

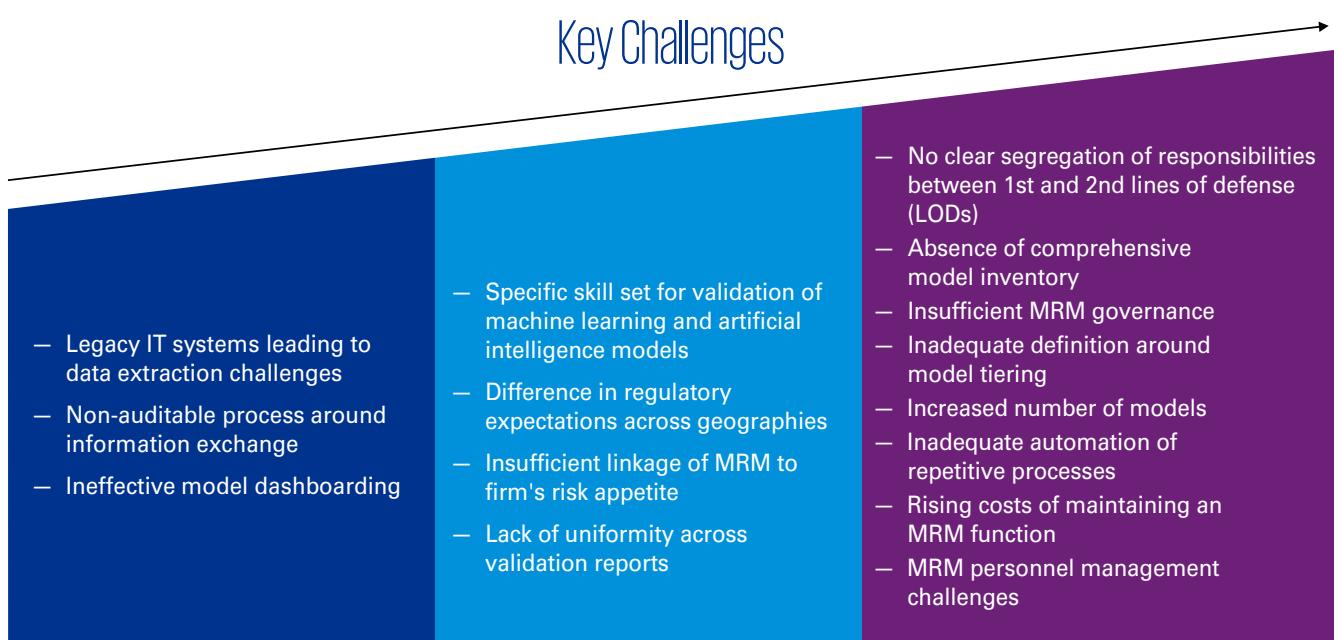
Model Risk Management as a managed service

The Model Risk Management industry landscape

Banks are highly dependent on models that are used for a wide variety of purposes across nearly all functions in a bank and have become a key component of operational efficiency, risk management and regulatory compliance. Banks use models to evaluate risks, assess capital adequacy, define funding requirements, understand customer behavior, manage data analytics and make investment decisions.

Indeed, the use — and importance — of models is only set to grow as the trend of digitalization and the use of artificial intelligence, machine learning and big data increases the number and complexity of models even more. The correct use of sophisticated models is key to making the right decisions for the future.

The imperative for banks to effectively manage and monitor their Model Risk Management (MRM) activities is only growing; therefore, MRM has become a matter of strategic importance.



Source: Model Risk Management Survey, KPMG International, 2020

How banks should address these challenges



How KPMG can help

KPMG's Model Risk Application can handle and efficiently execute key steps of the model validation value lifecycle. This technology asset has been developed using industry leading practices acquired through the course of executing multiple MRM transformations. It provides an end-to-end workflow encompassing book of work (BoW) management and the delivery of quality-controlled deliverables.

Delivery model

KPMG offers three delivery approaches to model validation outsourcing depending on your needs. We can handle your full BoW or a portion of your model inventory. Beginning with staff augmentation to a fully managed MRM service, KPMG tailors a service delivery approach that can bring you value considering your short- and long-term investment priorities.

Time and materials (staff augmentation)



- Mainly the addition of resources to the existing team to handle validation peaks
- Client is responsible for validation steering and KPIs
- Client is responsible for standardization and automation validation processes
- Resources are provided by both the client and KPMG (on a time basis)
- Client's systems and infrastructure are used for validation activities

BoW outsourcing



- Outsourcing a portion of the BoW (primarily lower tier models). Model governance is in line with bank's predefined policies
- Client is responsible for validation steering and KPIs, but KPMG steers within outsourced validation elements
- KPMG has incentive to use standardized and automated processes for predefined validation elements
- KPMG selects experienced specialists for the specific BoW
- KPMG uses client's and own infrastructure components

Fully managed MRM service

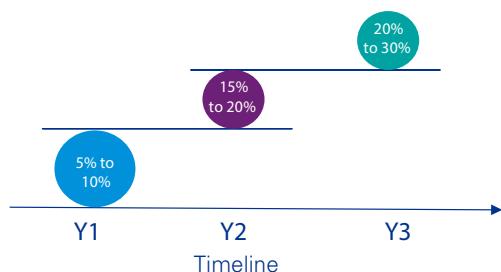


- Provides the scope of validation activities as well as the governance and organization of those activities
- KPMG is responsible for validation steering activities and for operations
- KPMG provides a highly standardized service. Strong incentive for automated processes
- KPMG responsible for organization, resource allocation and operations
- Validation activities are conducted with KPMG technology on the client's architecture

Increasing level of outsourcing activities

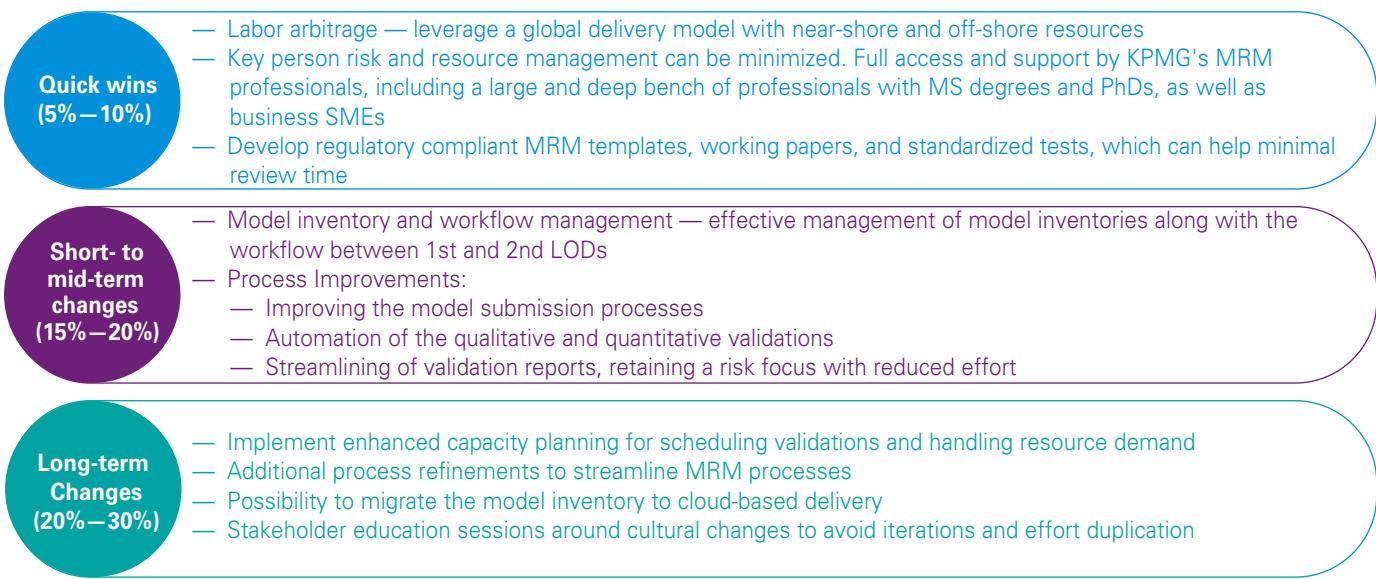
Cost optimization with managed MRM services

KPMG is currently operating model validation activities in a managed MRM services for leading global financial institutions. We can deliver estimated cost reductions of 20 to 30 percent by year three based on our experience and leading-edge technology together with the bank's current state.



Estimates rely on several assumptions, such as:

- Validations require around 10 weeks of work
- On average, internal validator costs are similar to KPMG's on-shore fees
- Bank currently performs work on-shore
- KPMG's automation tools typically exceed bank's own
- A specific blend of locations and seniorities is used



Value proposition

A Collaboration model

- Dedicated service delivery team comprising of on-shore, off-shore and near-shore validation professionals
- Multi-level quality assurance
- Can lead to cost reduction compared to fully on-shore delivery models
- Large bench to help ensure minimum delays during validation peaks

B Tools and accelerators

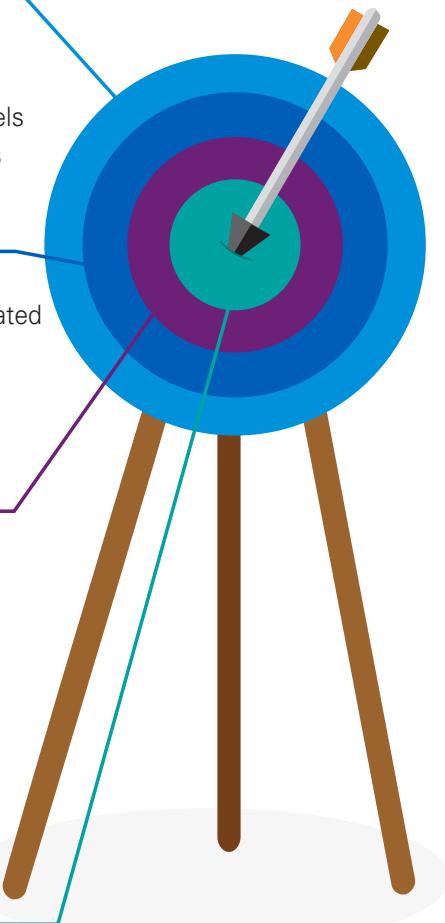
- End-to-end validation workflow tool from planning to report writing stage, thus helping to ensure the validation process is highly automated
- Can be hosted via a web-based application
- Can help ensure more consistency between validations
- Minimum licensing and maintenance costs

C Team of global professionals

- Our teams (on-shore and off-shore) work as a single team, bringing together the knowledge of global and local leading practices
- Our resources have extensive experience developing and validating diverse models across the entire model inventory (credit risk, market risk, operational risk, stress testing, capital planning and budgeting, asset and liability management, fraud and cyber risk)
- Resources with specific skill sets to handle the validation of the models (algorithmic trading, AI and ML models)
- Involvement of leading professionals for an outside-in perspective

D End-to-end transformation of MRM

- Our validators work across multiple and diverse MRM engagements
- Bring industry leading practices with respect to MRM implementations for your organization
- Along with consulting on policies and processes, they help streamline the MRM function
- Act as a strategic collaborator in the development of a MRM framework



KPMG's Financial Services Advisory professionals across multiple regions and geographies help risk organizations assess and enhance their performance by shaping their risk strategy, enhancing risk-adjusted performance and implementing pragmatic approaches aimed at improving effectiveness and efficiency.

Case study: MRM transformation of a Global Systemically Important Bank (G-SIB)

Multi-year engagement with one of the largest international banks to help transform the MRM function



Challenge

- The client identified a number of gaps between their existing MRM governance framework and regulatory requirements. They wanted assistance in developing a comprehensive MRM policy with detailed operating procedures around model development and validation
- Further, they sought KPMG's assistance in handling the validation peaks in the BoW driven by regulatory findings
- They also wanted KPMG to assist in performing implementation testing of the models in strategic IT solutions



KPMG's approach

- Together with the client, KPMG defined and implemented an enhanced model risk governance framework enabling the client to meet regulatory expectations. In the course of the implementation, the following framework elements were implemented:
 - Design and implementation of a consistent and robust MRM governance framework across the bank
 - Design and upgrade of a policy framework to help ensure full compliance with regulatory requirements and containing guidance and requirements for the "three LODs" across the model life cycle
 - Clarification of roles and responsibilities of all functions across model life cycle and development of standardized MRM processes
 - Introduction of aggregate model risk assessment, risk appetite, and reporting across the bank
 - Execution of organization-wide model inventory attestation process to help ensure completeness and accuracy of the model inventory
 - Education and training across 1st and 2nd lines of defense on the new policy prior to the rollout
- KPMG also provided end-to-end managed MRM services for specific BoW-based validations, the on-shore and off-shore teams jointly performed validations and produced validation reports for more than 500+ models across credit risk, markets risk, liquidity, AML, capital computation, valuation, etc.



Working together as one team

- There were more than 150 professionals across Switzerland, the US, the UK, India, Spain and Italy to support the bank in meeting the regulatory submission deadlines
- Panel of professionals comprising of partners and directors with deep know-how of financial risk management
- Multiple rounds of QA at the off-shore and on-shore locations to deliver "ready-to-use" reports



Benefits

- KPMG delivered Model Risk Governance Framework in line with FINMA and FED expectations
- Detailed training and validation know-how was shared with 1st and 2nd LODs to apprise them of leading practices
- KPMG delivered regulatory compliant validation reports that passed the FED supervisory review process
- KPMG assisted in updating the model risk inventory and map compensating controls, which was a key ask from FED as part of the MRM governance review process

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