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# Transforming Banking Through Data and Analytics



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## Executive Summary

In the current banking landscape, where increasing offerings from fintechs and digital banks have made product differentiation more challenging, data mastery is a strategic imperative for banks seeking to compete. This report examines how banks can enhance their operations through the application of data analytics. It examines key use cases, capability assessment frameworks, and implementation strategies based on research conducted with retail banking executives and industry experts. In collaboration with Datos Insights, the American Bankers Association (ABA) has also developed a model to assess a bank's position on the continuum. Banks can evaluate their current capabilities across the five dimensions of the model to identify their most significant gaps and most immediate opportunities for improvement.

These are the key findings from this report:

- **Data mastery has become a competitive arms race in banking:** Banks with superior data capabilities derive significantly more value from their operations, enabling enhanced decision-making, improved customer retention, competitive differentiation, operational efficiency, and revenue growth through personalized customer experiences.
- **Banks face multiple data challenges:** Banks typically struggle with fragmented data across multiple systems, intuition-based decision-making, poor data quality, skills gaps, time-consuming reconciliation efforts, and regulatory compliance risks.
- **Effective data analytics is potentially transformative for banks and can deliver a tangible business impact:** A 360-degree customer view, enhanced marketing effectiveness, granular profitability analysis, and improved risk management are the most compelling use cases for data analytics proficiency.
- **A bank's data capability evolves across three distinct stages:** Organizations progress from a traditional stage characterized by siloed data and limited capabilities, through an evolving stage with improved but inconsistent capabilities, to a transforming stage where data-driven decision-making becomes embedded throughout the enterprise.
- **External partnerships accelerate banks' data journeys:** Most community banks cannot achieve high data capability without the assistance of third-party analytics partners, which provide specialized expertise, technology infrastructure, skills augmentation, and industry perspective to complement their internal capabilities.

# Introduction

In a business environment where new market entrants are focusing on every aspect of banking, differentiating products and services is increasingly challenging. Data and analytics present banks with a transformative opportunity to break away from commoditization and address the challenge of new tech-savvy competitors. Data mastery, defined as the enterprise-wide use of data and analytics to make informed business decisions for sustained competitive advantage, has become increasingly critical.

Data mastery has evolved from a competitive advantage to a strategic imperative. Banks face mounting pressure to transform fragmented data repositories into actionable intelligence while contending with legacy systems, regulatory demands and escalating customer expectations. Banks that successfully harness their data assets gain the ability to make superior decisions, differentiate their offerings, and drive sustainable growth in an increasingly commoditized market.

This report provides senior banking executives with a strategic roadmap for elevating their institutions' ability to use data more effectively. Drawing from extensive research with industry practitioners, it outlines practical approaches to assess current data capability, identifies high-value use cases that deliver measurable returns, and presents implementation strategies tailored to community banks. The stakes are considerable: Institutions that fail to develop robust data capabilities risk competitive disadvantages, while those that succeed will unlock significant operational efficiencies and revenue opportunities.

## Methodology

This ABA report, published in collaboration with Datos Insights, is based on comprehensive research during the first quarter of 2025, including a 2024 survey of 23 retail banking executives focused on data analytics capabilities and priorities. The survey assessed banks' current data capabilities, the challenges of implementing data analytics initiatives, and their strategic priorities for future investments. Datos Insights also moderated a roundtable discussion with the ABA Product Assessments Advisory Council members to gather qualitative insights on the practical challenges and opportunities in developing data capabilities.

This research methodology incorporated a structured data capability assessment framework that examined five key dimensions:

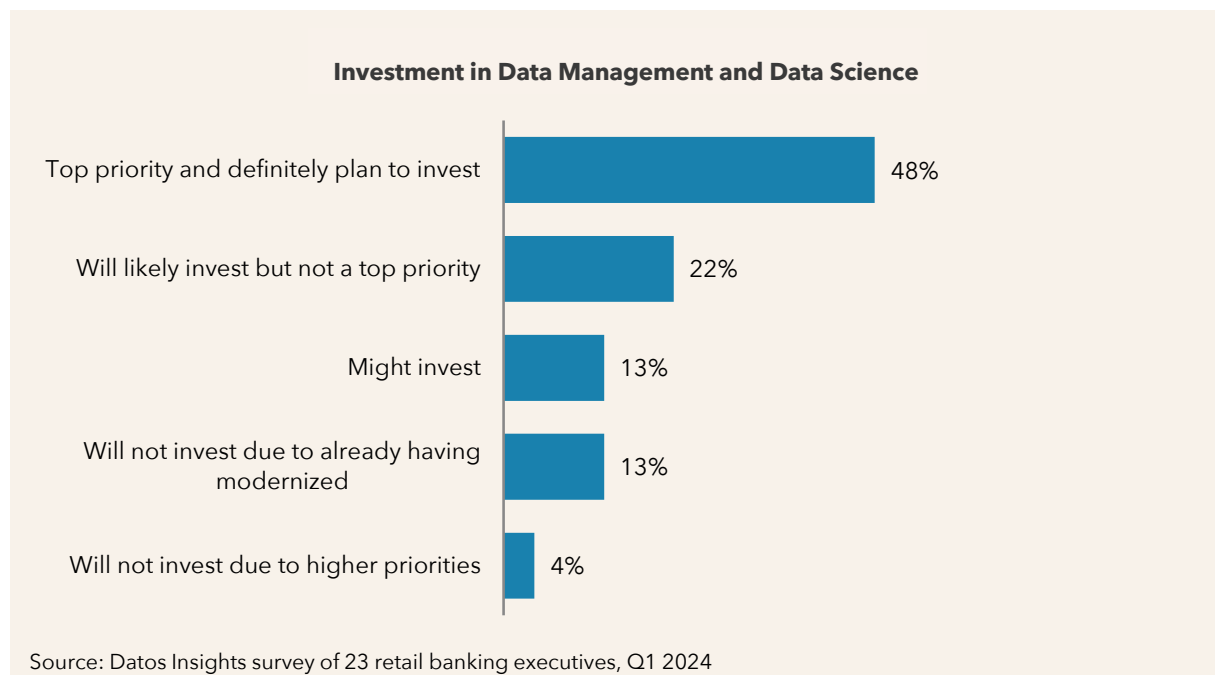
- 1.** Leadership and organization
- 2.** Strategy and execution
- 3.** Data governance
- 4.** Data fitness
- 5.** Architecture and technology management

This framework enabled the consistent evaluation of banks' current capabilities and the identification of common gaps across the industry.

# Why Focus on Data Analytics?

Forward-thinking institutions are investing significantly in their data infrastructure. Cisco estimates this spending will increase 15% annually between 2025 and 2030.<sup>1</sup> It is widely understood that upgrading community banks' data analytics capabilities will require significant allocations that demand executive-level attention and strategic management (Figure 1).

**Figure 1: How Important Is Investment in Data?**



Why is data infrastructure critical now? The banking industry stands at a critical inflection point as artificial intelligence (AI) transforms core operations, customer experiences and risk management frameworks. While AI offers the potential for significant efficiency improvements and competitive advantages, many banks find it challenging to align their existing data infrastructure with the advanced demands of today's AI technologies.

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<sup>1</sup> "Privacy as an Enabler of Customer Trust: CISCO 2024 Data Privacy Benchmark Study," CISCO, 2024, accessed on August 19, 2025, [https://www.cisco.com/c/dam/en\\_us/about/doing\\_business/trust-center/docs/cisco-privacy-benchmark-study-2024.pdf](https://www.cisco.com/c/dam/en_us/about/doing_business/trust-center/docs/cisco-privacy-benchmark-study-2024.pdf).

For banks to harness the benefits of AI, they must have access to relevant data. Data access hinges on data infrastructure.

## Applying Data Analytics to Business Processes: Value Creation

Banking institutions must justify technology investments with measurable business outcomes. Data analytics represents a strategic pivot toward evidence-based decision-making, creating competitive advantages and driving financial performance.

These are the four pillars of value creation:

- **Enhanced decision-making:** Data-driven capabilities transform operations from reactive to proactive. Executives gain real-time insights that inform strategic choices during market volatility, product launches and competitive positioning. This translates to faster market response times, more accurate risk assessments and improved resource allocation.
- **Competitive differentiation:** Superior data utilization enables personalized customer experiences that competitors are unable to replicate due to the inability to garner the resources and will. This creates sustainable advantages that appear in customer acquisition costs, lifetime value calculations and market positioning.
- **Operational efficiency:** Analytics drives efficiency through process automation and reduced manual effort. The transition from labor-intensive reconciliation to automated data quality management represents one of the most immediate value opportunities, freeing the workforce to focus on higher-value activities.
- **Revenue growth acceleration:** Better customer insights lead to improved product development, effective cross-selling strategies, and enhanced experiences that drive revenue growth. Marketing effectiveness improves dramatically through data-driven segmentation and personalization.



# Delivering Business Impact

To realize tangible value from data investments, banks should focus on specific business functions that deliver impact. Four high-value applications provide compelling examples of how data analytics transform banking operations: banking relationships and a 360-degree customer view; marketing effectiveness and customer engagement; profitability analysis; and compliance and risk management.

## Banking Relationships and 360-Degree Customer View

Developing a comprehensive view of customer relationships is the foundation of data-driven banking. This use case enables institutions to understand the full scope of customer interactions across all products, channels and times. It can also identify the lack of interaction and allow a bank to identify and focus on re-engaging disengaged or at-risk customers.

With a 360-degree customer view, financial institutions can identify cross-selling opportunities based on relationship patterns and life events while anticipating customer needs before they arise. This allows banks to develop more accurate customer segmentation strategies and reduce customer attrition by identifying at-risk relationships early in the process.

Without this capability, banks struggle with fragmented views of customers, leading to missed opportunities and inconsistent service experiences. Creating an accurate 360-degree view requires integrating data across multiple systems, which poses challenges that become increasingly complex as the number of banking channels and products expands. The interconnected nature of modern banking demands data integration capabilities that can synthesize information from disparate sources into actionable customer insights.

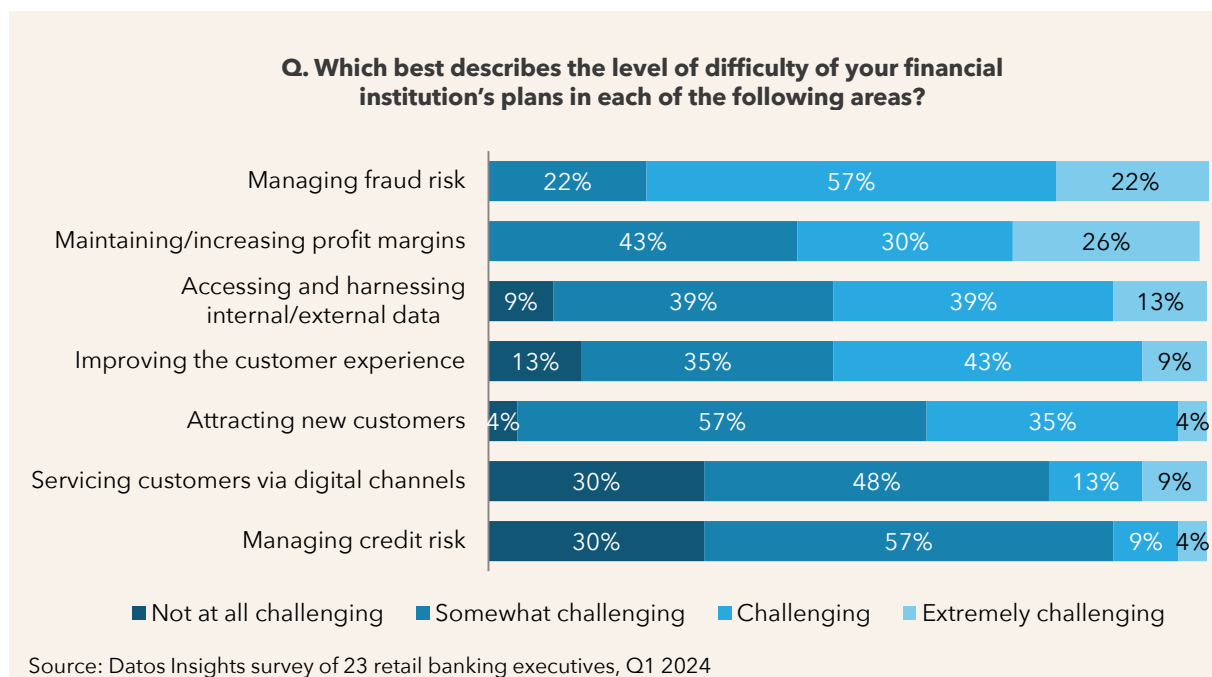
## Marketing Effectiveness and Customer Engagement

Data analytics transforms marketing from a cost center into a strategic business driver by enabling targeted, personalized customer engagement. Rather than operating on assumptions or broad demographic categories, financial institutions can craft precision-targeted campaigns that resonate with specific customer behaviors and preferences.

This transformation begins with data-driven customer segmentation that goes beyond traditional demographic boundaries. Banks can identify distinct behavioral patterns that reveal how customers interact with financial products and services. These insights enable the design of targeted campaigns that address specific customer needs, creating more meaningful connections between the institution and its clientele.

Datos Insights research reveals that 52% of banks find improving customer experience challenging or extremely challenging (Figure 2). Data analytics applied to marketing programs can significantly enhance the customer experience, although 52% feel that data analytics itself is challenging as well.

**Figure 2: Effort Associated With Executing Strategy Components**



Marketing attribution models provide the analytical backbone for measuring true return on investment, allowing institutions to track which initiatives drive actual results rather than relying on outdated last-touch attribution methods. Dynamic content personalization across digital channels ensures that each customer receives relevant messaging at the optimal moment in their financial journey.

The opportunity is not lost on bank leadership – 70% of banks are likely to invest in upgrading data management and data science capabilities, recognizing the competitive advantage that superior customer engagement delivers.<sup>2</sup>

Effective implementation requires integrating transaction data, customer demographics, and digital interaction data to create a comprehensive picture of customer preferences and responses. This holistic view enables institutions to predict customer needs, optimize touch point interactions, and deliver personalized experiences that drive both satisfaction and profitability. When executed successfully, this approach significantly enhances marketing effectiveness while simultaneously reducing acquisition and retention costs, thereby creating a virtuous cycle of improved performance and increased customer loyalty.

## Profitability Analysis

Many institutions still struggle to connect profitability measures across products and customers, limiting their ability to make data-informed decisions about resource allocation. Data analytics can help bridge those gaps, giving banks a granular view into product mix optimization and account-level profitability tracking. These insights enable banks to make more informed strategic decisions about products, customers and resources.

### Product Mix Optimization

Data analytics provides banks with unprecedented visibility into the performance of their product portfolios. Financial institutions can now evaluate the true profitability of each product, moving beyond traditional revenue metrics to understand the complete cost structure and margin dynamics. This in-depth analysis reveals which product combinations create the most valuable customer relationships, enabling banks to strategically position complementary offerings.

Banks can design product bundles that maximize lifetime value by understanding how different products interact within customer portfolios. The analytics reveal patterns showing which combinations drive higher engagement, reduce attrition and generate sustainable revenue streams. Furthermore, understanding how products perform across different customer segments enables targeted cross-selling strategies that align with specific demographic and behavioral characteristics.

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<sup>2</sup> Datos Insights survey of 23 retail banking executives, Q1 2024.

## Account-Level Profitability Tracking

Developed data capabilities or data maturity elevate profitability analysis beyond product-level insights to individual customer relationships. Banks can calculate the true profitability of each customer account, incorporating all revenue streams, operational costs and risk adjustments. This comprehensive view identifies which customers generate the most value, considering both current contributions and future potential.

Armed with this intelligence, banks can tailor service levels based on relationship value, ensuring that high-value customers receive the appropriate attention while optimizing resource allocation across their entire customer base. The analytics also enable sophisticated modeling of how pricing changes impact profitability, allowing banks to test scenarios and implement strategic adjustments that maximize returns without compromising customer satisfaction.

**“Understanding profitability at the account level has always been powerful for banks, but it has not been easily attainable.”**

*ABA Member, Product Assessments Advisory Council*

## Compliance and Risk Management

Data analytics is the foundation of risk mitigation and regulatory compliance, as failures in these critical areas can have a significant impact on financial performance and institutional reputation.

Financial institutions with developed data capabilities gain a strategic advantage by detecting potential fraud patterns before they escalate into significant losses. These sophisticated systems enable automated monitoring and reporting that ensures regulatory compliance while simultaneously identifying credit risks much earlier in the lending cycle. Perhaps most importantly, these capabilities allow institutions to anticipate and address operational risks proactively rather than reactively.

Today's regulatory environment presents an ever-shifting landscape where requirements continuously evolve and multiply. Robust data governance and analytics capabilities once represented a competitive advantage. Now, they have transformed from optional enhancements into absolute business necessities fundamental to survival. Institutions that

fail to invest in these foundational elements risk falling behind in performance metrics and their ability to operate within increasingly complex regulatory frameworks.

The institutions that thrive in this environment treat their data infrastructure as a strategic asset rather than a compliance burden, recognizing that superior analytics capabilities create sustainable competitive advantages across multiple business functions.

# Three Bank Use Cases

The following sections offer a deeper look at three specific transformative data analytics use cases among ABA member organizations, focusing on loan portfolio management optimization, 360-degree customer view and merchant opportunity analysis.

## Use Case 1: Loan Portfolio Management Optimization

**Problem:** An ABA member bank with \$650 million assets under management (AUM) struggled with loan portfolio management inefficiencies caused by fragmented data sources. Critical loan information was scattered between their core banking platform and ancillary systems, preventing real-time visibility into portfolio status and performance. Users across the organization, from loan officers to senior management, relied on multiple static reports that were time-consuming to generate, expensive to maintain and quickly outdated. Workflow management for critical processes, such as overdraft monitoring and endorsements, was manual and reactive, resulting in operational risks and customer service delays.

**Solution:** The bank implemented a comprehensive data lake architecture that combined loan data from their core platform and ancillary systems into a unified information source. Using Power BI as their data management tool, they created interactive dashboards and reporting capabilities that provided real-time access to complete loan portfolio information. The platform enabled users at all levels to customize their dashboards and reports, highlighting specific outcomes relevant to their roles. The solution replaced traditional static reporting with dynamic, self-service analytics that allowed users to explore and manipulate data based on their immediate needs.

**Results:** The transformation delivered significant operational improvements and cost savings across the organization. Users now have real-time visibility into all loans in the portfolio, enabling proactive management and faster decision-making. Workflow management for overdraft monitoring and endorsements became automated and efficient, reducing operational risk and improving customer response times. The ability to build reports and interactive dashboards easily empowered users to customize their analytics experience, improving productivity and the quality of insights. The retirement of multiple static reports generated substantial time and expense savings while providing superior data access and functionality.

## Use Case 2: 360-Degree Customer View

**Problem:** An ABA member bank with \$2 billion to \$2.5 billion AUM struggled to achieve a rounded view of its customers. Customer information was fragmented across eight different systems, including core and ancillary banking systems, online and business banking systems, brokerage platforms, wealth platforms, credit card systems, mortgage systems, interactive teller machine (ITM) platforms and telephony systems. These data silos prevented relationship managers from understanding complete customer relationships, identifying cross-selling opportunities, or responding effectively to customer needs. The larger the institution, the more severe this problem becomes, with different cores for retail, small and mid-sized business, corporate and trust clients creating even greater complexity.

**Solution:** The bank built a comprehensive data warehouse that consolidated all customer touchpoints into a unified Power BI platform with department-specific apps. The team implemented a “one row per customer” approach in the central database table, solving complex householding challenges where customers had different identifiers across systems. They followed an 80% to 90% rule, focusing on the most common use cases first rather than over-engineering the solution. Core system modifications were necessary, utilizing user-defined fields to capture complex relationships that standard householding logic couldn’t address, such as property management companies with multiple limited liability corporations at different addresses.

**Results:** The platform delivered immediate, measurable value across multiple areas. Crisis response capability improved dramatically. For example, when a branch fire occurred, the team was able to quickly produce a report for branch leadership identifying all of the branch customers with information on how those customers typically interacted with the bank. Channel optimization became data-driven as data ingested into the data warehouse from the bank’s ITM platform was combined with teller transaction information from the bank’s core platform to provide trends in ITM usage by branch location and compared the volume of ITM transactions to traditional branch transactions. The system enabled proactive customer conversations based on a comprehensive understanding of the entire relationship, supported targeted cross-selling initiatives by identifying product gaps, and provided comprehensive insights, including debit card and ATM usage patterns, branch visit frequency and telephony interactions.

## Use Case 3: Merchant Opportunity Analysis

**Problem:** An ABA member bank with \$2.0 billion to \$2.5 billion AUM required competitive intelligence in merchant services to identify customers using external payment processors,

such as Stripe, and evaluate potential revenue opportunities. Without visibility into customer payment processing activities, the sales team was unable to prioritize prospects or understand market share loss to competitors. Transaction data alone wasn't sufficient to identify these opportunities or calculate potential business value.

**Solution:** The bank developed an ongoing analysis system that mined transaction data to identify merchant service usage patterns, automatically flagging customers using external processors and calculating potential volumes and transaction values. The solution required constant refinement as new competitors emerged, corporate changes affected transaction descriptions, and market conditions evolved. The merchant services director filtered analysis by specific branches, collaborated with branch managers on customer outreach strategies, and accessed real-time competitive intelligence to prioritize high-value prospects.

**Results:** The platform provided territory-based opportunity analysis, enabling sales teams to focus their efforts on prospects with the highest potential return. Sales representatives identified which customers currently use competitor services, which used them previously, and which represented untapped opportunities. The system displayed transaction volumes and values, enabling teams to engage customers in data-driven conversations about potential cost savings and service improvements. This intelligence allowed proactive customer retention and strategic market positioning against competitors.



# Getting Started With Data Analytics

Developing mature data analytics capabilities requires a systematic approach. Banks must assess their current state, understand their data landscape, and address common challenges before making significant investments in their data infrastructure. Most importantly, the organization must document real and achievable goals.

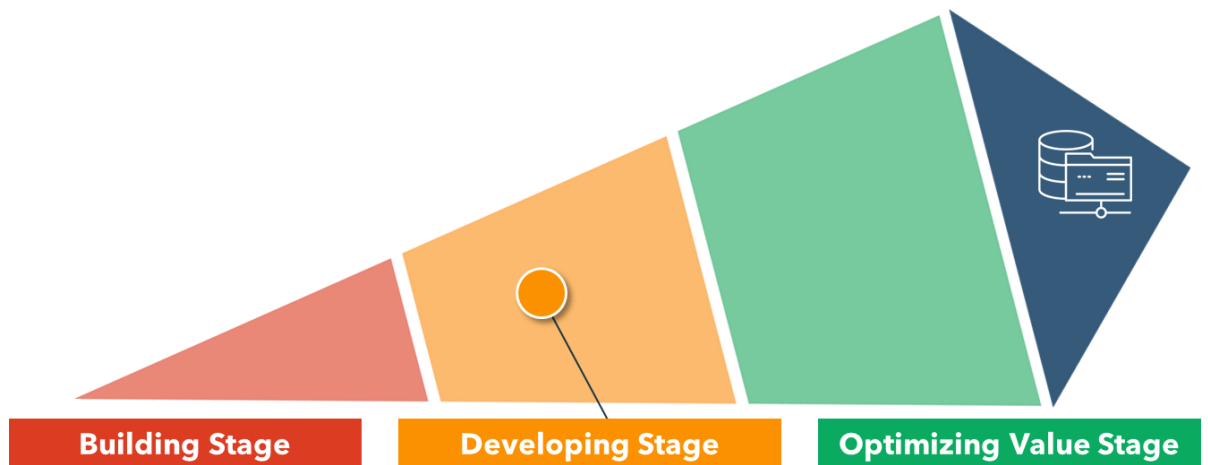
## Assessing Current Data Maturity

The journey to data mastery begins with an honest assessment of the bank's current capabilities. This analysis should examine multiple dimensions:

- **Leadership and organization:** Does your institution have executive-level ownership of data strategy? Is your data team appropriately structured and staffed?
- **Strategy and execution:** Is the business strategy aligned with data initiatives? Does your bank have appropriate funding and work prioritization processes in place?
- **Data governance:** Does your bank have established data governance practices in place? How effective are your regulatory compliance and data safeguarding approaches?
- **Data fitness:** Where is your data, and what is your data's quality, granularity and timeliness? How prepared is it for analysis?
- **Architecture and technology:** How developed is your bank's data architecture? How effectively does it manage data technology and operations?

## The Data Maturity Evaluation

In collaboration with Datos Insights, the ABA has developed a model to assess a bank's position on the data capability continuum. Understanding where an organization can provide a roadmap of where it needs to go to enable the creation of a successful data analytics program. The model incorporates a questionnaire for banks to complete, the results of which are then used to determine the bank's ability to execute each data capability and to determine the next steps.



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Rather than attempting to excel across all dimensions simultaneously, banks should focus on identifying the more significant opportunities for improvement. The goal is not to achieve perfection in every area but to develop a roadmap for incremental progress.

For more information and to access the Data Maturity Evaluation, visit [aba.com/datamaturity](https://aba.com/datamaturity).

## Understanding Your Current Position and How to Move Forward

Understanding data capability is a continuous journey for every institution. Progress unfolds gradually, with each organization navigating its own path toward data-driven decisions as a strategic asset.

A bank's data capability evolves across three distinct stages. Organizations progress from a traditional stage characterized by siloed data and limited capabilities, through an evolving stage with improved but inconsistent capabilities, to a transforming stage where data-driven decision-making becomes embedded throughout the enterprise.

This three-part data capability journey is described in greater detail below:

- **Building Stage—foundational improvements:** The journey begins by tackling fundamental challenges: enhancing data quality, breaking down information silos, and reducing dependence on spreadsheets. Early investments in infrastructure and governance lay the groundwork for reliable, accessible data. Executive sponsorship becomes essential, setting the tone for a culture that values data-driven decision-making.

- **Developing Stage—integration and literacy:** As organizations mature, they focus on integrating data across business lines and building robust business intelligence capabilities. This stage requires elevating data literacy throughout the workforce, refining management processes, and operationalizing analytics to drive tangible business outcomes. The goal is to ensure that insights are actionable and consistently applied across the enterprise.
- **Optimizing Value Stage—cultural shift:** Achieving a level of advanced data capability means embedding data-driven decision-making at every level and maintaining high standards for data quality. Sustaining this progress demands a cultural shift; leadership must champion data stewardship, foster collaboration, and treat information as a core organizational asset.

Ultimately, institutions that align their data initiatives with strategic priorities and invest in people, processes and technology will foster a genuine data culture – one where everyone values and protects information as a vital resource.

# Key Data Strategy Capabilities

Community banks face an opportunity to transform their operations through strategic data management and analytics. The journey from fragmented data silos to a robust, analytics-driven institution requires more than just technology investments; it demands a comprehensive approach that spans leadership, governance and architectural foundations.

## Leadership and Organization

Transforming fragmented data silos into a cohesive, analytics-powered enterprise requires more than just technological solutions – it demands strategic alignment and cultural change. Leadership and organization form the foundation of any successful data management and analytics program, setting the tone for how data is valued, governed and operationalized across the institution.

Leadership is the catalyst that transforms data from an operational byproduct into a strategic asset. Banks that excel in data capabilities consistently have a designated data executive – ideally at the C-suite level – who champions data initiatives and ensures alignment with business objectives. The presence of a formal data governance committee signals a commitment to accountability and cross-functional collaboration. When the C-suite is actively engaged, data initiatives receive the visibility, resources and prioritization needed to drive meaningful change. Without this top-down support, data projects often languish, and the organization risks falling behind competitors that treat data as a top priority in the boardroom.

Organizational structure is equally critical. In high-performing banks, the data function is not scattered across departments or buried within IT; instead, it operates as a standalone organization or a federated model with clear lines of responsibility and accountability. Embedding data analysts and subject matter experts within business units ensures that insights are relevant, actionable and closely tied to operational realities. This structure fosters a culture where data-driven decision-making becomes second nature, empowering business units to leverage analytics for growth, risk management and enhanced customer experience.

Lastly, leading banks invest in skill development, ensuring that people fill key data roles with the proper certifications and expertise. There's a deliberate process for capturing and sharing institutional knowledge, often through formal knowledge management systems.

This alignment of talent and process not only boosts efficiency but also accelerates the adoption of advanced analytics and innovation. When work is matched to skill level and expertise, and when knowledge is systematically leveraged, the organization is poised to extract maximum value from its data assets.

Leadership and organization are the engines that power a bank's data journey. With the right leaders, structure and talent in place, banks can move beyond compliance and reporting to unlock the full potential of data-driven transformation.

## Strategy and Execution

Banks achieve data mastery by tightly integrating business and data strategies, securing targeted funding based on specific use cases, and implementing disciplined return-on-investment measurement. This ensures data initiatives directly support commercial objectives rather than existing in isolation. High-performing banks establish standardized processes with defined service-level agreements, moving beyond ad hoc efforts to create accountability and consistency in data work delivery. They ask challenging questions: Is the business strategy aligned with data initiatives? Does the bank have appropriate strategic alignment and funding?

Developing a robust data strategy and execution capability requires three critical components:

- **Strategic business alignment** that ensures data initiatives serve clear commercial purposes
- **Comprehensive governance frameworks** that embed compliance and safeguarding into daily operations
- **Standardized operational processes** that replace manual, inconsistent approaches with disciplined, measurable delivery methods

These elements work together; strategic alignment provides direction, governance ensures trust and compliance, and standardized processes deliver consistent results that drive competitive advantage in today's data-driven banking environment.

## Data Governance

Data governance establishes a comprehensive framework of policies, procedures and controls that ensures data quality, security and compliance across the entire enterprise. It

creates clear ownership and accountability for data assets while embedding regulatory requirements into daily operations, transforming data from a potential liability into a strategic competitive advantage.

Most banks recognize the critical importance of data governance yet struggle with its effective implementation. While many institutions have formal programs and designated stewards, comprehensive enterprise-wide governance remains elusive, with banks rating themselves as only moderately effective and often relying on manual processes and fragmented approaches across business units.

Developing robust data governance capability relies on three critical factors:

- **Organizational accountability** through clearly defined roles and data stewardship responsibilities
- **Automated compliance frameworks** that embed regulatory requirements into operational processes
- **Continuous monitoring systems** that proactively identify and address data quality issues

These elements create a self-reinforcing cycle where clear accountability drives consistent processes, automation ensures scalability and accuracy, and continuous monitoring maintains trust and regulatory confidence across the entire data ecosystem.

## Data Fitness

Data fitness examines whether data meets the demands of its intended purpose. This critical dimension encompasses three interconnected elements determining your organization's analytical foundation: quality and trust, granularity and timeliness, and data preparedness. Another crucial component to data fitness is understanding data sources and locations. All four of these elements are discussed in more detail below.

### Quality and Trust

Quality and veracity are the bedrock of reliable analytics. Trust in data accuracy, consistency and reliability drives adoption across the enterprise. When executives question data integrity, analytics initiatives lose momentum, and credibility erodes. Poor data quality creates a domino effect, undermining confidence and leading to flawed decisions that can result in missed opportunities or regulatory exposure.

Think of data quality as the electrical grid powering your analytics ecosystem. Without reliable voltage and clean connections, sophisticated equipment fails to function regardless of its theoretical capabilities. Even the most advanced algorithms and talented analysts cannot overcome fundamentally flawed data inputs. This foundation supports every analytical capability the institution builds – from basic reporting to machine learning models that drive competitive advantage.

## Granularity and Timeliness

Granularity and timeliness determine analytical agility. Modern banking requires transaction-level detail refreshed at speeds that match market dynamics. Consider credit risk monitoring: Aggregate monthly summaries might not reveal emerging portfolio stress patterns that transaction-level data captures in real-time. The right level of detail, delivered when decisions need to be made, separates leading institutions from those perpetually playing catch-up.

## Data Preparedness

Data preparedness reflects organizational capability. Mature institutions invest heavily in upstream data preparation, recognizing that analysts spending the majority of their time wrangling data represents a fundamental inefficiency. When data arrives analysis-ready, teams focus on generating insights rather than wrestling with formatting inconsistencies or missing values.

## Data Sources and Locations

Most banks struggle with fragmented data across multiple systems. As identified by the ABA Product Assessments Advisory Council, a critical first step is to itemize all the places where valuable information exists.

Common banking data sources include the following:

- Core banking systems
- Digital banking platforms
- Card processing systems
- CRM platforms
- Customer service platforms
- Mobile and website usage data

- Wealth management systems
- Loan origination systems
- External data providers

For many institutions, data may primarily reside in the core system and a few ancillary applications. Larger institutions, on the other hand, typically contend with dozens of systems that contain valuable customer and operational data.

The complexity increases when considering data formats, update frequencies and access methods. Some systems provide real-time API access, while others might only offer batch exports. Understanding these nuances is critical for developing a cohesive data strategy.

## Architecture and Technology

Community banks embarking on their data analytics journey face a critical decision about their underlying data architecture. Understanding the differences between data warehouses, data lakes and data lakehouses enables institutions to select the most appropriate foundation for their needs (Table A).

**Table A: Data Repository Types**

Architecture type	Definition	Key characteristics	Institutional factors for best fit
<b>Data warehouse</b>	A centralized repository that stores structured data from multiple sources in a highly organized, schema-driven format	<ul style="list-style-type: none"><li>• Enforces data quality through rigorous transformation processes</li><li>• Delivers fast query performance for standard reports</li><li>• Provides consistent, reliable reporting capabilities</li><li>• Functions like a meticulously organized library with strict cataloging rules</li></ul>	<ul style="list-style-type: none"><li>• Primarily work with structured data from core banking systems</li><li>• Need consistent, reliable reporting for regulatory compliance</li><li>• Have well-defined reporting requirements that don't change frequently</li><li>• Prefer proven technology with established vendor support</li><li>• Want predictable performance for</li></ul>



Architecture type	Definition	Key characteristics	Institutional factors for best fit
			standard business intelligence queries
<b>Data lake</b>	Stores raw data in its native format without requiring upfront structure or transformation	<ul style="list-style-type: none"> <li>• Preserves all data types in original state</li> <li>• Supports structured, unstructured and semi-structured data</li> <li>• Enables advanced analytics and machine learning applications</li> <li>• Provides cost-effective storage for large data volumes</li> <li>• Functions like a vast reservoir holding any type of information</li> </ul>	<ul style="list-style-type: none"> <li>• Generate significant amounts of unstructured data (documents, emails, images)</li> <li>• Want to experiment with advanced analytics and machine learning</li> <li>• Have data science capabilities or plan to develop them</li> <li>• Need to store large volumes of data cost-effectively</li> <li>• Require flexibility to adapt to changing analytical requirements</li> </ul>
<b>Data lakehouse</b>	Combines the flexibility of a data lake with the performance and reliability of a data warehouse	<ul style="list-style-type: none"> <li>• Offers schema enforcement when needed</li> <li>• Handles both batch and real-time data processing</li> <li>• Eliminates need to choose between flexibility and performance</li> <li>• Uses advanced technologies for hybrid functionality</li> </ul>	<ul style="list-style-type: none"> <li>• Want both operational reporting and advanced analytics capabilities</li> <li>• Handle mixed data types (structured and unstructured)</li> <li>• Need real-time data processing for fraud detection or customer engagement</li> <li>• Plan to grow their analytics capabilities over time</li> <li>• Prefer a single platform that can evolve with their needs</li> </ul>

Source: Datos Insights

Consider these factors when evaluating which data architecture best suits your institution:

- Current capabilities and technical capabilities
- Volume and variety of data sources
- Regulatory and compliance requirements
- Available technical resources and expertise
- Budget constraints and timeline expectations
- Long-term strategic objectives

With an understanding of each repository's capabilities and the ultimate ideal outcome scenario, the optimal data architecture for the institution should be determined within the context of the target architecture (Table B).

**Table B: Decision Framework**

Scenario	Recommended Architecture	Rationale
Improving existing reporting and business intelligence	Data warehouse	Most community banks have well-established reporting needs around regulatory compliance, profitability analysis, and risk management that benefit from the structured, reliable approach
Generating significant unstructured data or exploring advanced analytics	Data lake	Banks with substantial document processing, customer service interactions, or digital banking data may find the flexibility valuable for future innovation
Future-proofing investment while addressing current needs	Data lakehouse	Provides a growth path from traditional reporting to advanced analytics without requiring a complete architectural overhaul

Source: Datos Insights

The decision should align with your institution's current capabilities while providing a clear path for future growth, ensuring that your data architecture investment supports both immediate needs and strategic evolution. Remember that these architectures aren't mutually exclusive choices. Many successful data strategies start with one approach and evolve over time.

# Vendor Selection

Most community-based financial institutions collaborate with external partners to ensure the deployment of the best structure and tools. Understanding the landscape of third-party analytics providers helps institutions make strategic investments that accelerate their data journey.

## The Role of Third-Party Analytics Vendors

Third-party vendors serve several critical roles in a financial institution's data strategy. These partnerships deliver specialized expertise and insights that significantly speed up data projects, offering established frameworks, ready-to-use templates, and industry-proven approaches that would require years to develop internally. Rather than building from scratch, institutions gain immediate access to methodologies tested and refined across multiple implementations.

Vendors provide specialized technologies that would be prohibitively expensive to build in-house, ranging from sophisticated data warehousing platforms to advanced analytics tools. Economics alone make partnerships compelling – developing these capabilities internally demands substantial capital investment plus ongoing maintenance costs that can strain community bank budgets.

Vendors supplement internal capabilities in specialized areas such as data science, machine learning and data engineering. These skills remain challenging to recruit and retain, especially for smaller institutions competing against larger banks and technology companies for scarce talent. External partnerships bridge these capability gaps without the overhead of full-time specialized staff.

Quality vendors provide cross-industry insights and competitive intelligence that internal teams often struggle to access. They bring perspective from multiple client implementations, regulatory environments and market conditions that enrich strategic decision-making beyond what any single institution could develop independently.

## Primary Goals When Selecting a Third-Party Vendor

Successful institutions evaluate potential vendors by focusing on key objectives that drive long-term value. Business alignment is paramount; select vendors that demonstrate a deep understanding of your bank's specific challenges and can align data solutions with strategic goals rather than pushing generic offerings.

Knowledge-transfer capabilities separate exceptional partners from mere vendors. Identify partners that handle complex technical tasks while working closely with internal teams to transfer skills and knowledge, building institutional capability rather than creating dependency.

Flexibility and customization strike a balance between standardization benefits and institutional uniqueness. Financial institutions should seek solutions that can be configured to specific needs while maintaining proven methodologies and best practices that drive consistent results across implementations.

Data ownership and exit strategy provisions protect institutional autonomy and future flexibility. Vendor contracts must include comprehensive provisions for obtaining all institutional data and metadata in standard formats, ensuring that partnerships enhance rather than constrain strategic options.

Implementation support encompasses both technical deployment and human change management elements, which are crucial in determining adoption success. Banks must evaluate each vendor's ability to guide institutions through the complete implementation process, including organizational change management support that drives user adoption and maximizes return on investment.

## Data & Analytics Solution Provider Directory

In partnership with Datos Insights, the ABA has created a directory of data management and analytics solution providers to serve as a reference for member banks when planning their data analytics strategies.

To qualify for inclusion, vendors fit one or more of these four categories:

- **Data integration and management:** Services that consolidate data from multiple sources, ensure data quality, consistency and governance
- **Predictive analytics and AI:** Solutions that use machine learning and AI to predict customer behavior, forecast trends and identify opportunities
- **Operational optimization:** Tools that analyze internal processes, identify inefficiencies and improve resource allocation
- **Customer insights:** Platforms that provide personalized customer analysis, segmentation and targeted offering capabilities

Vendors listed in the directory have experience with current clients in the community banking sector. Their primary focus is on data management and analytics; this excludes the banking core providers and banking platform providers that provide data management and analytics as part of their platform's ancillary services offerings. The Data & Analytics Solution Provider Directory can be downloaded at [aba.com/datadirectory](https://aba.com/datadirectory).

## Vendor Capability Categories and Selection Guidance

To help focus vendor research efforts, each of the four capability categories – data integration and management, predictive analytics and AI, operational optimization and customer insights – is summarized below.

Each category addresses different aspects of your bank's data analytics journey. Most institutions will need capabilities across multiple categories; however, sequencing investments based on their current capabilities and strategic priorities maximizes return on investment.

### Data Integration and Management

These providers offer services that consolidate data from multiple sources, ensuring data quality, consistency and adherence to governance standards. They help establish the foundation for all other analytics initiatives.

Consider a vendor that specializes in these services if your institution struggles with fragmented data across multiple systems, lacks a unified view of customers across products and channels, spends significant time reconciling reports from different sources, and needs to improve data quality and governance.

#### Key capabilities to evaluate:

- Data sourcing and management
- Data quality management
- Extract, transform, load (ETL)/data pipeline capabilities
- Data governance frameworks

## Implementation approaches:

- For smaller institutions, vendor-hosted solutions that minimize infrastructure requirements may be useful.
- Larger institutions could benefit from hybrid models that combine vendor platforms with internal customization.

## Predictive Analytics and AI

These solutions utilize machine learning and artificial intelligence to predict customer behavior, forecast trends and identify opportunities, representing the more advanced analytical capabilities that drive competitive differentiation.

If your institution has established basic reporting capabilities and reliable data, seeks to enhance marketing effectiveness through better targeting, wants to improve risk assessment and fraud detection, and needs more sophisticated customer segmentation, predictive analytics and AI vendors are worth considering.

## Key capabilities to evaluate:

- Machine learning model development and deployment
- Natural language processing for unstructured data
- Model management and governance
- Explainability and regulatory compliance

## Implementation approaches:

- Start with focused use cases that deliver clear business value.
- Consider vendors with banking-specific models that require less customization.
- Evaluate both standalone analytics platforms and capabilities embedded in existing systems.

## Operational Optimization

These tools analyze internal processes, identify inefficiencies, and improve resource allocation. They focus on optimizing banking operations for greater effectiveness and efficiency.

Consider this category if your institution seeks to reduce operational costs, streamline back-office processes, improve workforce management, and has identified process bottlenecks but lacks the data needed to address them.

### **Key capabilities to evaluate:**

- Process-mining and analysis
- Workflow optimization
- Capacity planning
- Performance dashboards

### **Implementation approaches:**

- Begin with process documentation and baseline measurements.
- Focus on high-volume, standardized processes for initial implementation.
- Look for solutions that integrate with existing workflow systems.

## **Customer Insights**

These platforms provide personalized customer analysis, segmentation and targeted offering capabilities. They focus specifically on enhancing customer relationships and marketing effectiveness.

Consider customer insights vendors if your institution wants to improve customer retention and engagement, seeks to enhance cross-selling and up-selling, needs more effective customer segmentation, and aims to personalize digital experiences.

### **Key capabilities to evaluate:**

- Customer journey analytics
- Next-best-action recommendations
- Churn prediction
- Customer lifetime value modeling

### **Implementation approaches:**

- Start with high-value customer segments for initial implementation.

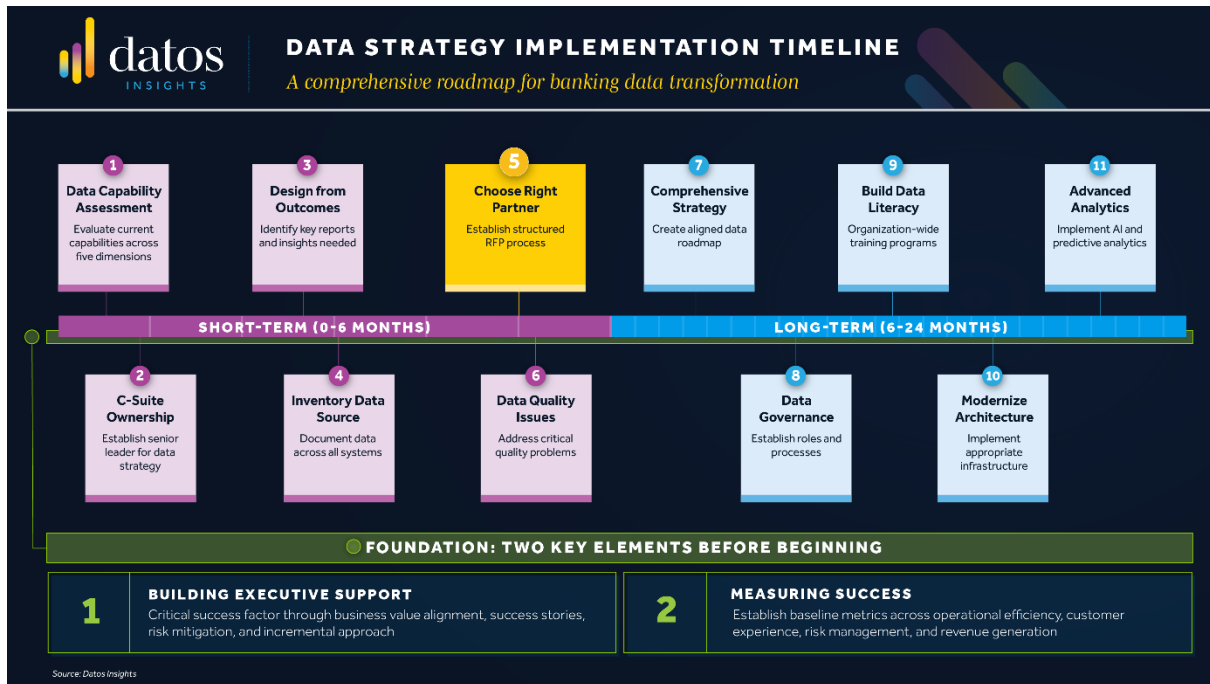
- Prioritize integration with customer-facing channels.
- Look for solutions that supplement rather than replace existing client relationship management systems.



# Next Steps and Recommendations

Transforming your institution's data capabilities requires a balanced approach that delivers short-term wins while building toward long-term strategic advantages. The following recommendations provide a roadmap for banks at any stage of data capability (Figure 3).

Figure 3: Data Strategy Timeline



Source: Datos Insights

## Getting Ready

Two key elements must be in place before beginning the journey: executive support and a plan for measuring success.

### Building Executive Support

Executive sponsorship represents the single most critical success factor for data initiatives. Without active leadership support, even the best-designed programs typically fail. Here are four ways to foster executive support:

- **Demonstrate business value alignment:** Frame data initiatives in terms of specific business outcomes rather than technical capabilities. Create key performance

indicators that connect data improvements directly to strategic priorities, such as growth, efficiency or risk management, to drive meaningful outcomes.

- **Share success stories:** Leverage humans' bias toward anecdotes by creating a collection of successful data wins. Document and share early successes to build momentum and demonstrate tangible results.
- **Highlight risk mitigation:** Point out how improved data capabilities reduce regulatory, operational and competitive risks. This often resonates strongly with risk-averse banking executives.
- **Take an incremental approach:** Propose a phased implementation that delivers progressive benefits rather than a "big bang" transformation. This reduces perceived risks and allows for course corrections.

## Measuring Success

Effective measurement requires baseline metrics across operational efficiency, customer experience, risk management and revenue generation. Track both leading indicators (data quality scores, user adoption) and lagging indicators (revenue growth, cost reduction).

Key metrics to track include the following:

- Report generation time and data reconciliation effort
- Marketing campaign effectiveness and cross-selling success rates
- Fraud detection accuracy and compliance costs
- Customer lifetime value improvements

## Short-Term vs. Long-Term Action Items

### Short-Term Actions (0 to six months):

- **Data maturity evaluation:** Assess your current capabilities across the five dimensions of the data capability model to identify your most significant gaps and most immediate opportunities for improvement.

- **Establish C-suite ownership:** Establish a senior leader responsible for data strategy. This may be a precursor to the chief data officer, but in the short term, someone at the executive level must champion the initiative.
- **Design from desired outcomes:** Identify the key reports or insights management needs to improve performance and customer delivery. Start with specific business problems rather than abstract data capabilities.
- **Inventory data sources:** Document where valuable data resides across your organization, including core systems, ancillary applications and external sources. Map data flows between systems to understand your current data landscape.
- **Choose the right partner:** Establish a structured request for proposals based on the bank's short- and mid-term needs, capabilities and long-term data strategy.
- **Address critical data quality issues:** Identify and resolve the most significant data quality issues that impact decision-making processes. Focus on the data that will bring the most value. Make data integrity a companywide responsibility.

## Long-Term Initiatives (six to 24 months):

- **Develop a comprehensive data strategy:** Create a roadmap that aligns data investments with business strategy. Ensure the plan addresses the needs of people, processes, technology and governance.
- **Implement a data governance framework:** Establish roles, responsibilities and processes for data stewardship, defining critical data elements and establishing quality standards to ensure data integrity and accuracy.
- **Build data literacy:** Develop training programs that enhance data skills across the organization. Consider data literacy in hiring and promotion decisions for key roles.
- **Modernize data architecture:** Evaluate and implement an appropriate data infrastructure, whether cloud-based, on-premises or hybrid, with a focus on reducing data silos and improving accessibility.
- **Adopt advanced analytics:** Once foundational capabilities are in place, implement predictive analytics and AI for high-value use cases identified in your strategy.

By following this roadmap and focusing on business value, your institution can transform data from an underutilized resource into a strategic asset that drives sustainable competitive advantage.

## Conclusion

Data mastery has emerged as a critical competitive differentiator for banks in today's increasingly commoditized banking environment. As this report has demonstrated, the journey to data capability requires strategic investment, executive commitment, and a systematic approach to building capabilities across people, processes and technology. Banks that successfully harness their data assets gain significant advantages in decision-making, customer experience, operational efficiency and revenue growth.

The path to data capability isn't uniform for all institutions. Most organizations find themselves at different stages across various dimensions of data capability. The key to success lies not in attempting to excel across all dimensions simultaneously, but rather in identifying the most significant gaps and opportunities for improvement based on strategic priorities and business needs. Banks can transform data from an underutilized resource into a strategic asset that drives sustainable competitive advantage by taking an incremental approach that delivers short-term wins while building toward long-term strategic advantages.

For a successful start in data analytics, the following elements are key:

- **Begin with specific business problems:** Design from desired outcomes by identifying key reports or insights management needs to improve performance and customer delivery, rather than pursuing abstract data capabilities.
- **Commission a proof of concept:** This can be very helpful in allowing a bank to test drive a particular vendor before making a full commitment to a platform/solution.
- **Establish clear executive ownership:** Designate a senior leader responsible for data strategy, as executive sponsorship represents the single most critical factor in the success of data initiatives.

- **Implement a data governance framework:** Establish roles, responsibilities and processes for data stewardship, defining critical data elements and establishing quality standards to ensure data reliability and compliance.
- **Build organizational data literacy:** Develop training programs that enhance data skills across the organization, considering data literacy in hiring and promotion decisions for key roles. This approach fosters a culture wherein everyone values data and acts as a corporate data steward.

## About ABA

The American Bankers Association is the voice of the nation's \$25 trillion banking industry, which is composed of small, regional and large banks that together employ approximately 2.1 million people, safeguard \$19.7 trillion in deposits and extend \$13.1 trillion in loans.

## About Datos Insights

Datos Insights is the leading research and advisory partner to the banking, insurance, securities, and payments industries—both the financial services firms and the technology providers that serve them.

In an era of rapid change, we empower firms across the financial services ecosystem to make high-stakes decisions with confidence and speed. Our distinctive combination of proprietary data, analytics, and deep practitioner expertise provides actionable insights that enable clients to accelerate critical initiatives, inspire decisive action, and de-risk strategic investments to achieve faster, bolder transformation.

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