AI In Focus: The Navigating Bank Credit Risk Playbook examines how FIs are using advanced computational systems, including AI, to improve lending and credit services, as well as other aspects of their operations. The Playbook is based on a survey of 100 executives at a broad range of FIs.

**MAY** 2021

# AI In Focus:

## THE NAVIGATING BANK CREDIT RISK PLAYBOOK

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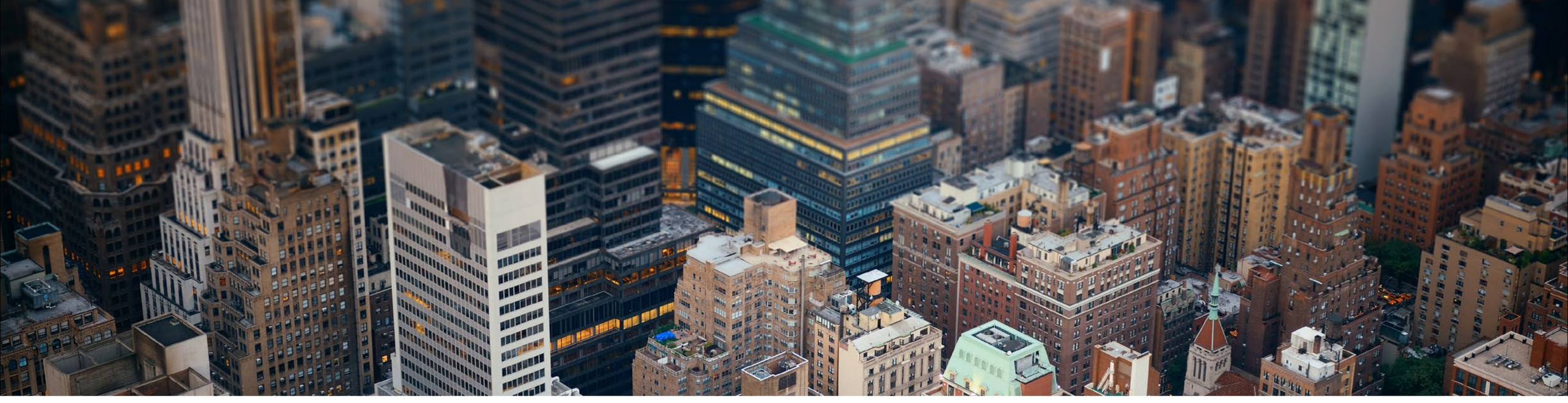


# AI In Focus:

THE NAVIGATING BANK CREDIT RISK PLAYBOOK


**ACKNOWLEDGMENT**

AI In Focus: The Navigating Bank Credit Risk Playbook is a collaboration with Brighterion, and PYMNTS is grateful for the company's support and insight. PYMNTS.com retains full editorial control over the following findings, methodology and data analysis.


# Table Of Contents



# Introduction

The past year has been a momentous and challenging one for financial institutions (FIs) — and not just because of the massive shift toward digital payment and banking channels. The pandemic has had profound reverberations across the economy, leading to lost jobs and other adverse impacts. Consumer debt in the United States has climbed by its steepest degree in more than 10 years, reaching close to $15 trillion.[1]

These downbeat statistics do not tell the whole story, however. Many consumers not only have remained gainfully employed but also have amassed savings that they are primed to spend. Government stimulus programs have helped keep consumers and businesses afloat — and have potentially masked the underlying economic fundamentals of borrowers. Other economic indicators are also looking up as vaccination campaigns make steady progress.

The economy is in a state of unprecedented flux, and this has intensified a long-running challenge for banks: how to manage credit risk. Many banks were already well aware that standard parameters that are typically used to assess creditworthiness, such as credit scores and demographic statistics, captured only limited pictures of current and prospective borrowers. Today's economic conditions have starkly exposed their shortcomings, however.

Advances in artificial intelligence (AI) have opened up new paradigms for managing credit risk, allowing banks to leverage real-time data about borrowers and market conditions. These tools effectively act like periscopes, providing 360-degree account-level views and insights — tasks beyond the capability of credit department staffs, however large they might be. Such tools can be leveraged along all aspects of credit products' life cycles, from acquisition to collections. These developments have raised a key question: How are FIs using AI tools to improve how they manage credit risk as well as other operations?

This is what we set out to determine in the first edition of our latest research series, AI In Focus: The Navigating Bank Credit Risk Playbook, which is based on a survey of 100 FI executives. The study builds on research we have been conducting since 2018 to track the use of AI and other advanced computational systems in banking, healthcare and other sectors. In this Playbook, we will reveal key insights from our latest survey and offer on-the-ground perspectives from banks as they seek to bring state-of-the-art technology to the age-old institution of lending.

1. Stolba, S. Average U.S. Consumer Debt Reaches New Record in 2020. Experian. 2021. https://www.experian.com/blogs/ask-experian/research/consumer-debt-study/. Accessed April 2021.

### What is real AI?

**Our research seeks to cut through the hype around AI by employing a specific and robust definition of the technology:**

AI uses machines to mimic the human brain's cognitive learning functions, and the technology continually learns from this process to make decisions. It has the following characteristics:

- The ability to personalize
- The ability to adapt to new information
- The ability to self-learn

# Key Findings

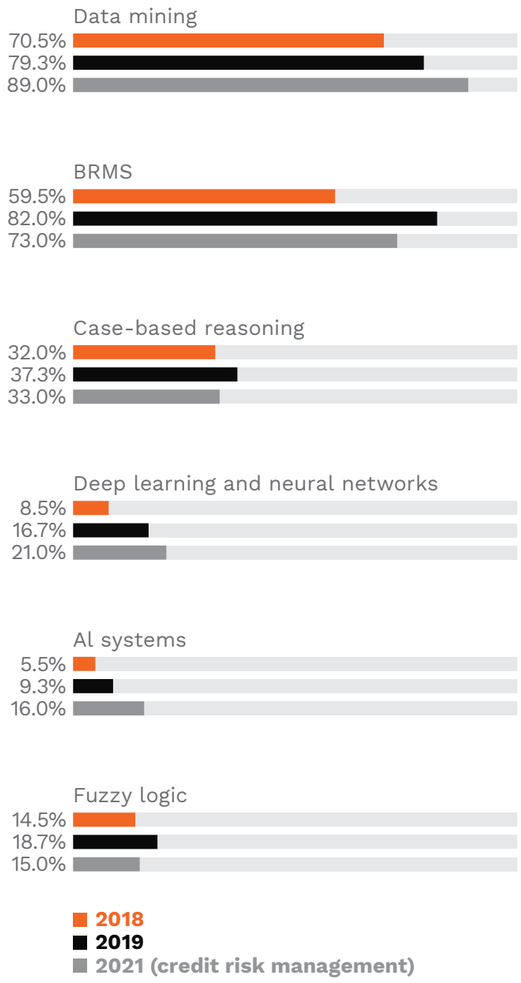
**AI use in the banking sector has grown threefold since 2018, becoming nearly as prevalent among large banks as more established computing systems like data mining.**

AI has gained rapid traction in the relatively short period of time it has been commercially available for banking applications. The share of FIs that use the system has nearly tripled, growing from 5.5 percent in 2018 to 16 percent in 2021. There is a considerable size divide when it comes to adoption, however: 79 percent of banks with more than $100 billion in assets use AI, but only a fraction of smaller banks do. AI has become nearly as prevalent among large banks as more established systems such as data mining and business rules management systems (BRMS), which are used by 100 percent and 74 percent of large FIs, respectively.

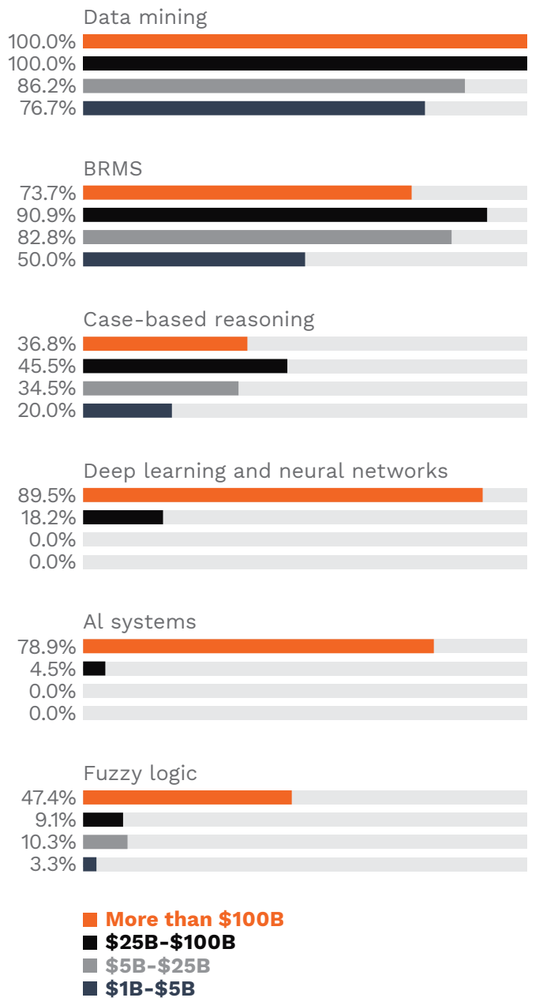
FIGURE 1:

## Computational system use over time

**1A: Share of FIs that use select systems, 2018, 2019, 2021**




**1B: Share of FIs that use select systems in 2021, by size**




Source: PYMNTS.com | Brighterion
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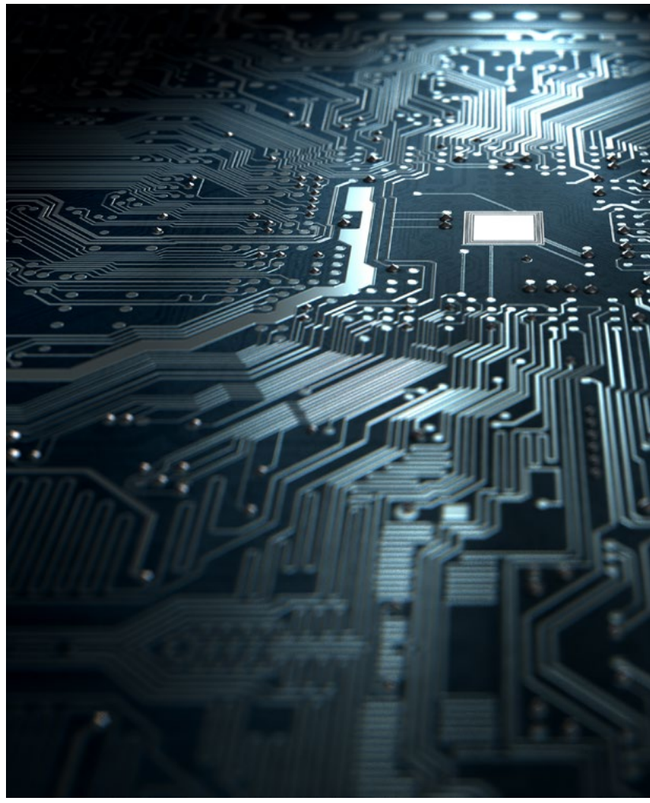

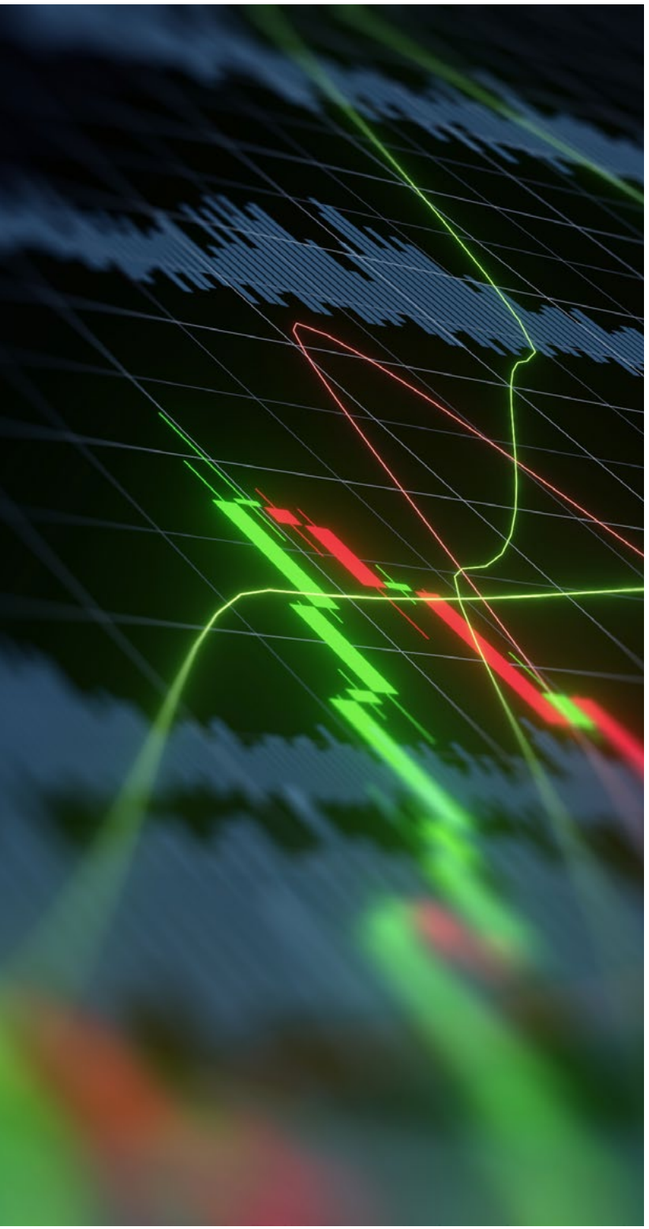

**The lending and credit environment has emerged as one of the greatest challenges facing FIs since the start of the pandemic.**

FIs have had to contend with many challenges in recent years, not the least of which has been meeting consumers' digital demands as growing shares shift online to shop and do their banking. The pandemic and its associated economic impacts have moved one challenge to the top of the priority list, however: lending and credit.

More than a third — 34 percent — of banks consider the economic factors impacting lending and credit to be their greatest challenge over the past year, making it the most frequently cited issue by a considerable margin. Other major concerns include data security, which 26 percent of FIs consider their most important challenge, regulatory compliance (13 percent) and increased competition from FinTechs (13 percent).

FIGURE 2:

## Greatest FI challenges

**Share of FIs that consider select issues to be their most important challenges**


Source: PYMNTS.com | Brighterion
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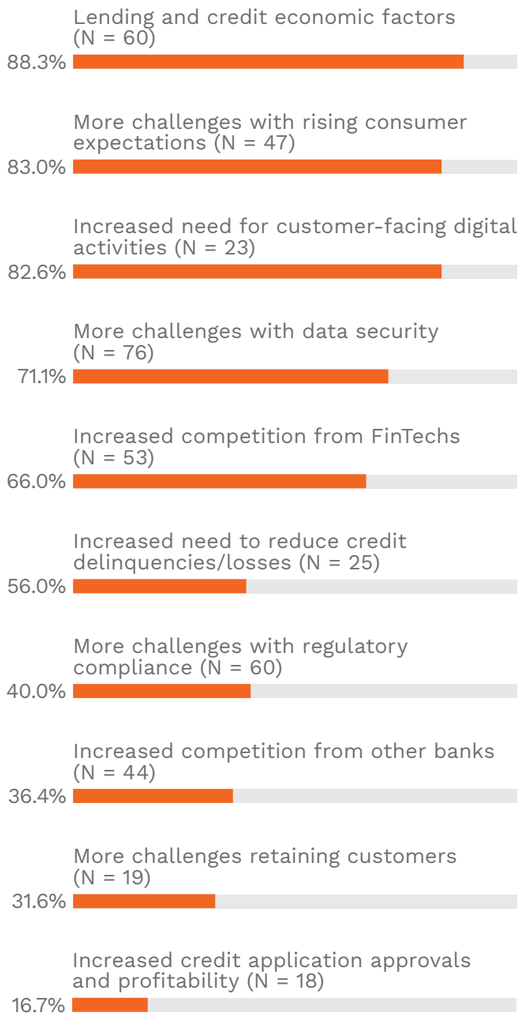
Our research also points to the degree to which credit-related challenges are linked to the pandemic: 88 percent of FIs say it has exacerbated lending and credit issues, making this area the one most impacted by the health crisis. Bank executives notably tend to view this as a greater pandemic-related challenge than adapting to the digital shift — although the latter is also a formidable one. Eighty-three percent of FIs say that meeting increased demand for customer-facing digital services has become more challenging due to the pandemic. The same share say the pandemic has intensified the related challenge of meeting rising consumer expectations.

Digging deeper into credit management operations reveals three main pain points that the pandemic has made more acute: late payments, accurate credit scoring for current customers and higher charge-offs. These were cited by 97 percent, 89 percent and 80 percent of FIs, respectively, as areas that the pandemic has made more challenging.

FIGURE 3:

## The pandemic's effects on FI challenges

**Share of FIs that say the pandemic intensified select challenges**




Source: PYMNTS.com | Brighterion
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**FIs view real-time data and automation as essential to managing and mitigating credit risk.**

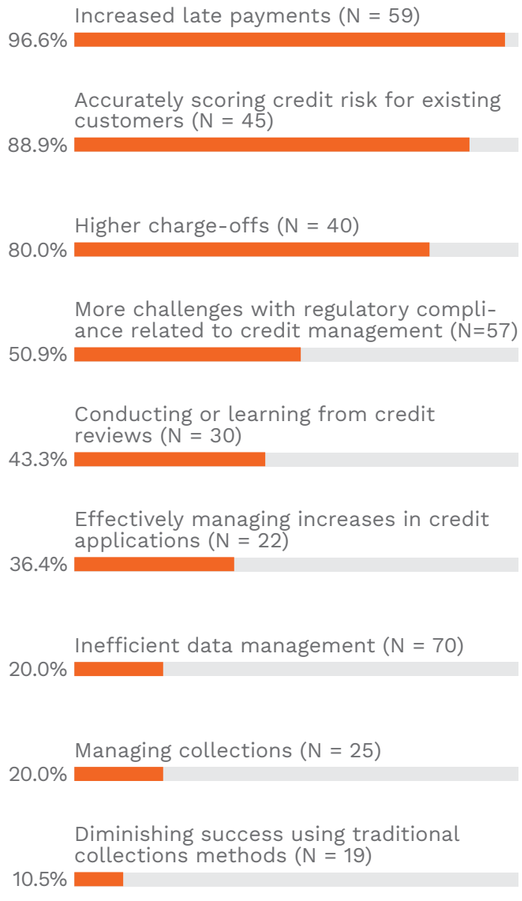
A large majority of banks have turned to two main strategies to reduce their exposure to downside credit risk: automation and real-time data. Seventy-one percent of FIs have increased their use of automated decision-making to mitigate risk, and the same share have increased their use of real-time, high-frequency data for this purpose. Many banks thus recognize that real-time data and automated technologies are essential to leveraging more immediate financial data without requiring days or weeks of human analysis and review.

It bears noting that while bank size tends to correspond with the use of real-time, high-frequency data, it is a strategy being employed by majorities of banks of all sizes, including 60 percent of small banks.

FIGURE 4:

## The pandemic's effects on credit-related challenges

**Share of FIs that say the pandemic intensified select challenges in credit operations**




Source: PYMNTS.com | Brighterion
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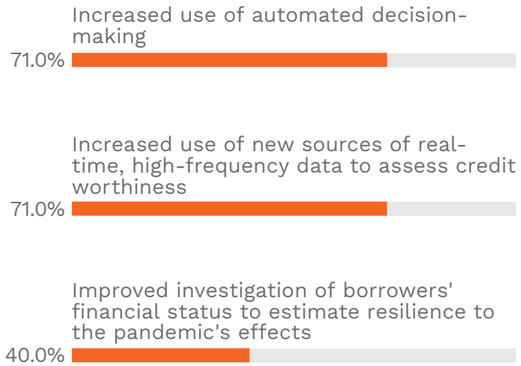
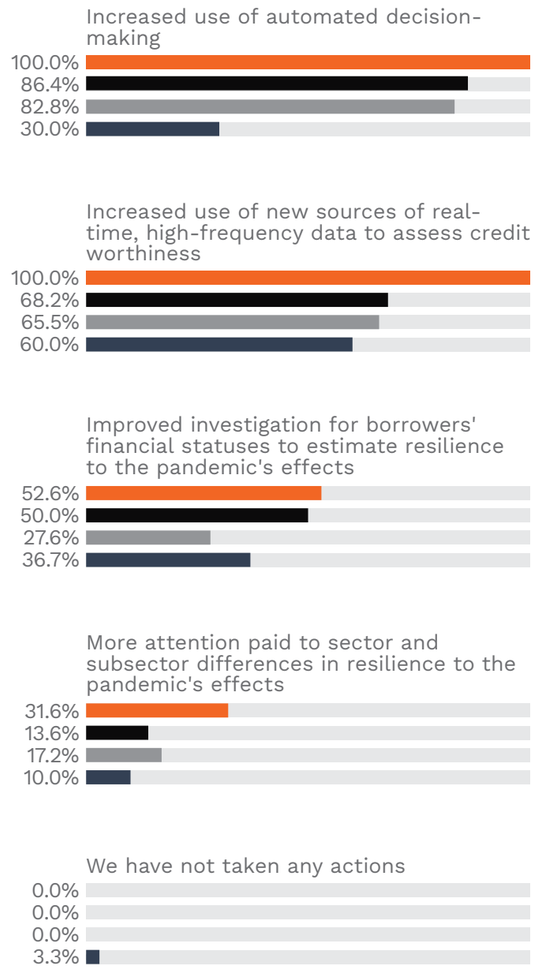
FIGURE 5:

## Approaches to mitigating credit risk

**5A: Share of FIs that took select strategies to address credit risk**




**5B: Share of FIs that took select strategies to address credit risk, by size**




Source: PYMNTS.com | Brighterion
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Recognizing the necessity of real-time functionality and automation is one thing, but being able to leverage the large volumes of data that go along with these processes is another. This is one reason why AI has become a nexus point for real-time functionality and automation: It can transform large streams of data into actionable insights.

> **AI transforms the complete banking process** and helps us monitor the risks involved in everyday operations.
>
> — Respondent, AI In Focus survey of bank executives

**Banks are using AI to flag problem accounts and improve credit decisions, although the technology is not being used to its full potential in credit and risk management.**

AI's benefits lie in its ability not only to process and learn from data but also to surface insights that might elude thousands of human analysts. This is one reason why credit risk has become a growing use case for AI in the banking sector: It has the potential to capture a far wider and richer view of borrowers and economic indicators that can affect overall risk.

Identifying potentially delinquent accounts has emerged as one of the main ways FIs are putting AI to use in credit management, with 75 percent of institutions employing AI for this purpose. Other major credit-related uses include aiding in credit decisions (63 percent), credit/risk underwriting (56 percent) and identifying solutions to potential credit problems (56 percent).

TABLE 1:

## Computational system use for credit-related functions

| Share of system users who use systems for select actions | Average | Data mining | BRMS | Case-based reasoning | Deep learning and neural networks | AI systems | Fuzzy logic |
|---|---|---|---|---|---|---|---|
| **N** | **247** | 89 | 73 | 33 | 21 | 16 | 15 |
| **Credit/risk underwriting** | **61.1%** | 68.5% | 56.2% | 54.5% | 42.9% | 56.3% | 86.7% |
| **Credit decisions** | **61.1%** | 32.6% | 90.4% | 69.7% | 71.4% | 62.5% | 53.3% |
| **Identifying solutions to potential credit problems** | **50.6%** | 74.2% | 46.6% | 42.4% | 9.5% | 56.3% | 0.0% |
| **Credit limits** | **47.0%** | 14.6% | 74.0% | 72.7% | 47.6% | 37.5% | 60.0% |
| **Identifying potential delinquent accounts** | **44.5%** | 66.3% | 34.2% | 24.2% | 19.0% | 75.0% | 13.3% |
| **Collections** | **37.2%** | 76.4% | 15.1% | 12.1% | 33.3% | 12.5% | 0.0% |
| **Charge-off/delinquent debt collection efforts** | **32.4%** | 58.4% | 12.3% | 24.2% | 19.0% | 18.8% | 26.7% |
| **Charge-off decisions** | **28.3%** | 6.7% | 53.4% | 42.4% | 19.0% | 12.5% | 33.3% |
| **Pricing credit risk** | **27.1%** | 5.6% | 23.3% | 51.5% | 57.1% | 56.3% | 46.7% |
| **Know your customer procedures** | **25.1%** | 62.9% | 4.1% | 0.0% | 4.8% | 6.3% | 6.7% |
| **Chargeback/dispute resolution** | **21.5%** | 9.0% | 26.0% | 24.2% | 38.1% | 31.3% | 33.3% |

Source: PYMNTS.com | Brighterion
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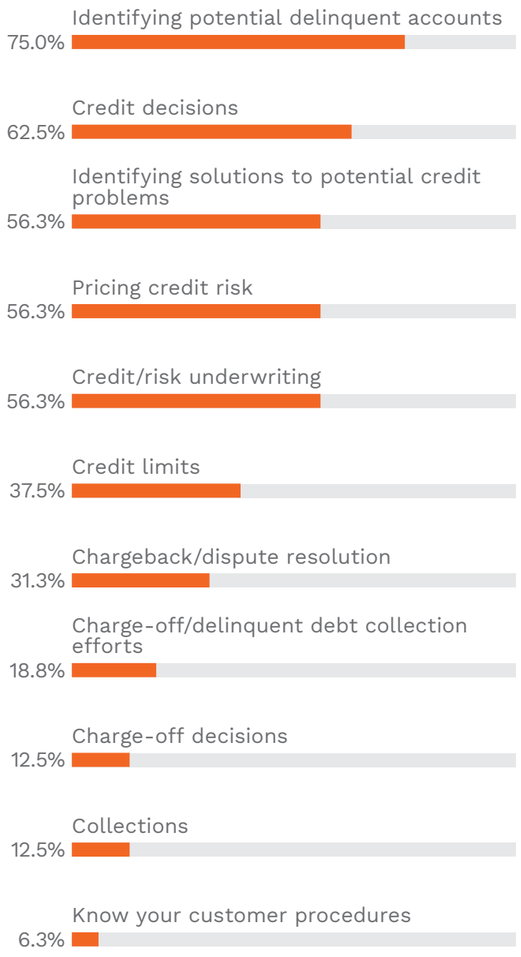
**FIGURE 6:**

## Computational system use for credit-related functions

**Share of AI system users who mentioned select actions for which the technology is used**




Source: PYMNTS.com | Brighterion
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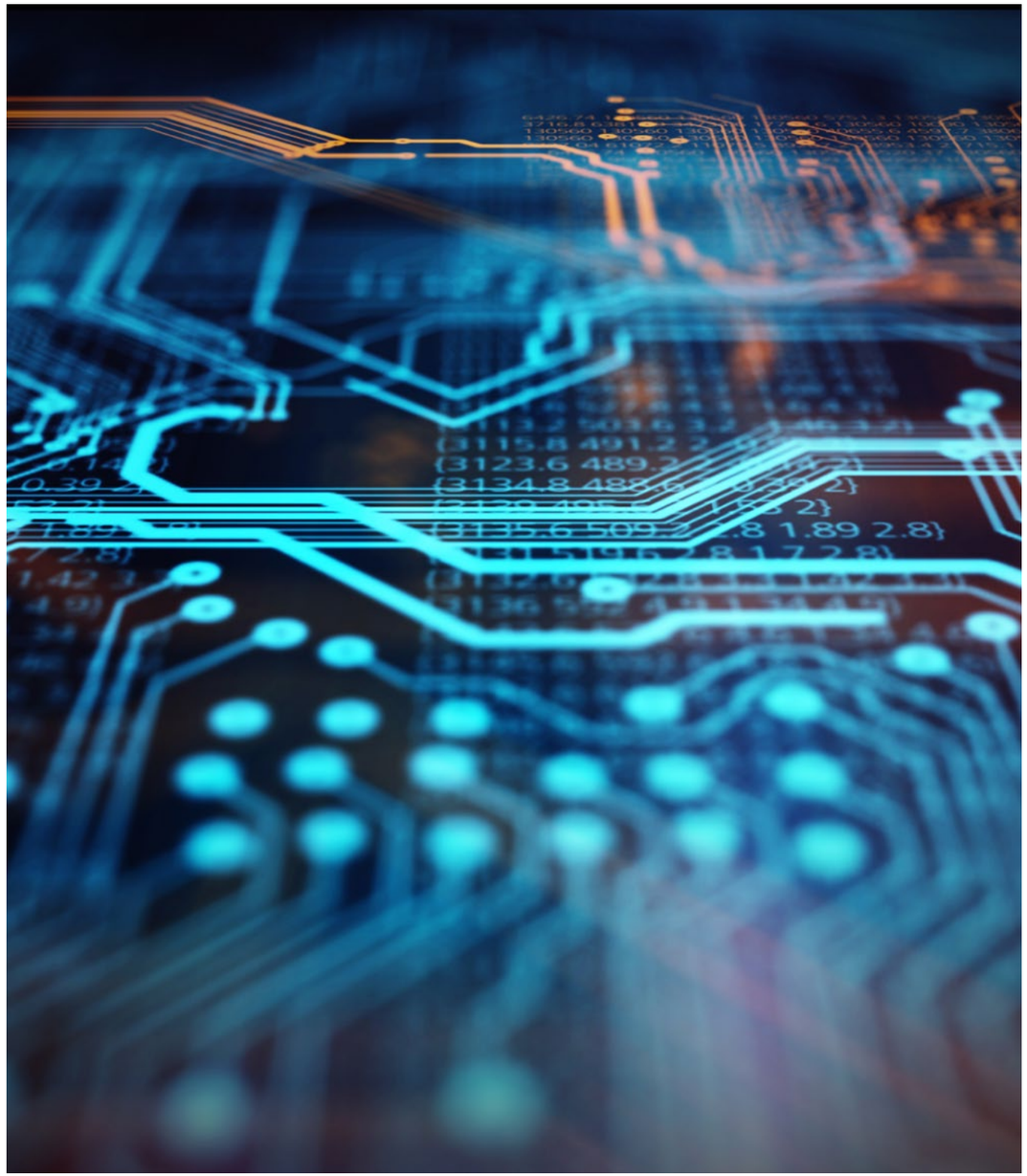
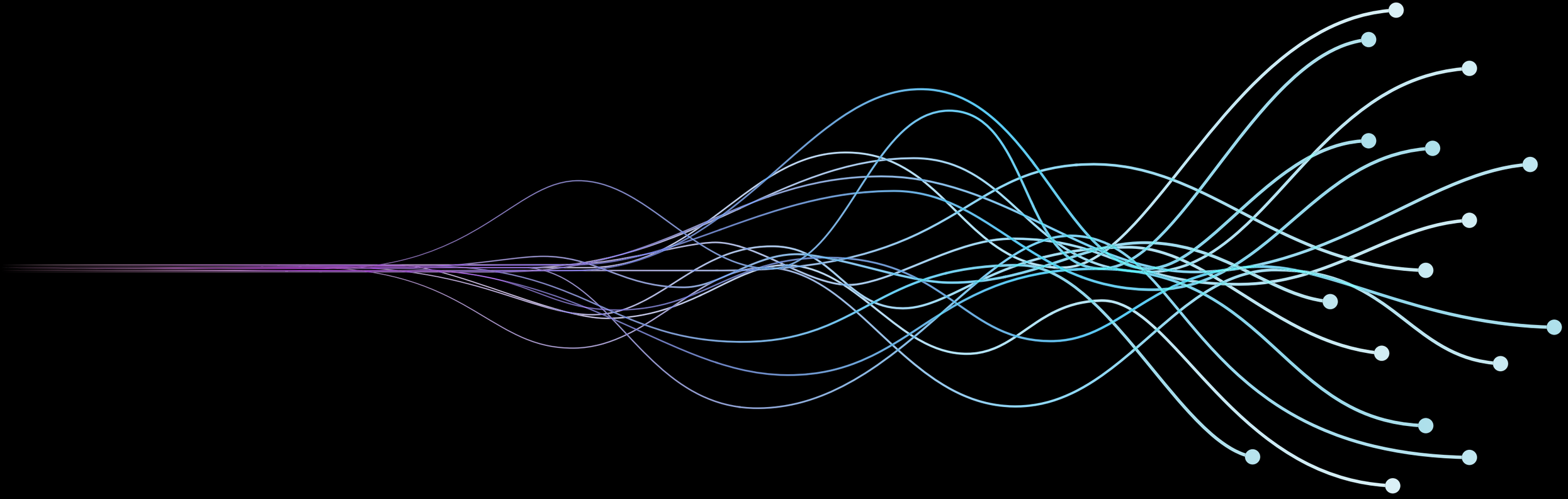
Our research suggests that banks may not fully appreciate AI's potential to improve credit management operations, however, and that they may be mis-applying more-limited legacy systems. BRMS users are 1.4 times more likely to use the system for credit decisioning than AI users, for example: 90 percent of banks that employ BRMS use it for this purpose, compared to only 63 percent of AI users.

The fact that static, rules-based systems remain common in credit management operations probably has little to do with any concrete assessment of their utility in this area — nor does the more limited use of AI reflect its perceived lack of utility. Rather, the technological adoption tends to be an incremental process, as will be explored in greater depth in the Playbook's Deep Dive.



# Deep Dive:

## AI AS A MULTIPRONGED TOOL



The adoption of new technologies often starts with a single compelling use case or application. When a technology demonstrates its value in one area, users are often receptive and eager to apply it to others. QR codes used to serve as nothing more than links to informative webpages, for example — today, they are lynchpins for mobile payments.

The pace of technological adoption has tended to move a little slower when it comes to businesses versus consumer end users, however. This is understandable, given that onboarding and migrating to new systems can require substantial expenses and labor as well as system downtime, which can be crippling for FIs.

Deferred action on IT modernization can have its own negative effects, however. Legacy systems can be overextended and used for purposes for which they are not well-suited, and this mismatch has become especially apparent as demand grows for real-time data and automated capabilities. Supervised computational tools like BRMS — one of the most prevalent technologies used by banking institutions — are inherently dependent on the static parameters established by programmers and users.

The big picture revealed by our data is that supervised systems like data mining and BRMS are the most commonly employed by FIs overall, with 89 percent using the former and 73 percent using the latter. These systems are undoubtedly useful for certain purposes, particularly when dealing with routine functions, though they are also being used for credit-related functions that are inherently dependent on real-time conditions. Seventy-six percent of FIs that use data mining do so for collections, for example, making it the most frequently used system in this area.

**Overcoming the power of inertia**

The fact that supervised computational systems remain entrenched in the banking sector does not necessarily mean that they are highly valued, however. Their staying power more likely reflects the fact that staff have grown accustomed to working with them and that FIs are wary about the risks and

> AI provides structured data from previous outcomes through which we can **predict financial risks and identify potential defaulters.**
>
> — Respondent, AI In Focus survey of bank executives

expenses involved in implementing new systems.

Given this context, banks have realized a remarkably wide range of benefits from AI in the short period of time it has been available for commercial applications. Banks that have adopted AI consider it beneficial for six distinct purposes, thus tying it with data mining — a system that dates back to the 1990s — as the computational technology with the greatest number of benefits.

The nature of the benefits AI users cite says a lot about the unique value of adaptable machine learning technologies. Eighty-one percent cite improvement of operational efficiencies — a broad benefit that applies throughout an organization. AI systems not only can reduce or eliminate much of the manual work involved in credit applications but also may recognize previously undetected patterns that correlate with higher likelihoods of repayment — or default.

If greater operational efficiency is seen as the overarching benefit conferred by AI, better fraud detection could be viewed as its driving use case. Eighty-one percent of AI users cite being alerted

**TABLE 2:**

## Number of benefits from computational systems

**Ranking of benefits FIs get from select systems (table) and the average number of benefits gained from each system (below)**

| | Data mining (N = 89) | BRMS (N = 73) | Case-based reasoning (N = 33) | Deep learning and neural networks (N = 21) | AI systems (N = 16) | Fuzzy logic (N = 15) |
|---|---|---|---|---|---|---|
| Improvement of operational efficiencies | 3rd | 1st | 1st | 1st | 1st | 1st |
| Being alerted to fraud before it happens | 1st | 2nd | 3rd | — | 1st | — |
| Improvement of customer satisfaction and experience | 4th | 3rd | 4th | 2nd | 4th | 1st |
| Reduction of false positives | 5th | 4th | 2nd | 4th | 3rd | 3rd |
| Reduction of payment fraud | 2nd | 5th | — | — | 5th | 5th |
| Increase in revenues through better targeting | — | — | 5th | 5th | — | — |
| Reduction of manual review | — | — | — | — | — | 4th |
| Reduction of personnel allocated to managing fraud | — | — | — | — | — | 5th |
| Better anti-money laundering/know your customer compliance | 5th | — | — | — | — | — |
| Reduction of manual exception management | — | — | — | 2nd | — | — |
| **Average number of mentioned benefits** | 6.0 | 5.8 | 5.2 | 4.9 | 6.0 | 4.7 |

Source: PYMNTS.com | Brighterion
AI In Focus Report

to potential fraud before it occurs as a benefit, making it the system considered most beneficial for this purpose. Being alerted to fraud before it happens is essential to combating it, since the likelihood of recovering funds greatly diminishes once a successful hack or theft occurs — while the potential for bad press greatly increases.

A related benefit stands out for AI: 75 percent of system users believe it reduces false positives, or cases when transactions are improperly blocked for security reasons. Decreased numbers of false positives are the other side of the effective fraud detection coin. A system that blocks genuinely fraudulent transactions is going to do a better job at letting legitimate ones through.

These findings suggest that AI is gaining a strong foothold at financial institutions and may be following an accelerated trajectory compared to past generations of computational technology. Better fraud detection may be the most compelling use case driving AI adoption, but its early adopters appear to be discovering its versatility, including its ability to vastly improve the complicated task of managing credit risk.

TABLE 3:

## Benefits from computational systems

| Share of system users who obtain select benefits from systems | Average | Data mining | BRMS | Case-based reasoning | Deep learning and neural networks | AI systems | Fuzzy logic |
|---|---|---|---|---|---|---|---|
| N | **247** | 89 | 73 | 33 | 21 | 16 | 15 |
| Improvement of operational efficiencies | **82.2%** | 73.0% | 93.2% | 93.9% | 71.4% | 81.3% | 73.3% |
| Being alerted to fraud before it happens | **66.4%** | 77.5% | 71.2% | 63.6% | 28.6% | 81.3% | 20.0% |
| Improvement of customer satisfaction and experience | **60.3%** | 53.9% | 67.1% | 60.6% | 52.4% | 62.5% | 73.3% |
| Reduction of false positives | **56.7%** | 48.3% | 58.9% | 66.7% | 47.6% | 75.0% | 66.7% |
| Reduction of payment fraud | **51.4%** | 75.3% | 43.8% | 33.3% | 9.5% | 56.3% | 40.0% |
| Increase in revenues through better targeting | **37.7%** | 47.2% | 30.1% | 42.4% | 42.9% | 37.5% | 0.0% |
| Reduction of manual review | **31.2%** | 29.2% | 27.4% | 21.2% | 38.1% | 43.8% | 60.0% |
| Reduction of personnel allocated to managing fraud | **26.7%** | 23.6% | 27.4% | 30.3% | 23.8% | 25.0% | 40.0% |
| Improvement of probability of collecting delinquent debt | **24.7%** | 41.6% | 20.5% | 15.2% | 14.3% | 6.3% | 0.0% |
| Reduction of the number of alerts needing action | **21.9%** | 20.2% | 24.7% | 15.2% | 28.6% | 31.3% | 13.3% |
| Reduction of charge-offs | **20.2%** | 9.0% | 30.1% | 27.3% | 19.0% | 12.5% | 33.3% |
| Better anti-money laundering/know your customer compliance | **19.8%** | 48.3% | 4.1% | 0.0% | 9.5% | 6.3% | 0.0% |
| Improvement of customer retention for credit products | **18.6%** | 21.3% | 20.5% | 15.2% | 19.0% | 18.8% | 0.0% |
| Reduction of manual exception management | **18.2%** | 9.0% | 15.1% | 15.2% | 52.4% | 31.3% | 33.3% |
| Better account onboarding | **15.4%** | 10.1% | 21.9% | 18.2% | 14.3% | 6.3% | 20.0% |
| Improvement of customer acquisition for credit products | **13.8%** | 12.4% | 20.5% | 3.0% | 14.3% | 25.0% | 0.0% |

Source: PYMNTS.com | Brighterion
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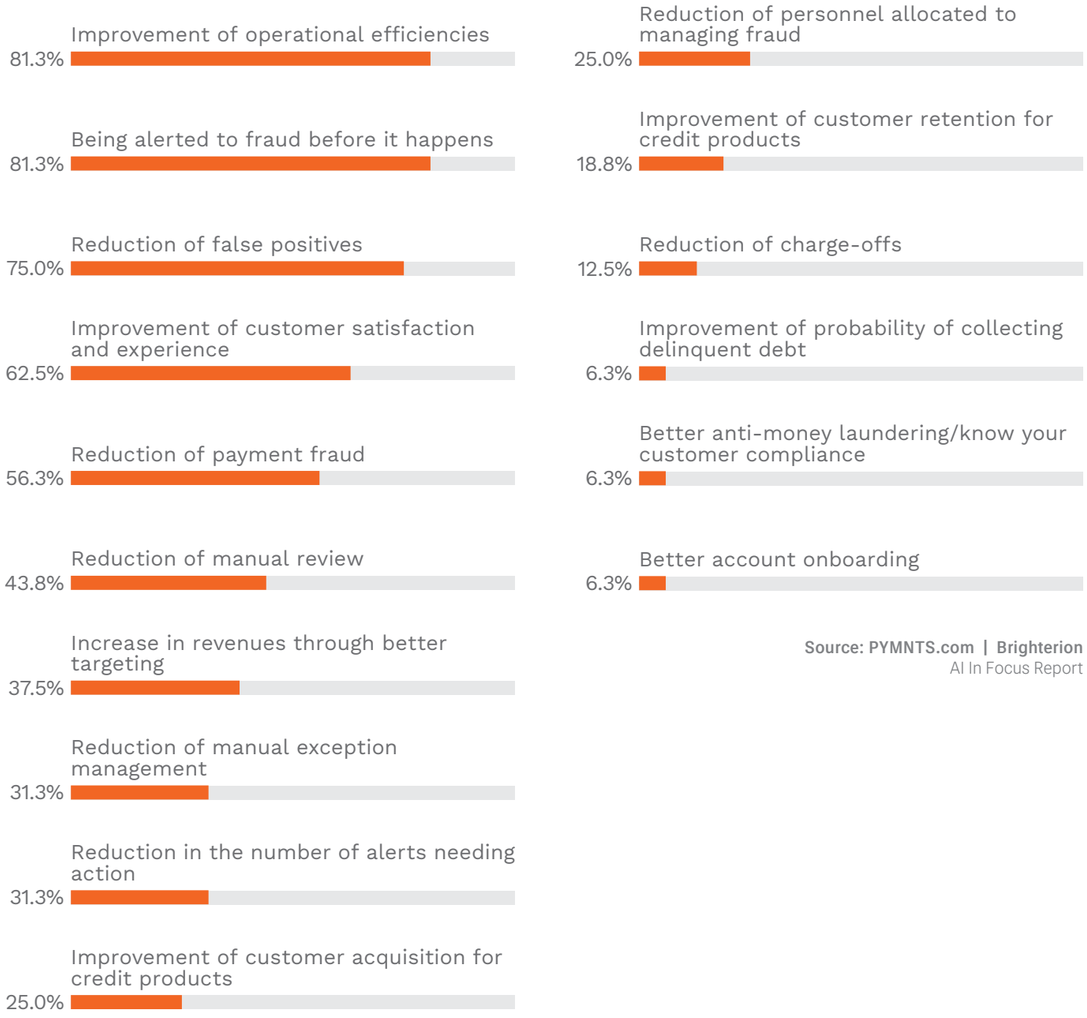
FIGURE 7:

## Benefits from computational systems

**Share of AI systems users who mentioned select benefits**




Source: PYMNTS.com | Brighterion
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> AI reduces workloads and allows us to make better decisions, which **ultimately boosts our operational efficiency.**
>
> — Respondent, AI In Focus survey of bank executives

# Case Study:

TD BANK ON WHY THERE IS MORE TO THE CREDIT LANDSCAPE THAN MEETS THE EYE

## TD Bank On Why There Is More To The Credit Landscape Than Meets The Eye

It is easy to forget today just how difficult the early days of the pandemic were. This was not just because of its very real health and economic impacts — including massive job losses — but also because of the widespread anxiety and uncertainty around what was coming next. These concerns naturally extended to banks, which faced the prospect of large-scale defaults on loans and credit cards.

The pandemic has also demonstrated why banks in difficult times must devise strategies based on their own data — not macroeconomic statistics and other external indicators. This is something Mike Kinane, head of credit cards and unsecured lending at TD Bank, knows well.

“At the start of the pandemic, like every other financial institution, we weren’t sure what the financial impact would be on customers,” he told PYMNTS. “We saw unemployment numbers skyrocket, which is usually a sign that consumers would potentially de-prioritize repaying loans and lines of credit with their banks. We immediately focused on supporting our customers by launching TD Cares, which provided payment relief options. And like many financial institutions, we took steps to mitigate repayment risk.”

The major economic impacts that many FIs were bracing for did not come to pass, however — at least not exactly how they may have anticipated. The pandemic has given rise to an array of unlikely consumer behaviors, among them widespread saving, major expenditures on home improvements and a roller-coaster ride of investment in the stock market and other alternative entities, such as nonfungible tokens (NFTs). To be sure, government stimulus spending and other support programs have contributed to some of these developments.

Kinane has observed these trends firsthand.

“An interesting thing happened over the course of 2020,” he said. “The government stimulus and unemployment assistance really buoyed the American consumer. In fact, people were saving and still paying down their debt. Financial institutions began working to determine if this would be sustainable.”

Economies are extremely complex, and the circumstances of individual consumers can vary dramatically even amid large-scale recessions. While consumer spending in the U.S. has not plunged since the pandemic began, it has flowed toward different channels. Spending on trips and travel has been way down, but spending on essentials and home entertainment, for example, has been strong — and banks have had to be responsive to these shifts.

TD Bank decided to alter some of its credit card programs.

“We saw consumer spending shift away from categories like travel and entertainment that are typically highly rewarded by credit cards,” Kinane said. “And our market research demonstrated a preference for cash back that would allow consumers to earn and spend how they’d like. So we introduced the new TD Double Up credit card in March, which offers consumers 1 percent cash back on purchases, regardless of category, and an additional 1 percent cash back when rewards are redeemed into an eligible TD deposit account.”

Advanced technologies like AI can allow banks to take a more finely tuned approach to economic conditions, even at the level of individual accounts. Data might suggest that a customer might benefit from a credit-line increase, for example, or a home equity line of credit. Conversely, AI could help FIs develop tailored strategies for borrowers flagged as credit risks. Thus, changing circumstances can quickly be recognized not

# Conclusion

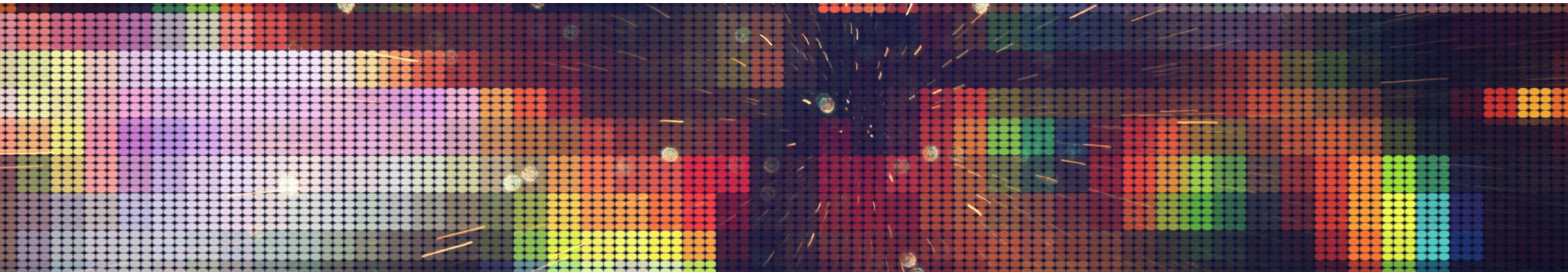
The past year has reinforced the wisdom of expecting the unexpected. For FIs, it has brought home the shortcomings of static models for assessing risk in lending. Many banks are keenly aware that gaining real-time capabilities is essential to better managing and mitigating these risks.

Recognizing the need for these capabilities is one thing, but having technological systems that can process large volumes of data and leverage it for operational and strategic advantages is another. AI is in many ways the key to unlocking these capabilities, and a growing share of FIs are coming to recognize this. Sixteen percent of banks are using AI systems today, and sizable majorities of large FIs are using AI beyond security use cases to include credit operations.

AI adoption faces hurdles, however. The technology has made only limited inroads among medium-sized and small banks, although these FIs also recognize the importance of AI and plan to invest in such systems over the coming months and years. The perceived costs associated with AI and its complexity continue to hinder banks, underscoring the importance of choosing the right technology partners — ones that can not only show proven results but also act as guides in implementing AI solutions that are intuitive and comprehensive. Complexity and dynamism do not characterize just the current economic climate, after all. They are ever-present in the world, and forward-thinking organizations must have the technological capabilities to respond to the challenges — and opportunities — they create.

**Methodology**

AI In Focus: The Navigating Bank Credit Risk Playbook is based on a survey of 100 financial executives who work at banks with at least $1 billion in total assets and who hold leadership responsibilities in at least one of the following areas: credit risk management, financial planning and analysis, risk management and fraud detection/analysis. The survey was conducted from January 28 to February 17.



# AI In Focus:

THE NAVIGATING BANK CREDIT RISK PLAYBOOK

# about

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PYMNTS.com is where the best minds and the best content meet on the web to learn about "What's Next" in payments and commerce. Our interactive platform is reinventing the way in which companies in payments share relevant information about the initiatives that shape the future of this dynamic sector and make news. Our data and analytics team includes economists, data scientists and industry analysts who work with companies to measure and quantify the innovation that is at the cutting edge of this new world.

Brighterion

mastercard

Brighterion, a Mastercard company, was founded in 2000 and acquired by Mastercard in 2017. We deliver a leading artificial intelligence and machine learning platform that provides real-time mission critical intelligence from any data source, regardless of type, complexity or volume. Our AI solutions fight financial crime and fraud, reduce credit risk, prevent healthcare fraud, waste and abuse, and more. Currently we serve 74 of the 100 largest U.S. banks and more than 2,000 customers worldwide, processing more than 100 billion transactions annually. For more information, please visit us on the web, our blog, LinkedIn, Twitter or Facebook.