

Managing Machines



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Governance is key to unlock machine learning value

Imagine a scenario where banking “bots go wild” in the financial sector — chatbots calling wrong customers, false positives in flagged transactions wasting time and expense to resolve, or systematic biases that eliminate worthy borrowers from the lending pool. What if instead of building customer trust and loyalty, a bank’s artificial intelligence (AI) and machine learning (ML) program destroys it? What if an organization is making strategic decisions or creating policies around erroneous data?

While AI/ML can create unquestionable value to an organization, it can equally destroy it. The difference between value creation and destruction may lie in effective governance.

Introduction

The proliferation of artificial intelligence (AI) and machine learning (ML) tools in financial services is undeniable, with companies seeking to use innovation for cost savings, greater insights, and tapping the wealth of data at their fingertips. Banks are beginning to realize the benefits of these innovations, capitalizing on more efficient and accurate model reporting, and the ability to systematically detect data patterns/relationships that might unlock growth opportunities or identify unknown risks. AI/ML is no longer a pipe dream; roughly 80% of banks with more than \$150 million in assets¹ have evaluated the use of ML — many have already deployed tools and features built around this technology.

With applications spanning customer service to threat intelligence and prevention, the potential for AI/ML in banking is extensive. Further, financial services companies are quickly realizing that ML is not simply about cost savings; it is a revenue driver that can enhance top-line growth.





Despite their promise, these tools can introduce new and significant risk and should be managed with the same scrutiny as other tools in the bank’s system. Since bots are still nascent, it is important to scrutinize new potential risks, including biased decision-making, unexplained outcomes, and misinterpretation of model findings.

So what should banks consider when embarking on an AI/ML journey to enhance the model risk management system?

1. “Why State Street Wants to Use AI On ‘Almost Everything,’” Pymnts.com, July 20, 2018, <https://www.pymnts.com/news/digital-banking/2018/state-street-artificial-intelligence-machine-learning>

Potential Applications Are Boundless

The applications for AI in financial services are limitless; here are some impactful use cases that we are seeing in the market today. As companies move at warp speed to scale AI programs, the following represent areas of focus in risk management. A common theme has emerged around these applications — there is no proven approach; developers and validators continue to learn and refine processes:

			
APPLICATION	DESCRIPTION	BENEFITS	RISK
Risk modeling	Development of models for credit losses, credit ratings, interest rate risk simulations, and capital scenario analysis	<ul style="list-style-type: none"> • Process significant data sets, enabling focus on qualitative analysis • Proactively identify and respond to new risks, emerging threats, and bad actors 	<ul style="list-style-type: none"> • Self-learning characteristic makes predicting future outcomes challenging • Potential biases in automated decision-making • New data relationships lead to misinterpretation of findings
Anti-money laundering (AML) transaction monitoring	Efficiently and effectively detect suspicious behavior through: <ul style="list-style-type: none"> • Intelligent customer segmentation; grouping customers by behavioral data points • More effective post transaction alerts • Improved anomaly detection enables more proactive risk mitigation 	<ul style="list-style-type: none"> • Increase operational efficiency by reducing false positives • Improved effectiveness in identifying "bad actors" • Channel efforts to investigate and react swiftly to real money laundering cases • Enhanced quality of alerts 	<ul style="list-style-type: none"> • Data quality issues lead to poor/unexplainable results • Potential lack of transparency; implementation requires statistically valid data backed by thoughtful analyses
Customer service/ chatbots	Automated assistance within customer service	<ul style="list-style-type: none"> • Provide more efficient and personalized customer service • Redeploy talent where greater value can be realized • Engage customers 24/7 • Analyze customer behavior and reactions to create a better client experience 	<ul style="list-style-type: none"> • Consumers remain wary of AI applications in banking; they seem to lack understanding in how consumer experience, financial health can be improved

Case Study

Intelligent segmentation increases bank effectiveness in catching real bad actors

To generate alerts for a historical review of correspondent banking activity, Guidehouse and Ayasdi deployed Intelligent Segmentation. The final result was 29% reduction in the final alert population, but more importantly, productivity increased as much as 10% for some rules meaning more potentially suspicious behavior was detected. The use of AI resulted in increased efficiency and effectiveness for our client.



Limited Guidance Opens Door to Regulatory Risk and Stymies Innovation

While the need for a regulatory strategy around ML is undeniable, innovation in financial services remains hamstrung by the notion that banking agencies “getting comfortable” with various contexts prior to use. This means that companies will likely need to maintain manual and automated models in parallel in the near term.

Though regulators including the Office of the Comptroller of the Currency and Treasury Department remain reserved around the use of machine learning and other innovation techniques, there is also enthusiasm, particularly around the increased accuracy of record-keeping and financial calculations. These agencies are committed to the managed growth of automation and the potential efficiencies, accuracy, and access it can provide. Regulators are also motivated to meet the needs of smaller and emerging businesses, recognizing the more secure environment and reduced need for human intervention that these solutions provide.

That said, very little regulatory guidance around ML-based models has been issued — financial institutions should ensure that existing guidance is being followed. The following represents minimal regulator guidance regarding AI/ML-based model use:

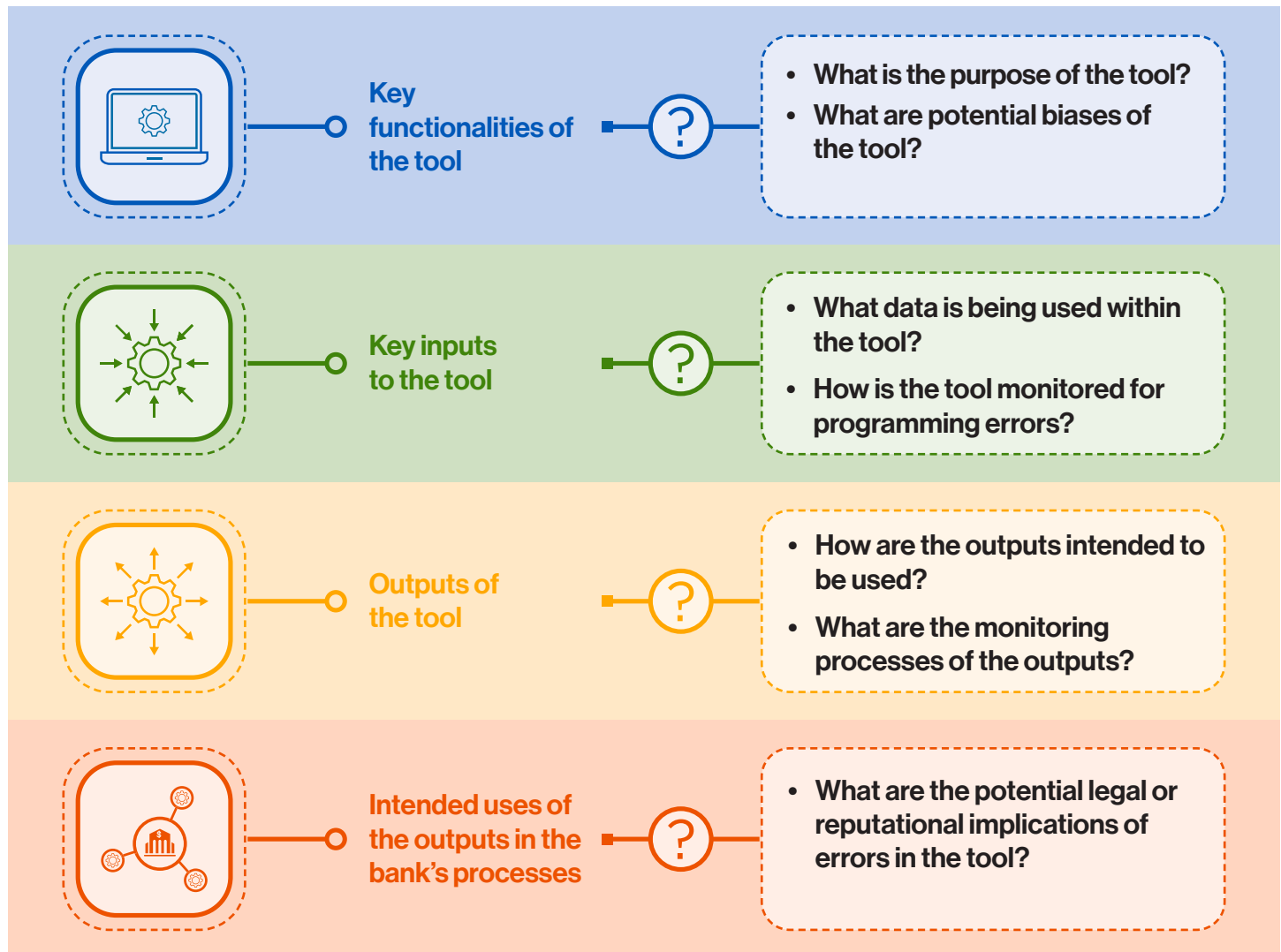
- In October 2018, the regulators commented on innovation in Bank Secrecy Act/Anti-Money Laundering (BSA/AML) modeling and noted that banks will want to demonstrate the strengths of these new innovations and the bank’s overall BSA/AML guidance.
- Additionally, in November 2018, Lael Brainard of the Federal Reserve Board of Governors addressed a conference on the risks of AI-based models and the possibility of federal regulation.²

These agencies are committed to the managed growth of automation and the potential efficiencies, accuracy, and access it can provide.

2. Lael Brainard, “What Are We Learning About Artificial Intelligence in Financial Services?” Board of Governors of the Federal Reserve System, November 13, 2018, <https://www.federalreserve.gov/newsevents/speech/brainard20181113a.htm>

Unlocking Value with Proper Governance

As AI and ML become commonplace in financial services and risk models, banks must closely monitor the inherent risk of these new tools. Banks should conduct a robust risk assessment of AI/ML tools and create management processes to manage the risk, remembering that AI/ML models may fit into existing risk frameworks, but may also require an updated framework. The risk assessment should consider:



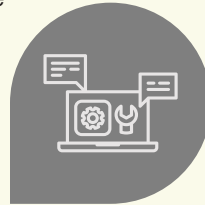
Unlocking Value with Proper Governance (continued)



Banks should then consider these elements against existing risk policies and procedures to determine if they fit into an existing risk framework, or if a new one should be developed. For example, a model built using ML techniques may fall under the bank's definition of a model, and therefore, would be considered a model and should be catalogued and assessed under the bank's model risk management framework. An AI tool may instead meet the definition of a computing tool and may be considered under the bank's computing

tool or operational risk policy. A third option might be that the tools do not fit into an existing framework and a new framework should be considered. Regardless of the framework in which the tool ultimately resides, the bank should include the tools in the appropriate system and create a monitoring and testing plan.

It is critical that banks continue to apply the same degree of scrutiny to AI-based models as to traditional models. Banks should be able to rigorously validate and assess the decision-making of their analytics tools. Banks should update their policies in model development and model risk management to articulate the bank's philosophy with respect to the use and validation of AI/ML models. Additionally, maintaining a rigorous audit trail regarding the uses of AI in financial models is critical. Any AI-determined or AI-supplemented results should be used primarily when they are easily understandable and explainable.



5 Key Considerations For Banks Looking To Embark On A Machine Learning Journey

1



Governance should be part of initial discussion when embarking upon the machine learning journey.

Prioritize business units that can quickly benefit from machine learning implementation without taxing the current risk framework/introduce new risk(s).



2

3



Identify new risk elements and determine whether the current risk framework can mitigate these risks or if new policies and procedures should be developed.

Categorize the model under the appropriate risk policy (computing/operational/model risk) and create a monitoring and testing plan.



4

5



Continuous validation of financial model “explainability” — users need to understand the calculations processed by financial models to authenticate their assumptions and results and implement ongoing monitoring.

AI and ML offer extraordinary opportunities to increase the performance of models. These models do, however, present a responsibility to banks to ensure that the associated risks are being measured and managed effectively. In making governance a key tenet of the ML journey, banks can truly unlock its value. Companies that are adept at cross-functional collaboration will benefit from the ability to safely scale ML — enabling operational efficiency, top-line growth, and speed to market.



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