small and medium sized banks, with 76% and 81% having less than 10% of FTEs dedicated to this, respectively. For larger banks, this number is 65% and 94% have at most 10% of FTEs dedicated to AI model validation. Notably, smaller banks have a relatively larger share of FTEs dedicated to AI model validation than medium sized banks.

Respondents indicate that 39% of the banks' models are validated annually. 35% are validated either every two or three years, while the remaining 27% of the models are validated either every five years, only once or never.

Generally, there are no firm size-differences related to the frequency of model validation.

Figure 24. Number of FTEs dedicated to model development

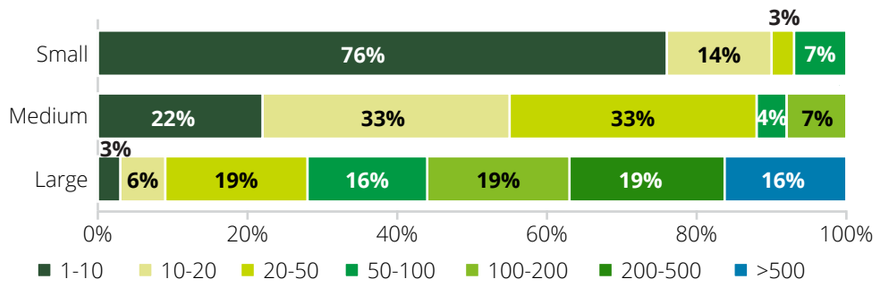


Figure 25. Number of FTEs dedicated to model validation

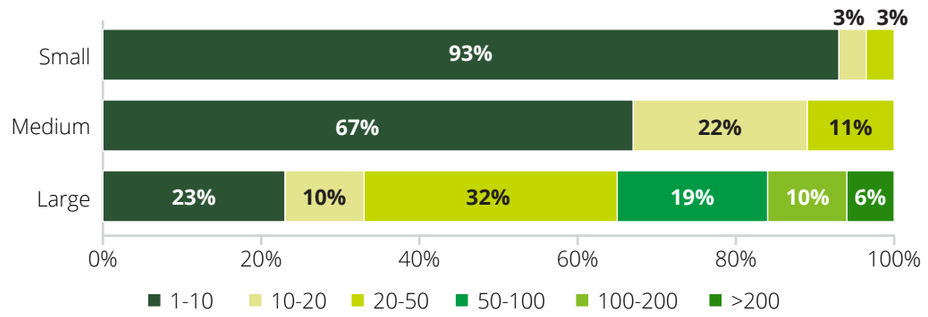


Figure 26. Share of FTEs dedicated to model validation of AI models

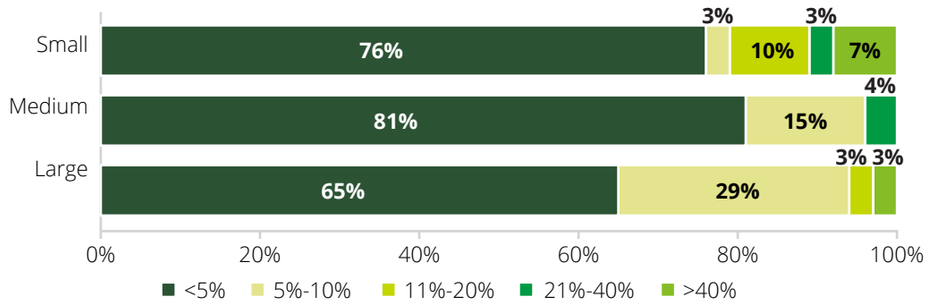
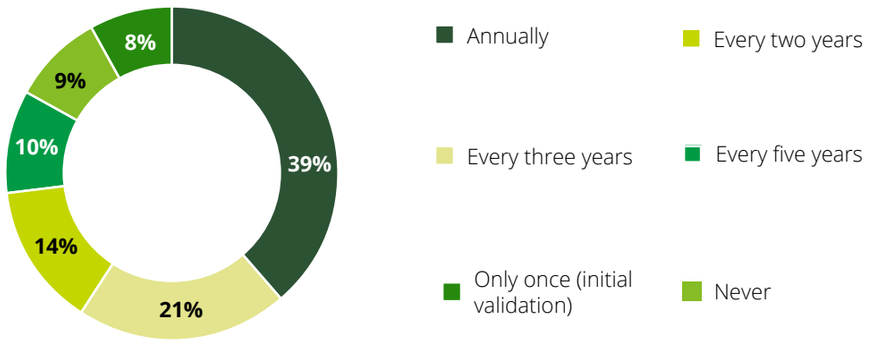


Figure 27. Proportion of models validated at least...

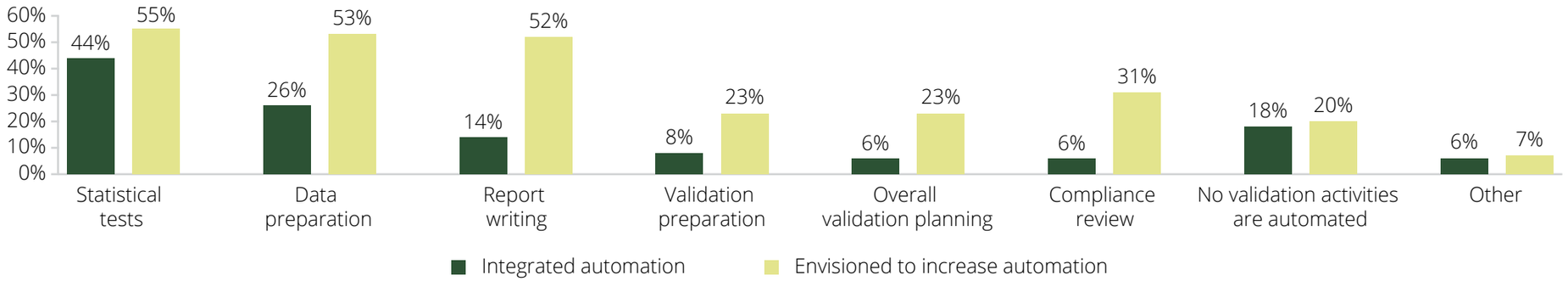


Governance

Automation within Model Validation

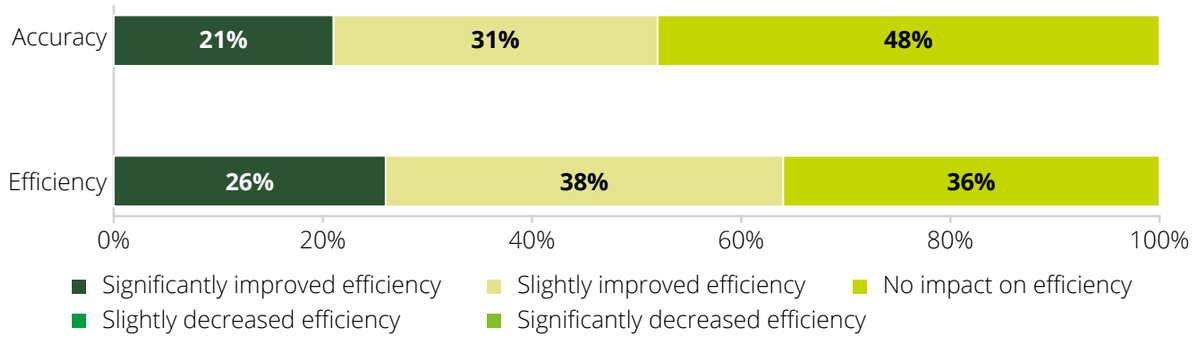
The incorporation of automation within model validation is used to reduce manual efforts, accelerate processes, and enable continuous oversight. It leverages tools for data checks, testing and monitoring. Survey responses demonstrated the following areas where automation has been integrated into the model validation framework, with the largest portion, 44% of banks, reporting that that automation has been integrated within Statistical Tests as part of their model validation framework.

Figure 28: Envisioned vs Integrated Automation within Model Validation



Furthering this, 55% of banks highlighted that they see a future increasing use of automation in the Statistical Test process, accompanied by 53% of banks foreseeing an increased use of automation in Data preparation within their model validation framework.

Figure 29: Efficiency vs Accuracy of Model Validation with the use of automation



26% of banks agreed that automation has significantly impacted the efficiency of their model validation framework. Interestingly, a large portion of banks – 36%, recorded that automation had no impact on the efficiency of their model validation framework. A similar trend can be seen regarding the impact of automation of the accuracy of the model validation process. 21% of banks agree that automation has significantly impacted accuracy, but the majority – 48%, reported that automation had no impact on the accuracy of their model validation activities.

Governance

Model risk appetite and model monitoring

Almost two-thirds of the respondents indicated that they have a defined risk appetite for model risk. Of the respondents with a risk appetite for model risk, the majority applies either quantitative limits or a combination of both quantitative and qualitative limits. This constitutes a little more than half of the total respondents.

Almost all respondents monitor their models at least partially. Only 9% of respondents indicate that they do not monitor their models or they did not respond. Models are mainly monitored by the model owner or model developer, with these shares both being 30%. Compared to 2023, the fraction of banks having their model owner monitor their models is almost unchanged, whereas in the case of the model developer being the monitor, this has decreased by 5%-points.

Figure 31.A. Existence and execution of model monitoring

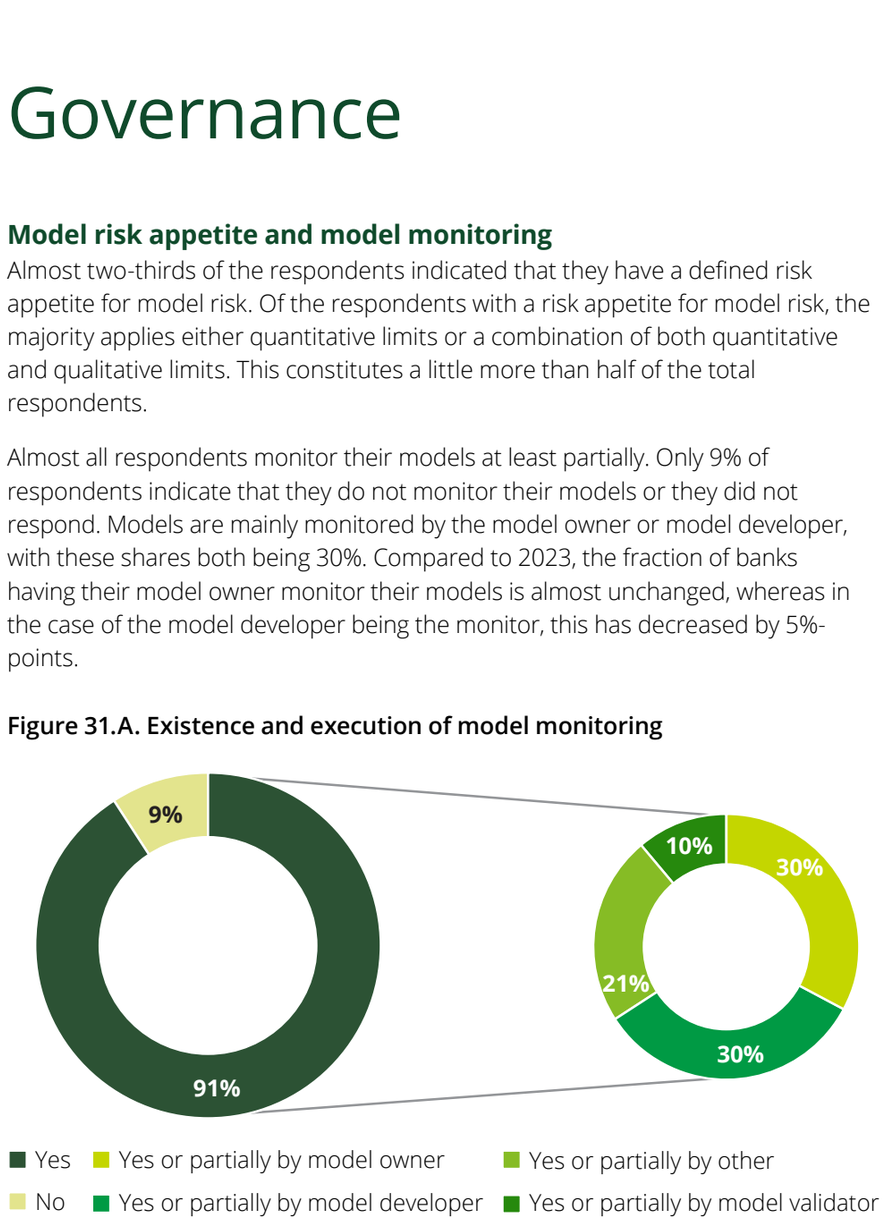


Figure 30. Banks with defined risk appetite for model risk and the characteristics of the risk appetite

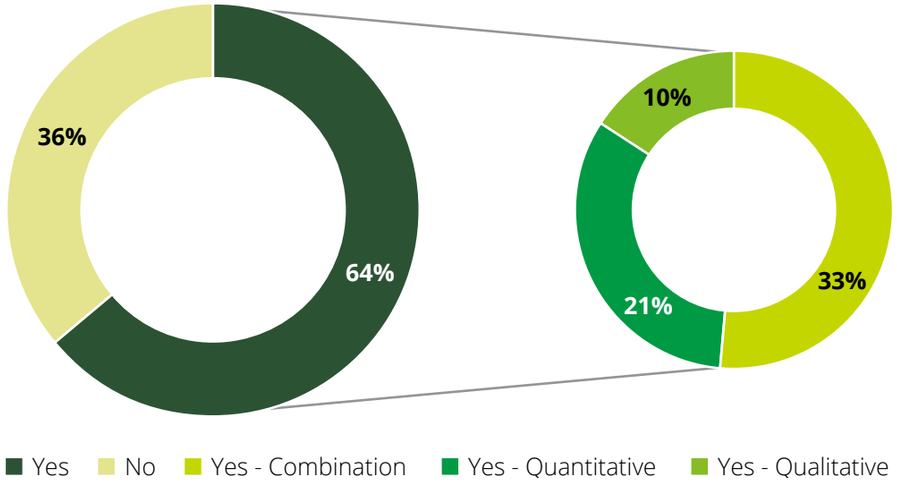
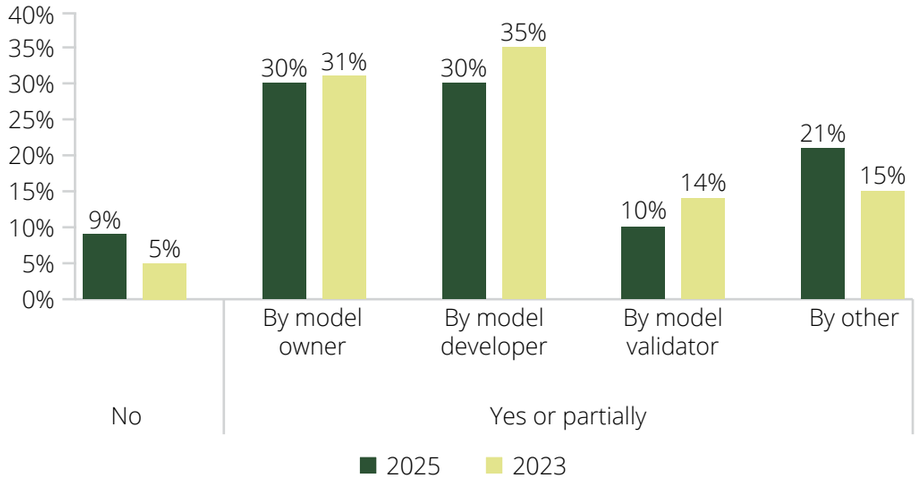


Figure 31.B. Existence and execution of model monitoring



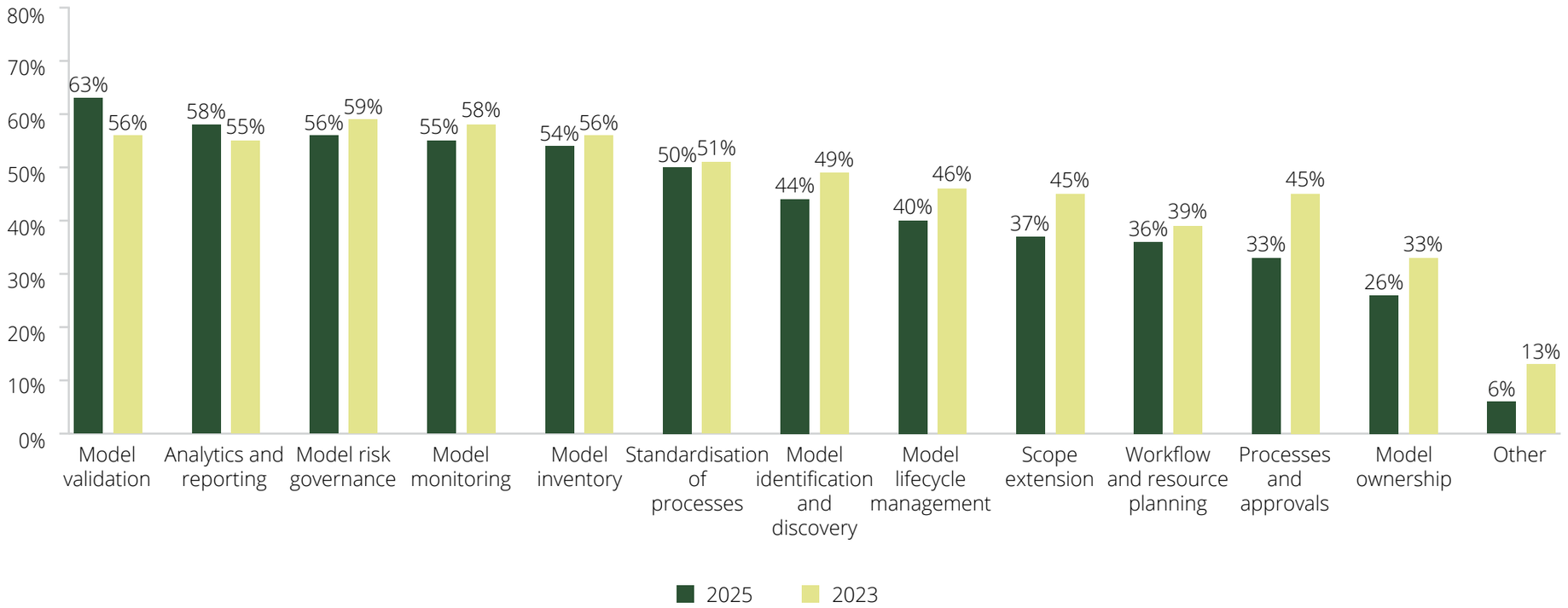
Governance

Model risk management improvements

Going forward, there are many areas where banks indicate that they intend to enhance their model risk management framework within the next few years. Half the banks or more intend to enhance their framework in the areas of model validation, analytics and reporting, model risk governance, model monitoring, model inventory, and standardisation of processes.

Some areas where banks intend to improve their model risk management have decreased notably in attention compared to 2023. These areas include processes and approvals, scope extension and model ownership. Since 2023, the attention towards these areas have decreased by 12%-points, 8%-points, and 7%-points, respectively.

Figure 32. Intended improvement areas for model risk management



AI – Current Scope and Future Considerations

This part of the survey only considers the 67% of the banks that have identified use of AI and/or ML modelling techniques in their organisation.

AI – Current Scope and Future Considerations

67% of the participants responded that their organisation uses models with artificial intelligence (AI) or machine learning (ML) techniques, compared to 56% in the 2023 survey. A clear difference in the prevalence of AI/ML modelling techniques can be observed between sizes as large institutions lead the way in AI/ML modelling adoption.

EU AI Act

The EU AI Act establishes a risk-based regulatory framework for all AI systems used within the EU. During 2024, the act was formally published by the European Union. New requirements will be introduced gradually until 2030. The goal of the act is to establish a common framework for AI regulation across the EU, to ensure that AI is developed and used in a way that is ethical, safe, and transparent.

Figure 33. Banks with AI/ML models that analyzed the impact of the proposed EU AI Act

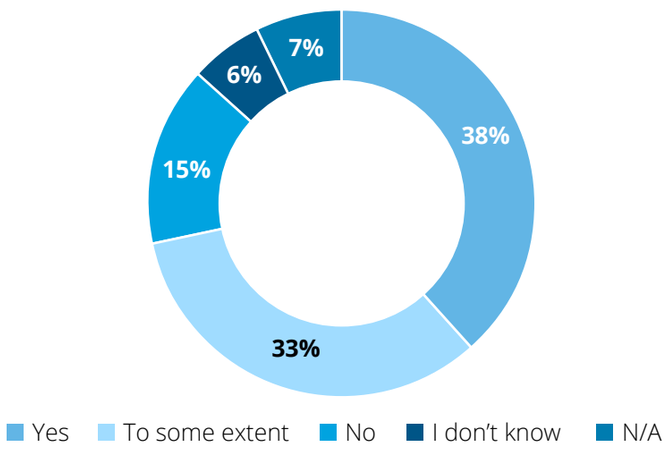
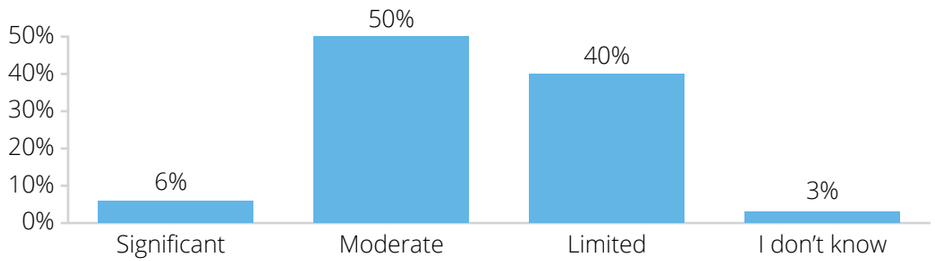


Figure 34. Required updates in MRM frameworks to incorporate requirements from the EU AI Act



Significant changes
Major changes are required in policies, procedures, and governance structures

Moderate changes
Some updates needed, but core frameworks remain largely intact

Limited changes
Minimal changes required and existing framework is largely sufficient

71% of banks have, at least to some extent, analyzed the impact of the EU AI Act on their MRM framework. Of these 71%, most banks have assessed that their MRM framework require moderate or limited updates to incorporate the proposed requirements from the EU AI Act. Taking the size of the bank into account, 95% of the large banks has performed the analyzes while corresponding figure for both medium and small banks are 64%

AI – Current Scope and Future Considerations

High-risk AI applications under the proposed EU AI Act

The proposed EU AI Act presents requirements for high-risk applications of artificial intelligence. In terms of perceived preparedness for these requirements, large banks demonstrate the highest perceived preparedness in all categories. While seemingly to some extent prepared, few banks (only around 10%) answered that they have AI use-cases defined as "High-Risk Applications according to Annex III" of the EU AI Act. Use cases of these 10% highlighted in the survey include access to and enjoyment of essential private services and essential public services and benefits, employment worker's management and access to self-employment and biometrics.

Figure 35. AI use-cases defined as High-Risk Applications according to the EU AI Act

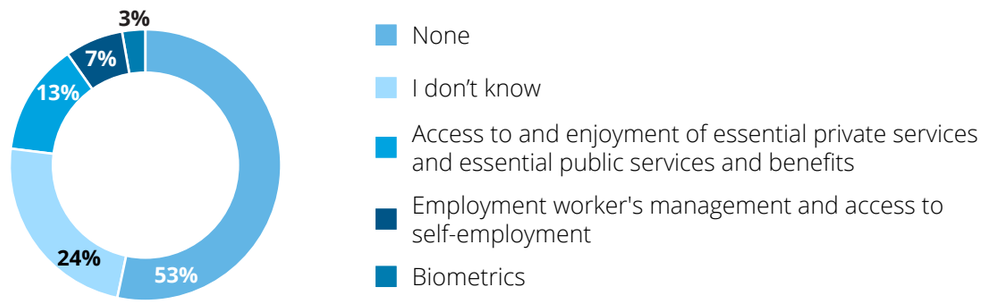
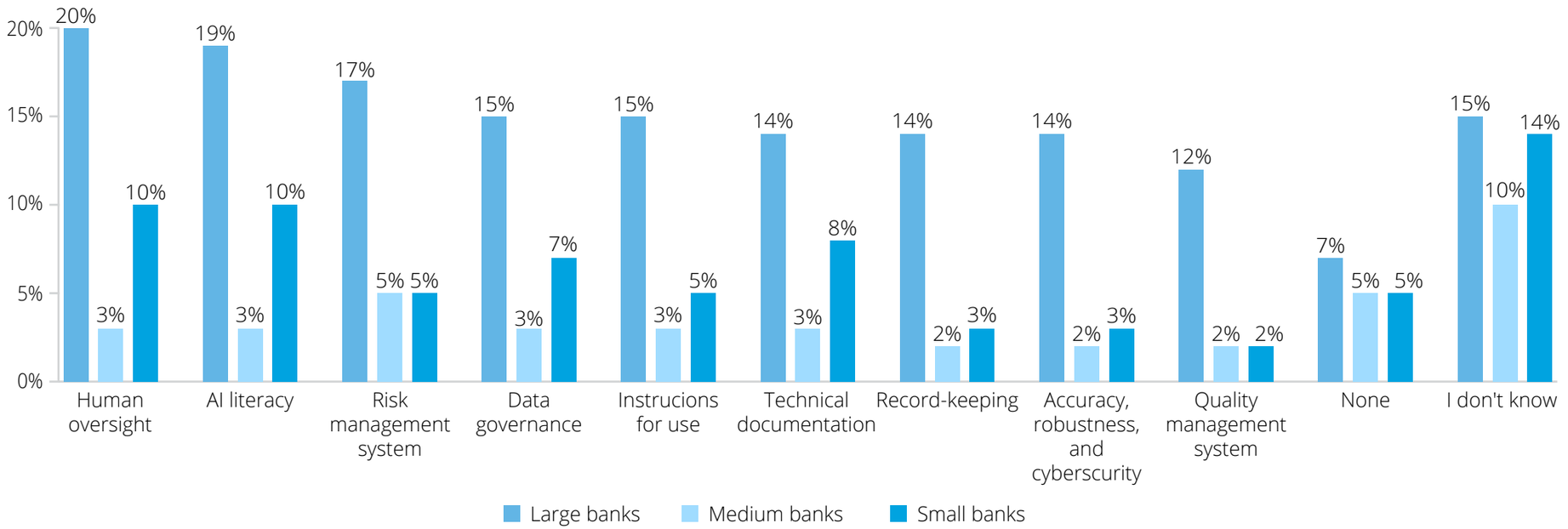


Figure 36. Preparedness for requirements regarding high-risk AI models as defined in the EU AI Act



AI – Current Scope and Future Considerations

AI/ML modeling techniques in use

The majority of the banks use AI/ML models. However, in 2023 AI/ML modelling techniques were mainly used for AML, customer experience, and marketing purposes. In 2025, we see a wider adoption in a diverse range of areas. The majority of usage still lies within credit decisioning (36%), AML (58%), and customer experience (53%). Three categories, credit risk (for management and operational processes), transaction monitoring, and cyber risk models have seen decreased adoption. AI/ML modelling techniques have not yet seen widespread adoption within market risk, Pillar 2 & liquidity, and ESG models.

Figure 37. Prevalence of AI /ML modelling techniques in banks

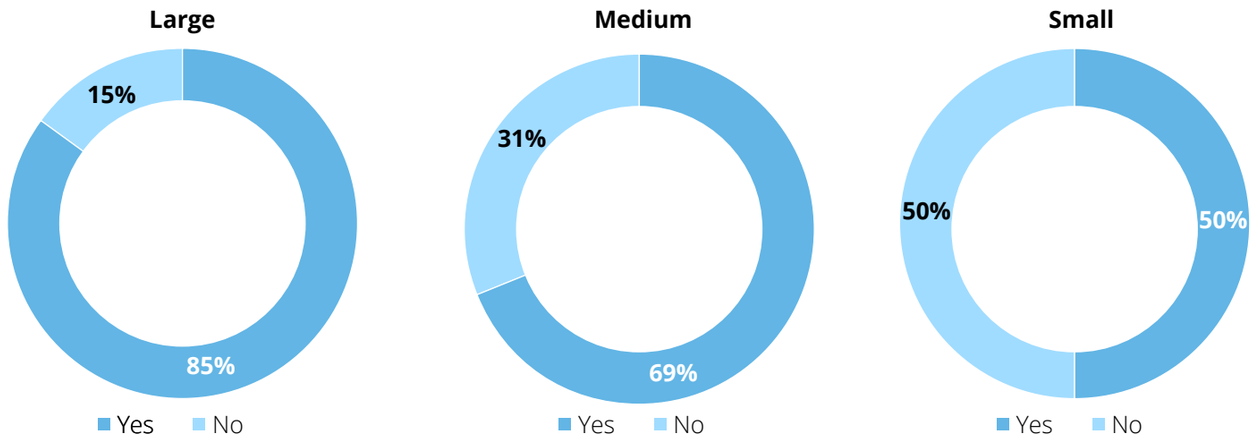
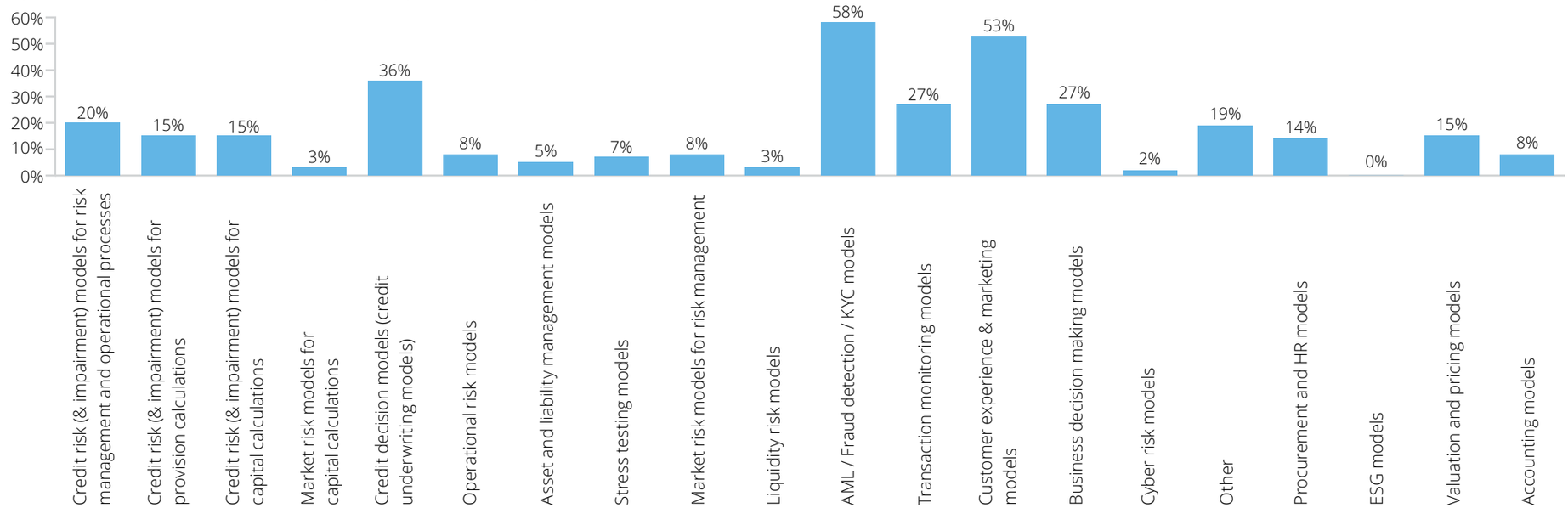


Figure 38. Use of AI /ML modelling techniques in the organisation



AI – Current Scope and Future Considerations

Significant challenges of using AI/ML models

Banks using AI/ML modelling techniques face various challenges stemming from the use of these models. In the 2023 survey challenges lay in transparency and explainability, compliance and robustness, and reliability. While challenges in these areas have declined since, this year's survey instead demonstrate growing challenges are those of safety and security together with adoption.

"Across the banks, medium size banks reports the most diverse range of challenges of using AI/ML models"

Figure 39. Reasons for challenges of using AI/ML models

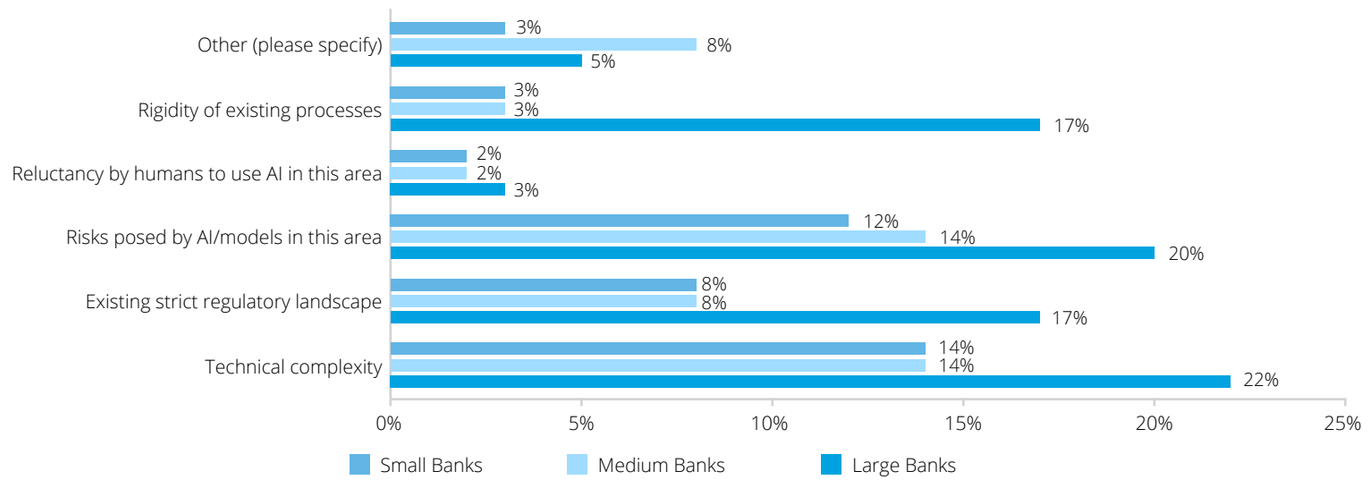
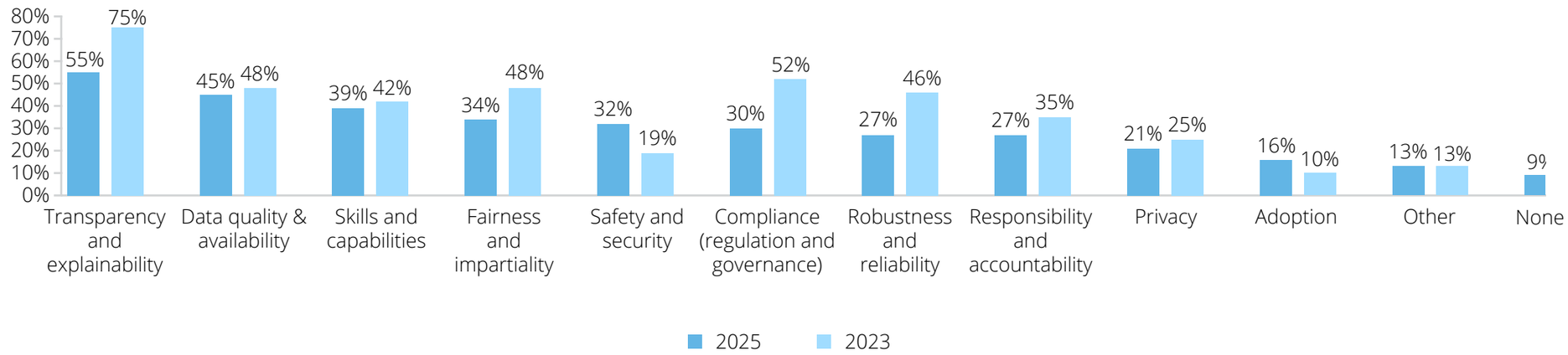


Figure 40. Significant challenges of using AI/ML models



AI – Current Scope and Future Considerations

AI/ML model definitions and model inventory inclusion

With increased adoption, AI/ML models are increasingly finding their way into model definitions and model inventories alike. 35% have established distinct model definitions for AI/ML models and 76% of banks include AI/ML models in the MRM framework. Additionally, 59% of bank which use AI/ML models, distinguish them as such in the model inventory demonstrating a significant change since the 2023 survey.

Majority of the banks use the same model tiering as for traditional models. Several banks highlight that a tiering methodology is under development, while examples from other banks that are using alternative methods include adapted or added components of the traditional tiering methodology to consider AI models.

Figure 41. Banks with model definitions distinct for AI/ML models

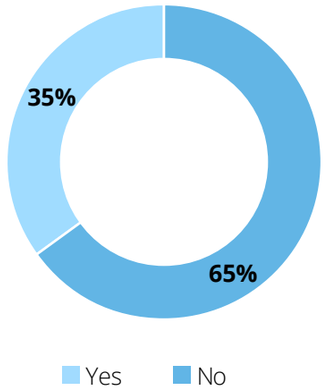


Figure 42. Banks that include AI/ML models in the MRM framework

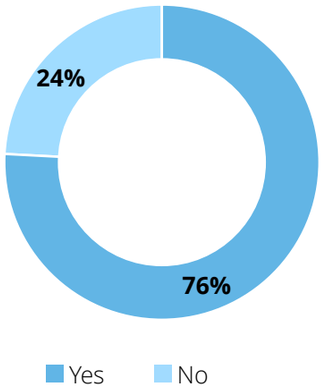


Figure 43. Classification of AI/ML models in the model inventory

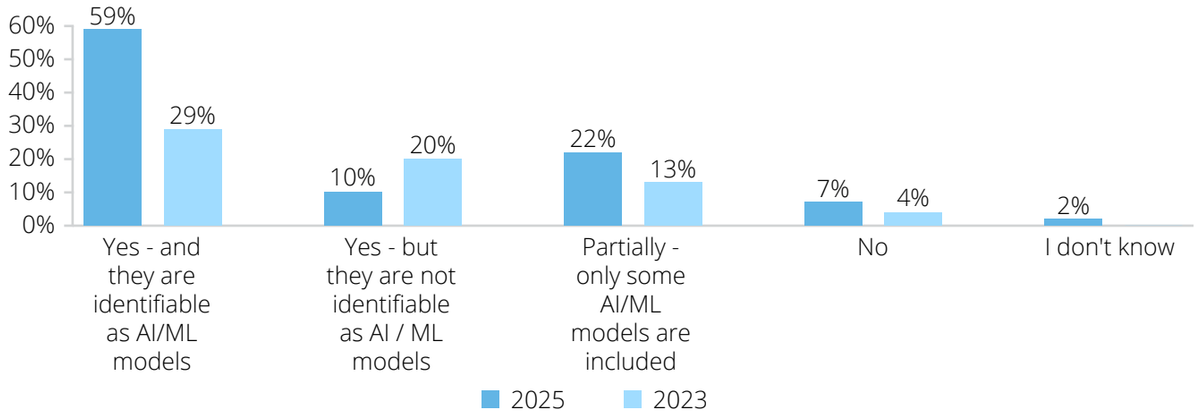
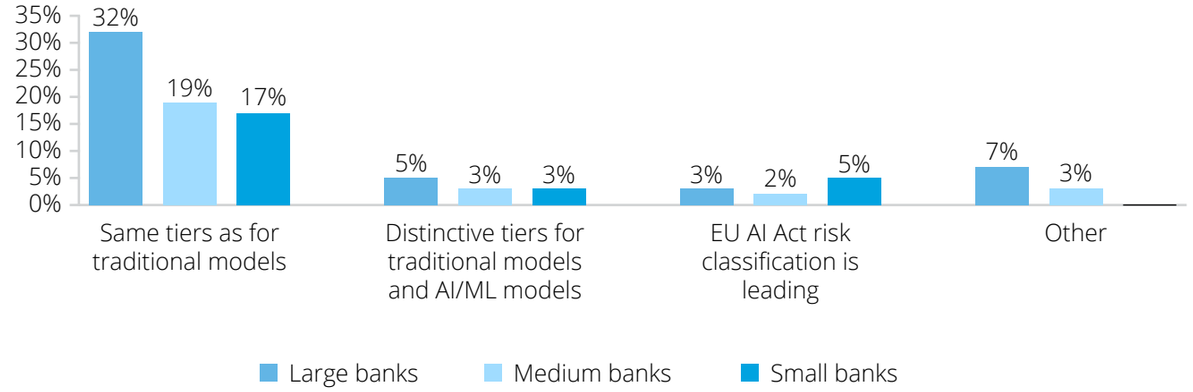


Figure 44. Risk tiering of AI/ML models



AI – Current Scope and Future Considerations

Governance of AI/ML models within the model risk management framework

98% of the banks consider their model risk management framework adequate to govern these models to at least some extent. However, only 29% agree with this statement entirely. Nevertheless, a significant improvement is observed compared to 2023 results with less uncertainties and no reports of inadequacy in the MRM framework for AI&ML models. Around 60% of the banks have developed additional model risk management processes and procedures to address the unique characteristics of AI/ML modelling techniques.

Figure 45. Banks that assess their MRM framework as adequate to govern AI/ML models

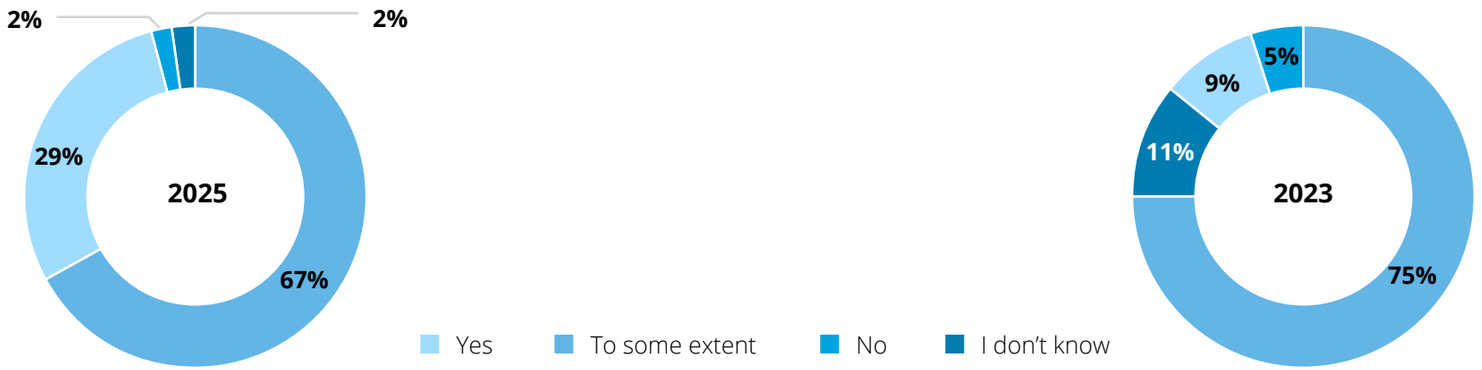
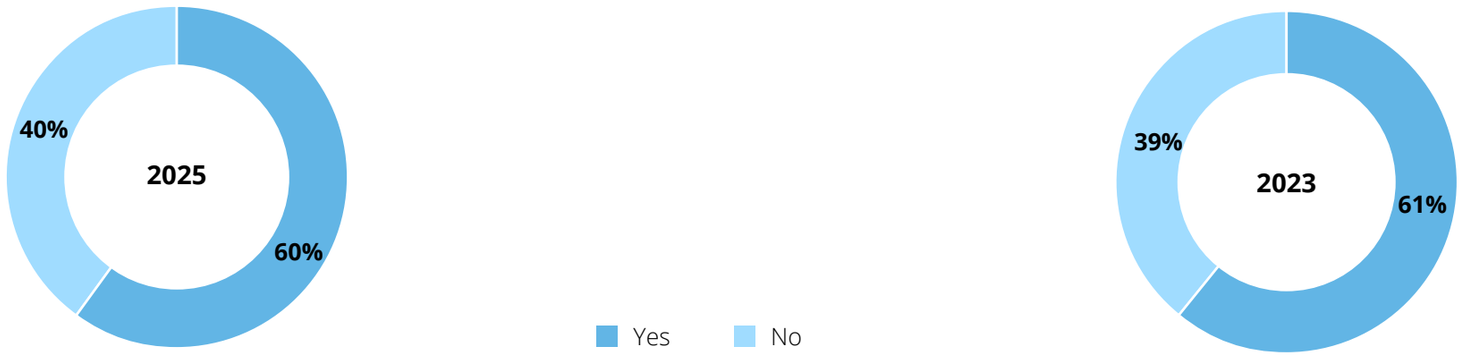


Figure 46. Banks that have developed additional processes to address unique characteristics of AI/ML models



AI – Current Scope and Future Considerations

Roles and responsibilities around AI/ML models

While many banks are making significant progress in integrating MRM teams into their AI governance structures, there remains a substantial proportion that have yet to fully establish or clarify these frameworks. Adoption of AI/ML to enhance risk management is increasing, but uncertainty persists, highlighting a need for clearer strategies and communication around AI/ML integration in risk processes.

Most banks report that their MRM teams are either fully integrated or play a collaborative role within the organisational AI control framework. This suggests a strong trend towards embedding risk management into AI governance. However, a notable minority still lack an AI control framework or are unsure of their team's role, indicating room for improvement, particularly among small and medium banks.

Figure 47. Main responsibility for AI and AI Risk Management on C-level

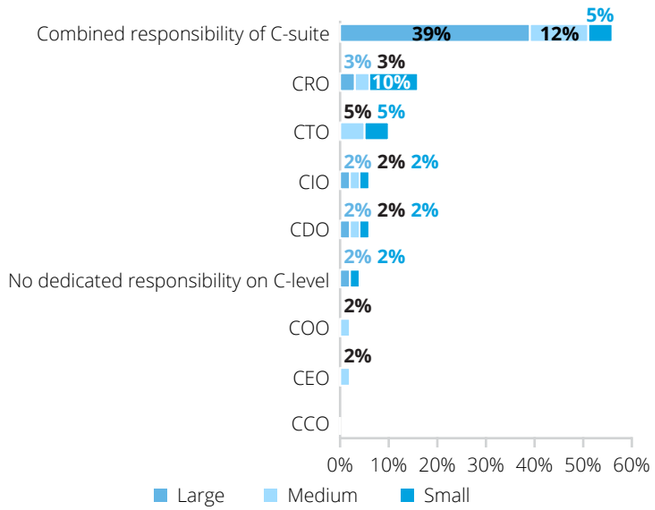
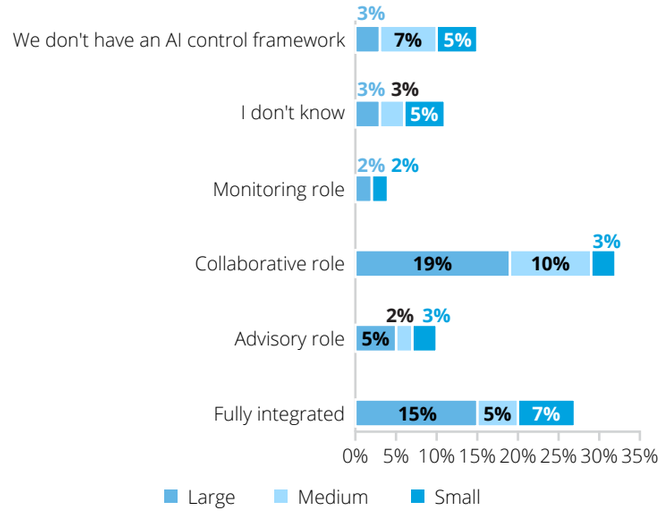


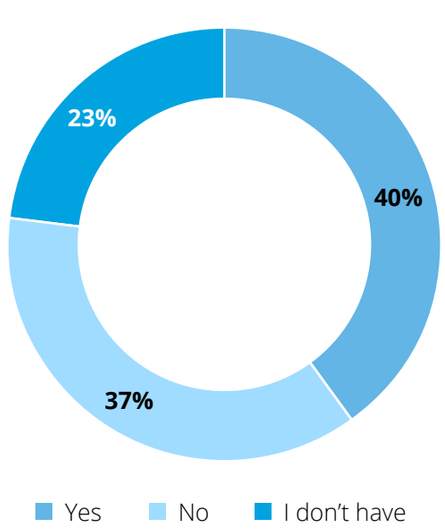
Figure 48. MRM team's role in contributing to the overarching organisational AI control framework



Use of AI/ML in the MRM process

40% of banks have indicated that they use AI/ML to enhance their MRM processes, however, uncertainty in use remain significant. This reflects both growing adoption and ongoing uncertainty or lack of clarity about the benefits and implementation of AI/ML in risk management. Common use-cases of the positive responds were report writing, coding, and other administrative tasks such as minute-taking. Many banks are currently evaluating how AI/ML can be used in the MRM process.

Figure 49. Bank using AI/ML to enhance their current MRM process



AI – Current Scope and Future Considerations

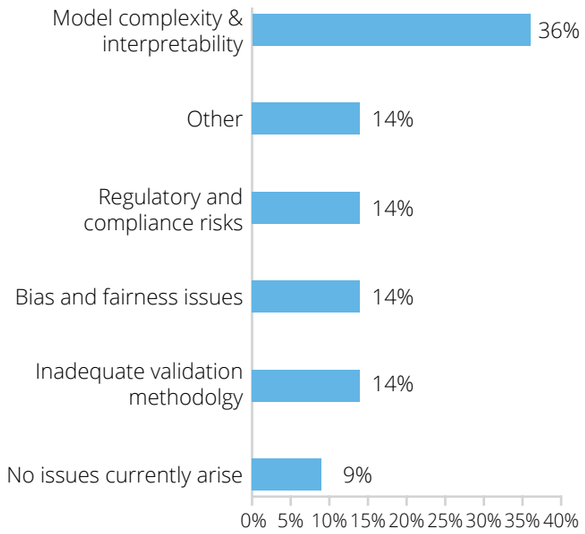
Validation of AI/ML models

Banks are increasingly aware of the distinct requirements for AI/ML model validation, with complexity and interpretability being the primary hurdles. Most institutions are adapting existing risk management frameworks rather than investing in new AI-specific governance tools, but uncertainty and challenges persist, particularly around validation standards and tool selection.

Main validation challenges

The most significant challenge faced by banks in AI model validation is model complexity and interpretability, cited by 36% of respondents. Other notable challenges include inadequate validation methodology, regulatory and compliance risks, and bias and fairness. Only a small proportion report no issues, highlighting that validation remains a key concern.

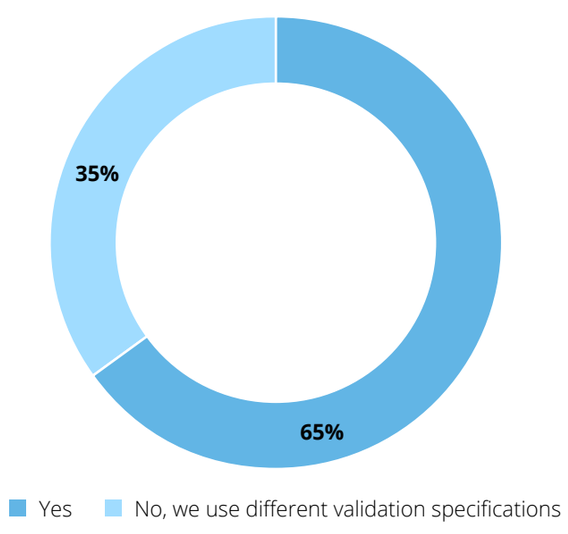
Figure 50. Main challenges currently arising around AI model validation



Validation specifications

A significant share of banks do not use the same validation specifications for AI/ML models as for traditional models, indicating a recognition of the unique challenges posed by AI/ML and a move towards tailored validation approaches.

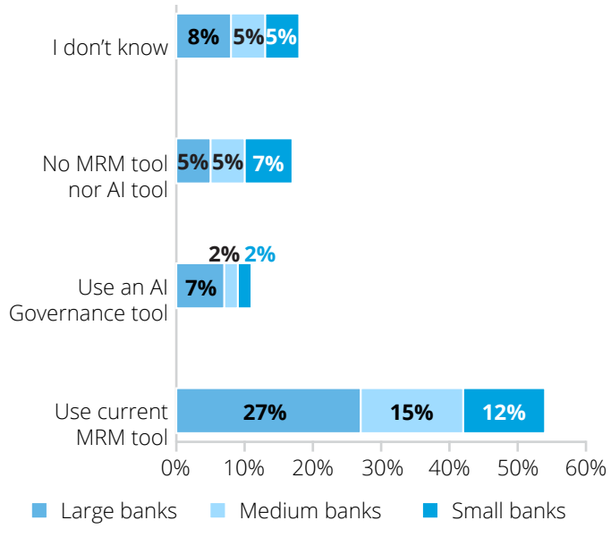
Figure 51. Banks with specific validation procedures for AI/ML models



Governance tools

Over half of the banks rely on their existing model risk management (MRM) tools to manage AI models, rather than adopting dedicated AI governance tools. Very few have implemented or plan to implement specialised AI governance tools, and a notable proportion are unsure of their approach, especially among small and medium banks.

Figure 52. Use (or intended use) of AI governance tools for AI models



AI – Current Scope and Future Considerations

Adopting generative AI and Large Language Models

Three out of four banks responded that they use generative AI (genAI) and Large Language Models (LLMs) in their organisation. Most banks which, in 2023, did not have a policy around the use of genAI and LLMs have since implemented one. 18% of all banks lack policies around the use of generative AI and Large Language Models, down from 58% in 2023.

In practice, validated use-cases for genAI seems to lag policy adoption. As observed in other areas, large banks are more mature, with 43% of the group having validated use-cases for genAI.

Figure 53. Banks using generative AI and Large Language Models

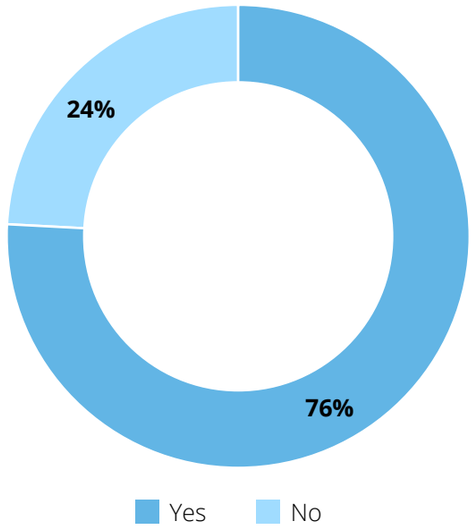


Figure 54. Policies around the use of generative AI and Large Language Models

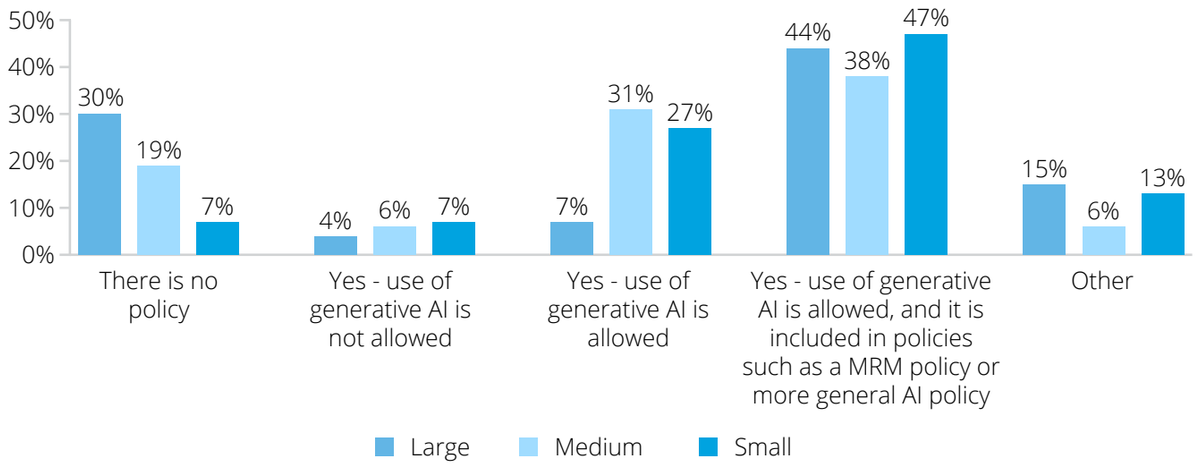
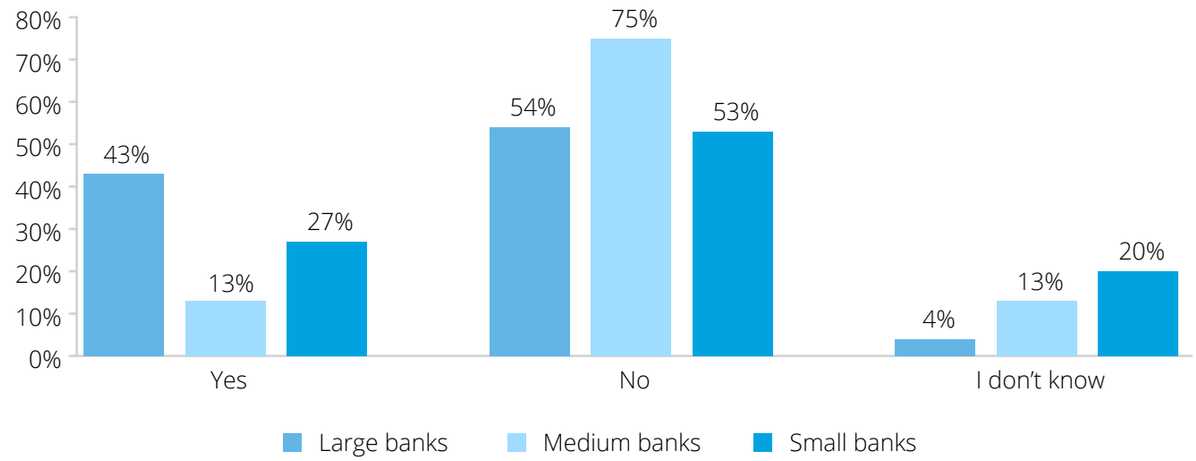


Figure 55. Banks with validated use cases for generative AI



Acknowledgements

Acknowledgements

Subject matter advisors

Roeland Baeten
rbaeten@deloitte.com

Fabio Luca Crepaldi
fcrepaldi@deloitte.it

Thomas Moosbrucker
tmoosbrucker@deloitte.de

Hervé Phaure
HPhaure@deloitte.fr

Elisabeth Werneman
ewerneman@deloitte.se

Ian Wilson
iwilson@deloitte.co.uk

Editors

This reports is the result of a team effort that includes contributions by experts of the member firms of Deloitte Touch Tohmatsu Limited listed in this report.

Special thanks to the subject matter experts mentioned to the left, but especially to the following people from Deloitte who have made this survey a success by administering the survey, assessing the results and creating this document:

Rebecca Andersson, Senior Manager

Timothy Leo, Manager

Kevin Vuong, Manager

Akshay Mungroo, Assistant manager

Balázs Hingyi, Senior consultant

Contacts

Contacts

Austria
Sascha Bakry
Partner
sbakry@deloitte.at

Belgium
Roeland Baeten
Partner
rbaeten@deloitte.com

Central Europe
Przemyslaw Szczygielski
Partner
pszczygielski@deloitteCE.com

Damir Vukotić
Partner
dvukotic@deloittece.com

Denmark
Brian Skopek Hansen
Partner
brianshansen@deloitte.dk

Viki Styrbæk
Partner
vstyrbaek@deloitte.dk

Finland
Maria Englund
Director
maria.englund@deloitte.fi

France
Hervé Phaure
Partner
HPhaure@deloitte.fr

Germany
Thomas Moosbrucker
Partner
tmoosbrucker@deloitte.de

Hungary
Krisztina S-Nagy
Partner
ksnagy@deloittece.com

Ireland
Sean Smith
Partner
seansmith1@deloitte.ie

Aoife Bayne
Partner
abayne@deloitte.ie

Iceland
Gunnar Magnusson
Partner
gmagnusson@deloitte.is

Italy
Fabio Luca Crepaldi
Partner
fcrepaldi@deloitte.it

Middle East
Ravi Ranjan
Partner
rranjan2@deloitte.com

The Netherlands
Koen Dessens
Partner
kdessens@deloitte.nl

Sjoerd Kampen
Director
skampen@deloitte.nl

Norway
Lasse Cornelius Vangstein
Partner
lvangstein@deloitte.no

Portugal
Alexandra Ferreira
Partner
alexanferreira@deloitte.pt

South Africa
Gert Myburgh
Partner
gmyburgh@deloitte.co.za

Spain
Oriol Arnau
Partner
jarnau@deloitte.es

Sweden
Gareth Greenwood
Partner
ggreenwood@deloitte.se

United Kingdom
Ian Wilson
Partner
iwilson@deloitte.co.uk

Andrew Mackay
Director
andrewmackay@deloitte.co.uk

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