NELSON MULLINS

FinTech University

FinTech and Artificial Intelligence
July 11, 2023

Artificial Intelligence

Thinking about your future digital co-worker

What is ARTIFICIAL Intelligence?

- Artificial Intelligence can be thought of broadly as any technology able to perform tasks that would typically require “human thought.” This can be anything:
  - Understanding something that is seen
  - Recognizing speech
  - Making data-driven decisions
  - Translating between languages
  - Understanding risks of decisions
- Artificial Intelligence (“AI”) really encompasses two core concepts:
  - Rule-based systems
  - Machine learning
- Banks are already seeing AI enter the financial services sector. Each year, more FinTech firms are using AI to change how consumers view their relationship with financial services. Now, more than ever, customers expect easier, faster, 24-hour access to financial services.

What We will Discuss Today:

- AI is revolutionizing the delivery of financial products. It has two goals:
  - Provide “smarter” outcomes
  - “Change” the burden on humans within the financial services company
- In this presentation, we are going to systematically walk through current developments in AI, and then think about where banks will be in 7 more years.
- After this, we will discuss the regulatory implications of AI within the financial sector.
- Finally, we will discuss how AI continued to revolutionize compliance oversight within banks.

CHATGPT: "HOW WILL ARTIFICIAL INTELLIGENCE CHANGE THE BANK OF 2030?"

*OpenAI, ChatGPT.

1. Personalized customer service: AI-powered chatbots and virtual assistants could provide customers with personalized banking recommendations and advice based on their financial history and behavior.
2. Fraud detection: AI could be used to analyze large amounts of data and identify patterns and anomalies that could indicate fraudulent activity. This could help banks to prevent fraud before it happens.
3. Risk management: AI algorithms could be used to assess and manage risks associated with various financial products and services, including loans and investments.
4. Credit scoring: AI could be used to analyze a range of data sources and create more accurate credit scores for customers, which could help banks to make more informed lending decisions.
5. Compliance and regulation: AI could be used to automate regulatory compliance processes and ensure that banks are complying with relevant laws and regulations.
6. Investment management: AI algorithms could be used to analyze market data and make investment decisions on behalf of customers, based on their risk tolerance and investment goals.
7. Cybersecurity: AI could be used to detect and respond to cybersecurity threats, helping banks to protect their customers' data and financial assets.

Overall, AI has the potential to transform the banking industry in a number of ways by 2030, from enhancing customer experience to improving risk management and compliance. However, it will be important for banks to balance the potential benefits of AI with the need to maintain transparency, privacy, and ethical considerations.

Understanding the Terminology

An introduction to the space

Definitions

- **Rules-Based Systems**: AI built on a set of algorithms that are used to store, manipulate, and interpret some set of data.
- **Machine Learning**: A set of algorithms to make a system "artificially intelligent"—enabling the system to recognize patterns from large data sets and apply past experiences to predict future results.
- **Natural Language Technologies**: Understanding and interacting with a technology as though it were another human—using human language through "Bots" or other natural language generators.
- **Cognitive Data Mapping**: A system that can review data to "understand" what the data means in the way a human would interpret data.
- **Predictive Analytics**: Combines data, statistical algorithms, and machine learning techniques to identify the likelihood of a future outcome based on historical data sets.

The Solutions

A new technology frontier for banking with a simultaneous regulatory focus

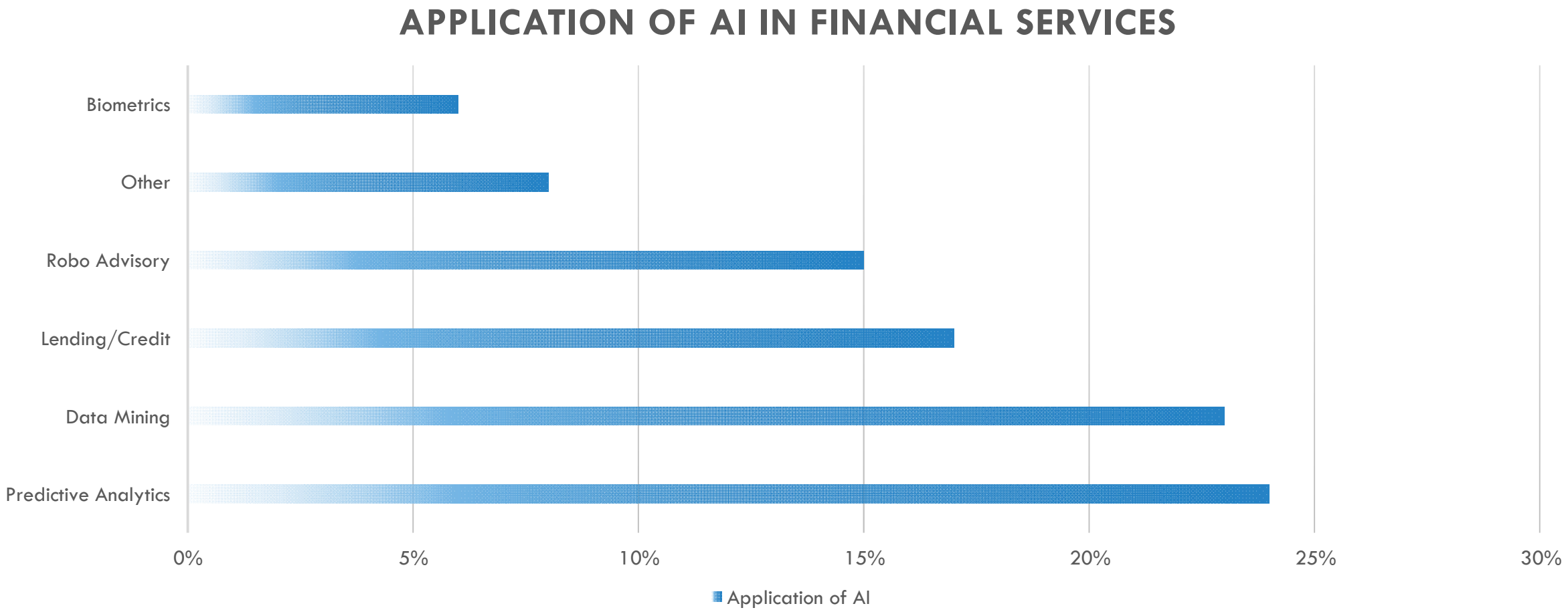
The EXPLOSIVE GROWTH OF AI:

Reporting, Compliance, & Operations:	KYC & Data Protection:	Marketing & Sales:	Client Experience:	Predictive:
• Auto clearing of false sanction screening hits generated by filtering software • Auto booking of transactions and accounting entries on basis of unstructured data (voice log transcriptions, emails, forms…) • Automatic reporting • Increased sophistication of data analysis to better quantify risk • Third-party vendor oversight and risk management • Collections management	• Big data analysis across systems to generate fraud alerts • Suitability analysis for customers • Automatic second line oversight of business units • KYC reviews, including automatic screening • Review of communications for possible data leaks • Review of customer service interactions for prohibited conduct	• Targeted advertising for individual customers • Customized product offers • Real-time analysis of marketing effort ROI • Real-time customer profitability analysis • Customer prioritization • Competitor usage analysis	• Client satisfaction assessments • Real-time client behavior patterns • Real-time product recommendations • Assessment of client “happiness” during bank interactions • Early Warning Systems (EWS) for client dissatisfaction • EWS for loan default • Lower “marketing fatigue”	• Machine learning based underwriting • Real time feedback on product design • Missing solutions analysis • Bigger data sets feeding customer risks assessments • Cross-platform and inter-bank data ingestion • Limit assessments

Why?

Stronger Customer Relationships	End-to-end automation 24/7 Solutions Highly-personalized banking experience
Higher Customer Lifetime Value	More effective cross-selling of financial products Better understanding of ongoing customer needs
Lower Operating Costs	Shifting FTE workload to “higher” uses Less document processing and review More use of humans for the difficult, nuanced tasks
Lower Credit Risks	Bigger data sets More predictive Underwriting Early detection of warning behaviors

Where are Banks Planning to USE AI?



*Goodwin, *A Global Survey of on the State of Financial Technology*

An Emerging Regulatory Focus:

- In a joint *Request for Information*, the prudential regulators sought industry feedback on the use of AI in banking. They identified a number of key use cases:

1. *Flagging unusual transactions.*
2. *Personalization of customer services..*
3. *Credit decisions.*
4. *Risk management.*
5. *Textual analysis.*
6. *Cybersecurity.*

The regulators also flagged a number of significant regulatory concerns—*more on that later….*

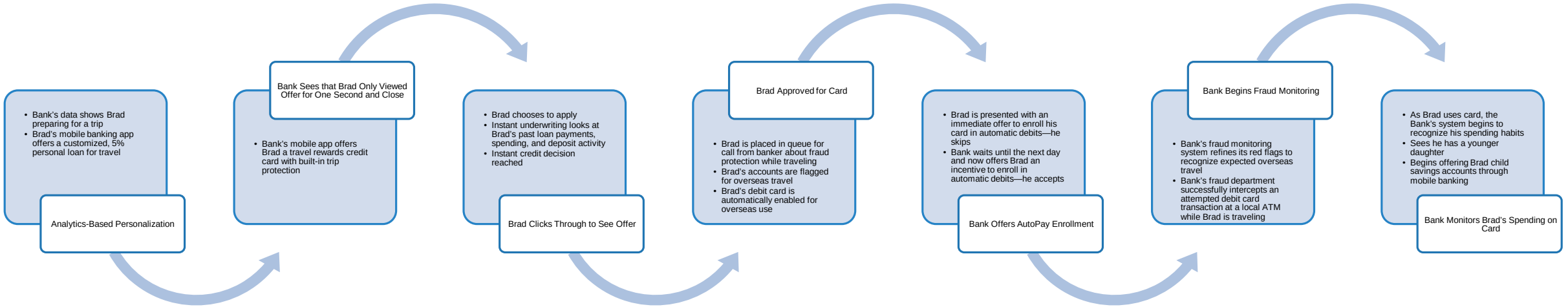
Request for Information and Comment on Financial Institutions' Use of Artificial Intelligence, Including Machine Learning

A Notice by the Comptroller of the Currency, the Federal Reserve System, the Federal Deposit Insurance Corporation, the Consumer Financial Protection Bureau, and the National Credit Union Administration on 03/31/2021

Enhancing the Customer Journey

Bringing personal banking to the digital age

Reimagining the Customer Experience



Bank's User Profile: **Brad Rustin** (Age 41)

Family: Wife and young daughter

Occupation: Working Professional

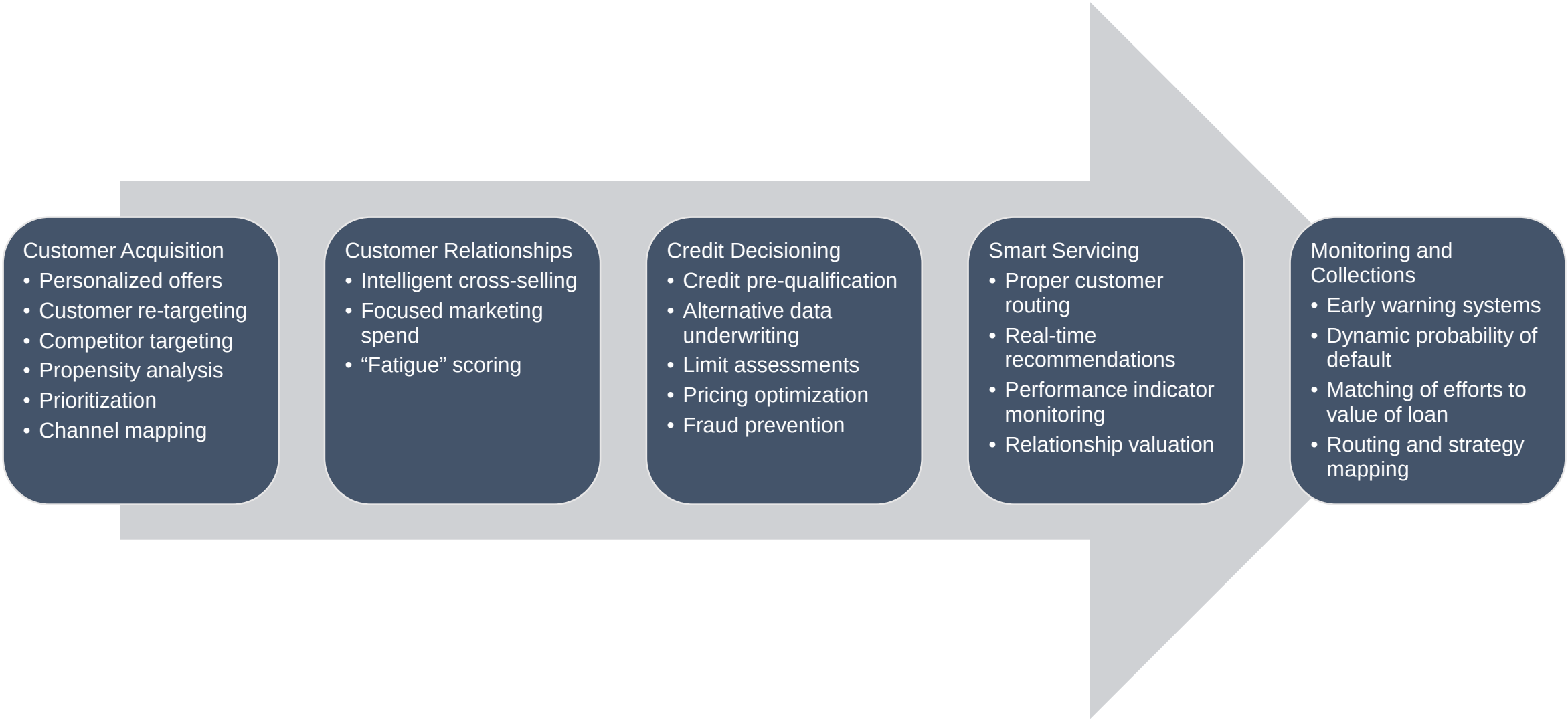
Other Relationships: Car Loan from Ford Motor Credit

Spending: Entertainment and Travel

Other Financial Products: Brokerage account, AmEx, 529

Profit to Bank: $210/year based on deposit revenue

Using AI for the Customer Life Cycle



Innovation in Underwriting

Using alternative data to make better credit decisions

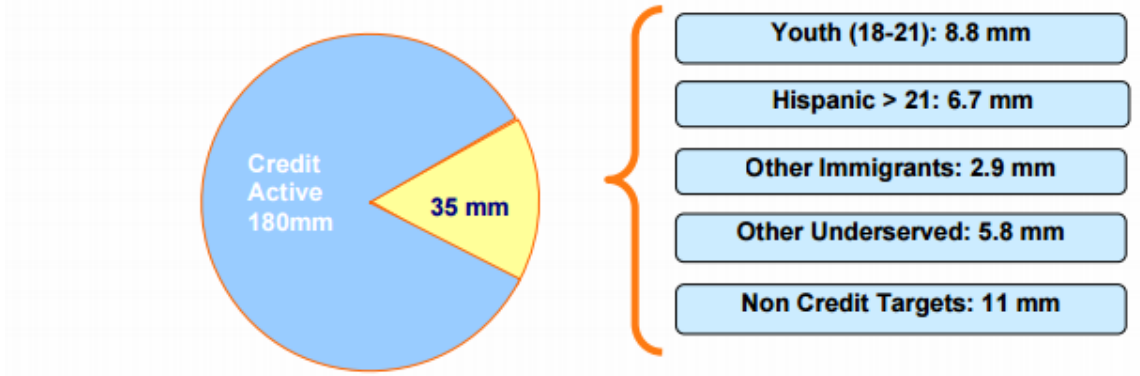
What is Alternative Data?

- Alternative data is anything beyond traditional credit reports that helps a lender predict the likelihood of a consumer's default on a given loan.
- Almost anything can be considered alternative data. Each vendor promises that their alternative data has value at predicting consumer behaviors.

Utility Payments	Telecom Payments	Rent Payments	Insurance Payments	Check Cashing Activity
Online Banking Data	Payday Loan Payments	Prepaid Card Spending and Loading	International Remittances	Cable TV Payments

Reaching Underserved Groups:

- 26 million Americans are “credit invisible”—no credit history with a nationwide consumer reporting agency (2017 CFPB Estimate)
- Another 19 million Americans have a consumer report that has gone “stale” or is insufficient (“thin file”) to produce a credit score under most credit scoring models (2017 CFPB Estimate)
- Individuals that fall into these two groups tend to be traditionally underserved groups—African-American, Hispanic, and low-income consumers (2017 CFPB Data).



Why Consider Alternative Data?

The National Credit Reporting Association estimates that 70 million consumers either have no credit score or a lower score than their financial history warrants when other data is included.

In a Brookings study, the acceptance rate of applicants with “thin files” went up dramatically when alternative data was used to assess creditworthiness:

Hispanics: 22% Increase in Acceptance Rates

African-Americans: 21% Increase in Acceptance Rates

Asian Americans: 14% Increase in Acceptance Rates

Youth (under age 25): 14% Increase in Acceptance Rates

Senior (over age 66): 14% Increase in Acceptance Rates

Earners (less than $20,000): 21% Increase in Acceptance Rates

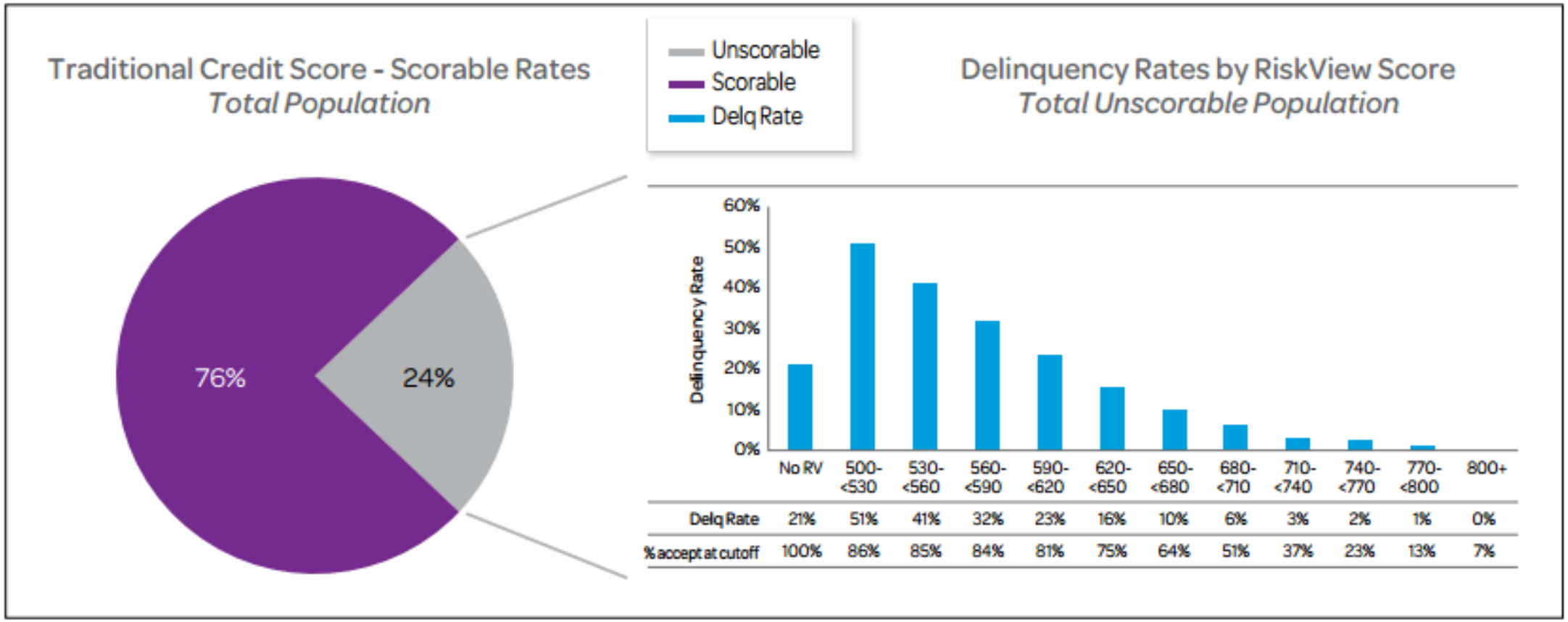
Earners ($20,000 to $29,999): 15% Increase in Acceptance Rates

- *Michael A. Turner, Alyssa Stewart Lee, Ann Schnare, Robin Varghese, and Patrick D. Walker, “Give Credit Where Credit is Due: Increasing Access to Affordable Mainstream Credit Using Alternative Data,” Policy and Economic Research Council and The Brookings Institution Urban Markets Initiative (2006).

Why Consider Alternative Data

- Not only does alternative data help evaluate thin- or no-file applicants, it can help more accurately predict future default.
- In the Brookings study:
  - Considering utility bill payment data decreased lenders' default rates by 29%.
  - Considering telecommunications data decreased lenders' default rates by 27%.
- The Center For Financial Services Innovation ran a similar test using L2C (TransUnion) data in subprime auto portfolios. The L2C data showed:
  - 69.4% lift in predictive value where there was no credit file
  - 25.9% lift in predictive value where there was a "thin" credit file
  - 19.4% lift in predictive value where the consumer had a mainstream credit score

More Accurate Predication of Delinquency



*LexisNexis Risk Solutions (2017)

The Promise of Alternative Data

- + Expand access to credit
- + Customers traditionally deemed risky can now be accurately reviewed
- + Improved assessment of creditworthiness
- + More timely information
- + Automate manual processes
- + Lower costs to lender and, in turn, lower costs to borrower

What is Being Considered?

L2C (now TransUnion Credit Vision)	Experian Emerging Credit Score	FICO Expansion Score	LexisNexis RiskView	PRBC Consumer Report	Symantec ID Analytics
•Property tax and deed records •Check and debit account history •Payday lending •Rent-to-Own payments •Address stability •Club and subscription activity	•Demographics •Internet, catalog, and direct marketing purchases •Public records •Property and asset records •Telecom and Utility Data	•Debit data •Membership data •Utility data •Bankruptcies, judgment, liens •Property and asset records	•Employment history •Address history •Property and asset records •Bankruptcies, judgments, liens •Criminal records •ID verification and professional licensure	•Rent history •Utility payments •Mobile phone account payments •Banking inquiries •Property and asset records •Address history	•Telecommunications payments •Online lending data •Credit card applications

What is Being Considered?

ADP SmartCompliance	Yodlee/Envestnet	Plaid	Finicity
• API to instantly verify worker income • Confirms employment and length of employment	• Credit card activity • Bank account activity • Deposits and withdrawals from accounts • Some, limited prepaid card activity	• Transaction data from credit cards • Deposits and withdrawals from accounts • Some, limited prepaid card activity	• Transaction data from credit cards • Deposits and withdrawals from accounts • Some, limited prepaid card activity

Unique use cases

Cutting edge usage of AI within banks

Customer Strategy

Servicing Strategy:

- Ranking of customers by “VAR”—value-at-risk (= Loan Value x Likelihood of Default)
- Routing to most appropriate servicers
- Using lower cost / lower resource tools for low-VAR customers (such as texts or automated calls)
- Using supervisors or best servicing staff for high-VAR customers

Customer Treatment Strategy:

- Often, the most difficult analysis is determining what strategy the bank should use for a given customer:
  - Customers with significant relationships with the bank (“custom” touch)
  - Customers who are “absent minded” (automated reminder systems)
  - Customers with high willingness, but low ability to pay (“restructuring” approach)
  - Customers with low willingness to pay and high ability to pay (“aggressive” collections)
  - Customers with low willingness to pay and low ability to pay (“early settlement and asset recovery” approach)
- Often, a computer can make these terminations much better than a bank collector

Call Monitoring

- Recent enforcement actions have revealed significant risks associated with third-party servicers, third-party debt collectors, and banking staff.
- Modern developments in language-based AI allows banks to monitor calls for “trigger words” for the compliance team.
- The newest technology can even track customer responses and effectiveness of tone and strategy.
- When this information is then cross-referenced to analytical data regarding accounts and products, it also allows you to monitor for over-pushing products or accounts.

“Point of Decision” Marketing

The *Harvard Business School (HBS)* spent significant time analyzing the “why” behind customer behavior. Traditionally, banks tried to understand their customers, their needs, and then match to these statements.

However, the HBS research revealed that most customers make decisions regarding a product based on a “problem” → “solution” approach.

HBS found that the single biggest driver of the use of a product was whether it was there when a client needed it and that it met their need at that point in time. This is extremely difficult for most businesses. However, through AI, this is now becoming realistic for banks.

Simply look at the BNPL industry and you will see a great example of the explosive growth of *Point of Decision* financial products and their dramatic usage.

Chatbots and Natural Language AI

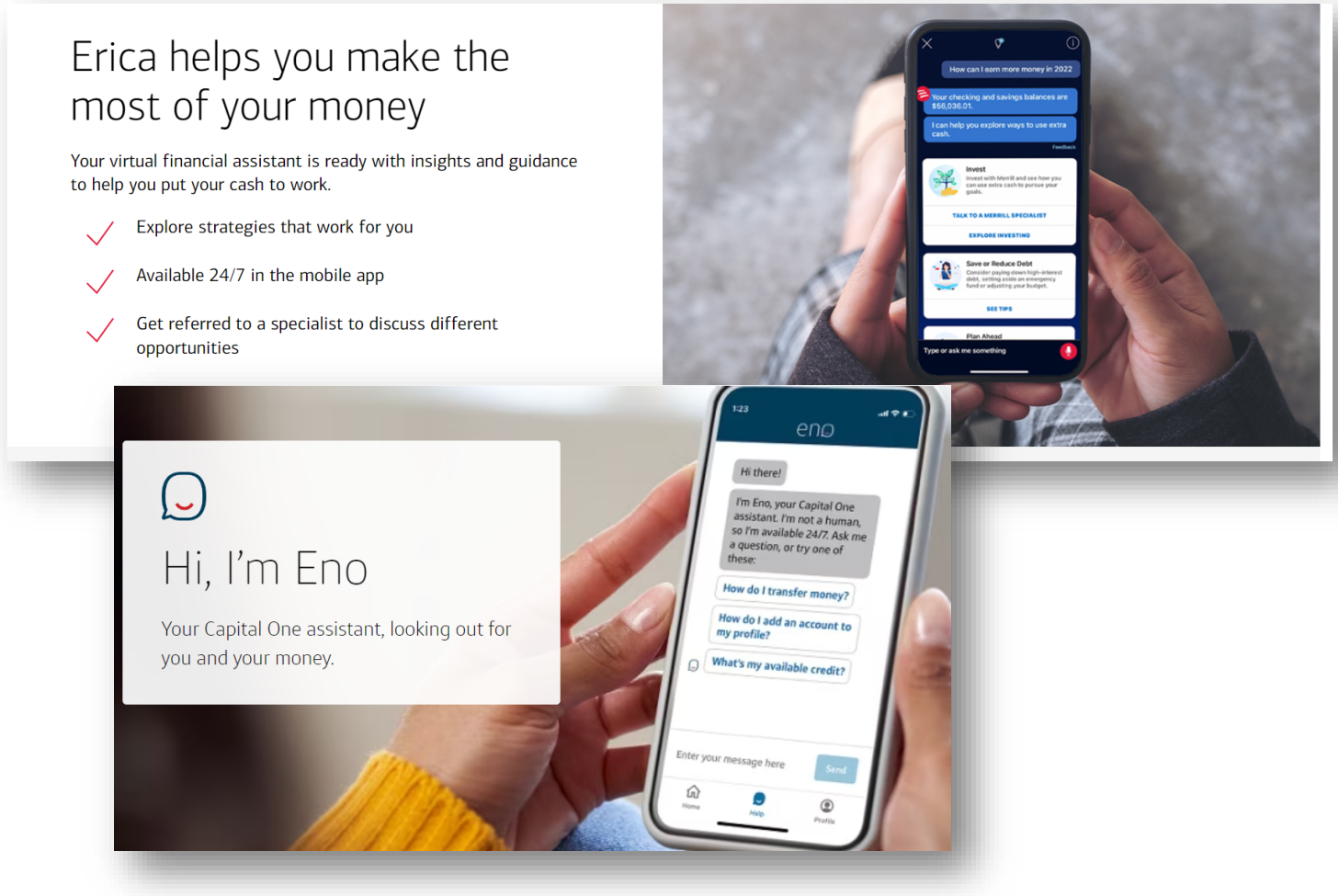
Already, text-based customer support is overtaking phone support.

Many times, the customer request is a simple status update or a simple transaction that takes a CSR <10 seconds. However, the customer is now on the phone for 5 to 10 minutes for a 3 second transaction.

Modern, natural-language chatbots are redefining customer service giving customers the “feel” of chatting with a human when the chatbot is truly responding.

Given customer usage, ChatBots are well positioned to serve customers (“Most Valuable Services”):

- Viewing statements and account balances (33% of respondents)
- Transferring funds between accounts (31%)
- Bill pay (28%)
- Peer-to-peer payments (11%)

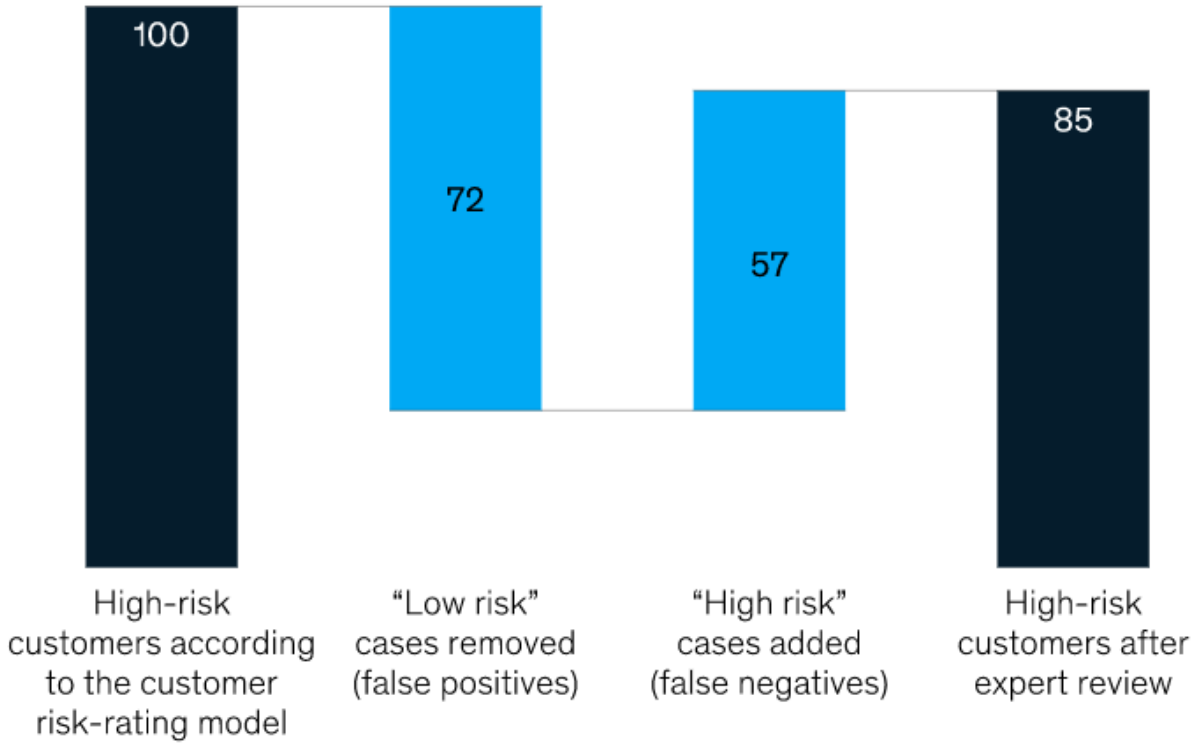


AI innovation in compliance

Using AI to streamline fraud and risk, while better utilizing human talent

Typical AML Scoring Systems

High-risk customers sent to enhanced due-diligence units (disguised real data example), indexed to 100

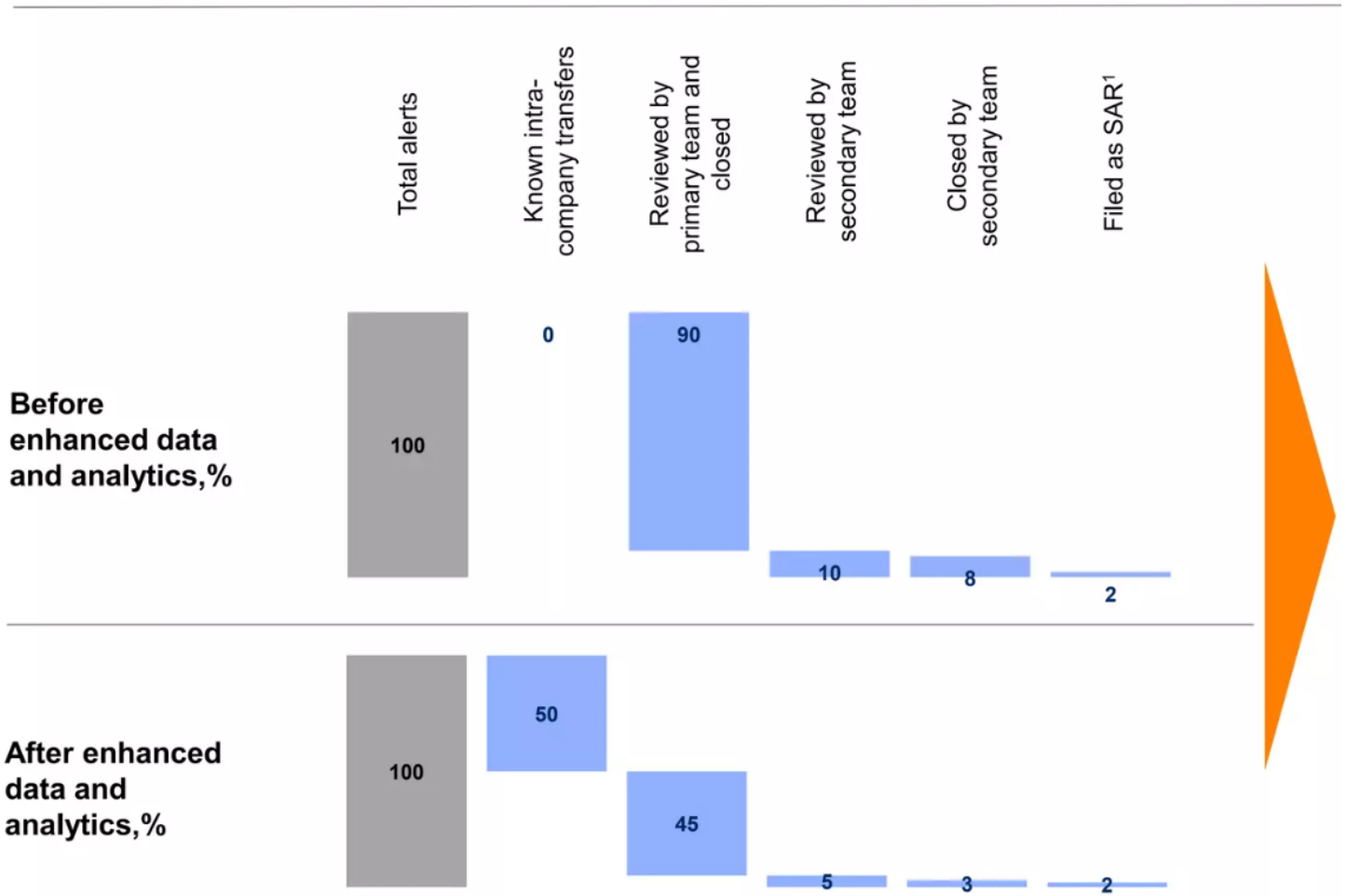


*McKinsey & Co., *The investigator-centered approach to financial crime: Doing what matters* (2020).

Use of Enhanced Analytics

McKinsey conducted research at a large U.S. bank. The bank established machine learning systems that would "learn" from the BSA/AML team and look for more intricate patterns of conduct.

Most of the false positives were innocuous intra-company transfers. By understanding the corporate structure and "teaching" the software, the burden on BSA/AML staff was halved.



Where can AI add Value in Compliance?

- **Identification and verification of customers**: In the context of remote onboarding and authentication AI, including biometrics, machine learning and liveness detection techniques, can be used to perform micro expression analysis, anti-spoofing checks, fake image detection, and human face attributes analysis.
- **Monitoring of the business relationship and behavioral and transactional analysis**:
  - Unsupervised machine learning algorithms: Group customers into cohesive groupings based on their behavior, which will then create controls that can be set more adequately based on a risk-based approach (ex: transaction threshold settings), allowing a tailored and efficient monitoring of the business relationship.
  - Supervised machine learning algorithms: Allow for a quicker and real time analysis of data according to the relevant AML/CFT requirements in place.
  - Alert Scoring: Helps focus on a patterns of activity and issue notifications or need for enhanced due diligence.
- **Identification and implementation of regulatory updates**: Machine Learning techniques with Natural language processing (NLP), cognitive computing capability, and robotic process automation (RPA) can scan and interpret big volumes of unstructured regulatory data sources on an ongoing basis to automatically identify, analyze and then shortlist applicable requirements for the institution; or implement (to a certain extent) the new or revised regulatory requirements (via codification and generation of implementation workflows) so regulated entities can comply with the relevant regulatory products.
- **Automated data reporting (ADR)**: Use standardized reporting templates using automated digital applications (data pooling tools) making the regulated entities underlying granular data available in bulks to supervisors.

Regulatory Concerns

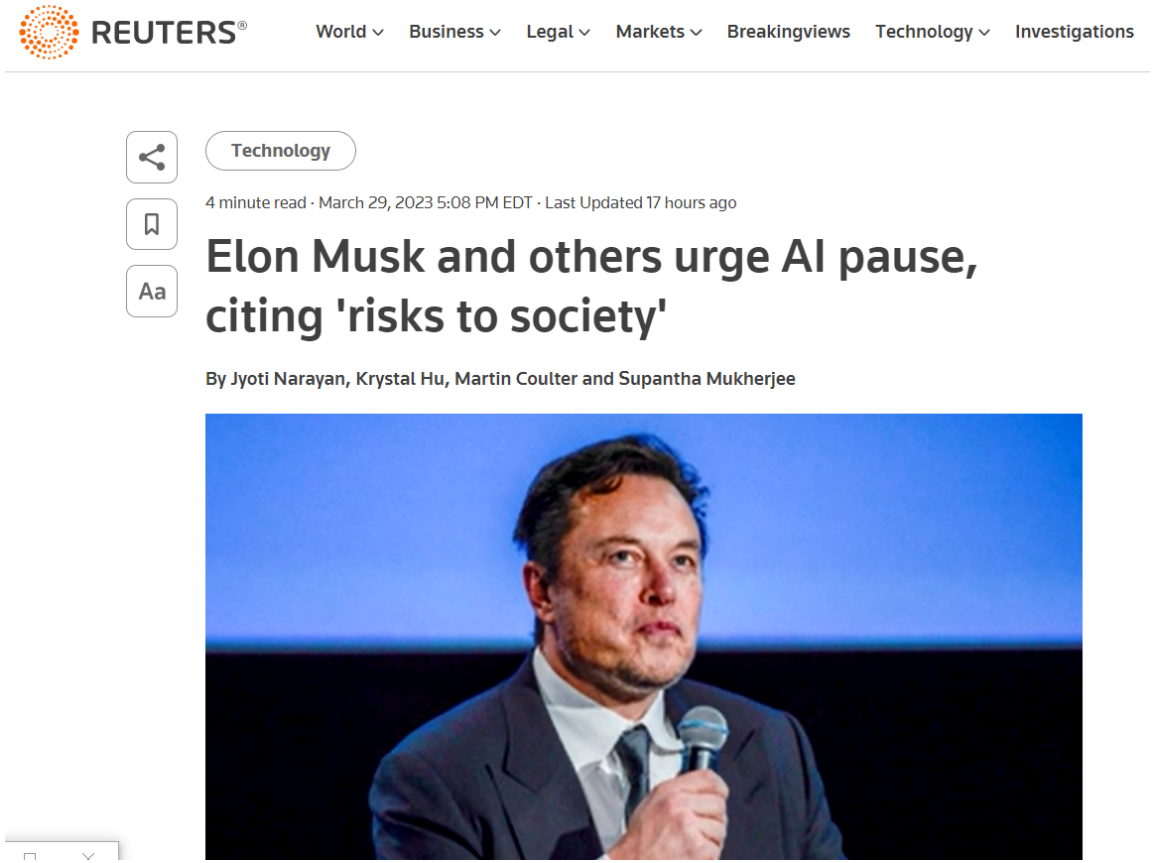
The risks of big data and AI

Societal Questions

Power: GPT-4 can pass most AP exams and score in the 90th percentile of the Uniform Bar Exam taken by lawyers. One study found it can also promote misinformation and manage disinformation campaigns.

From the Letter:

- “Contemporary AI systems are now becoming human-competitive at general tasks, and we must ask ourselves: Should we let machines flood our information channels with propaganda and untruth?“
- **"**Should we automate away all the jobs, including the fulfilling ones? Should we develop nonhuman minds that might eventually outnumber, outsmart, obsolete and replace us? Should we risk loss of control of our civilization?“
- "Powerful AI systems should be developed only once we are confident that their effects will be positive, and their risks will be manageable."



Regulatory Questions

Explainability: Without insight into an approach's general operating principles, bank management may not be able to evaluate with confidence how the system will function in unforeseen circumstances.

Data Integrity: Like other systems, AI is designed to interact directly with training data to identify correlations and patterns and use that information for prediction or categorization. If the training data are biased or incomplete, AI may incorporate those shortcomings into its predictions or categorizations.

Overfitting: "Overfitting" can occur when an algorithm "learns" from idiosyncratic patterns in the training data that are not representative of the population as a whole.

Cybersecurity Risks: AI may be exposed to risk from a variety of criminal cybersecurity threats. For example, AI can be vulnerable to "data poisoning attacks," which attempt to corrupt and contaminate training data to compromise the system's performance.

Dynamic Updating: Some AI has the ability for it to learn or evolve over time, especially as it captures new training data. This can cause drift as it learns from the new data. This can present challenges for validating, monitoring, tracking, and documenting the AI approach, including for persons conducting an independent review.

Third-Party Oversight: Given significant data exchange, TPRM programs are significantly more critical.

Fair Lending/Discrimination/UDAAP: Significant concerns have been raised with "black box" underwriting. There may be uncertainty about how less transparent and explainable AI approaches align with applicable consumer protection legal and regulatory frameworks, which often address fairness and transparency.

The Risks of BIG Data / AI

- Inaccurate or incomplete information in newer databases and with less sophisticated data sources
- Less transparency into the sources of the data
- Difficulties in achieving “good standing” given the diversity of information
- May inaccurately reward or penalize certain groups of consumers (i.e., military, students, seniors)
- Potential for discrimination by using “facially neutral” alternative data that has a discriminatory effect on a protected class

The Legal Landscape for BIG DATA AND AI

- Is the source data legally obtained?
- Is the source data accurate?
- Are the sources the type that provide FCRA-level data or data actionable by a Bank?
- Is the reporting agency complying with the FCRA and the FACT Act?
- Is the information being used in compliance with Fair Lending and UDAAP obligations?
- Is the data and its predictive results defensible / predictive?
- How will the Bank provide proper authorizations and obtain consents from consumers?
- How will the lender disclose adverse actions taken based on the data?
- How can a customer “fix” their standing with the bank?

The Future of BIG Data and AI?

Dear Applicant,

We regret to inform you that we are not able to extend you financing at this time. The principal reason(s) for our denial of your application are:

(x) Insufficient number of social media connections
(x) References in social media to inability to pay bills at end of month

Our credit decision was based in whole or in part on information obtained in a report from the consumer reporting agency listed below. You have a right under the Fair Credit Reporting Act to know the information contained in your credit file at the consumer reporting agency. The reporting agency played no part in our decision and is unable to supply specific reasons why we have denied credit to you. You also have a right to a free copy of your report from the reporting agency, if you request it no later than 60 days after you receive this notice. In addition, if you find that any information contained in the report you receive is inaccurate or incomplete, you have the right to dispute the matter with the reporting agency.

Facebook
1 Hacker Way
Menlo Park, California 94025

Compliance Cheat Sheet

- *Interagency Statement on the Use of Alternative Data in Credit Underwriting*, FDIC FIL-82-2019.
- *Supervisory Guidance on Model Risk Management*, Federal Reserve SR Letter 11-7.
- *Third-Party/Outsourcing Risk Management*, FDIC FIL-44-2008.
- *New, Modified, or Expanded Bank Products and Services*, OCC Bulletin 2017-43.
- Patrice Alexander Ficklin, Tom Pahl, and Paul Watkins, CFPB Blog, *Innovation spotlight: Providing adverse action notices when using AI/ML models* (July 7, 2020).
- *Request for Information on Financial Institutions' Use of Artificial Intelligence, Including Machine Learning*, OCC Bulletin 2021-17.
- *Deputy Comptroller Testifies on Artificial Intelligence*, OCC News Release 2022-52.

Presenter Biographies

DOWSE BRADWELL "BRAD" RUSTIN IV

Brad Rustin chairs the firm's Financial Services Regulatory Practice. He began his career as a litigator focusing on consumer financial services litigation and defense of regulatory claims against chartered and non-chartered financial institutions, finance entities, and money services business. Following in the wake of the fiscal crisis, he began working with financial institutions, state-licensed lenders, money transmitters, non-traditional lenders, check cashers, and mortgage brokers on issues of regulatory compliance. Brad is a Certified Anti-Money Laundering Specialist (CAMS) by ACAMS and a Certified Regulatory Compliance Manager (CRCM) by the American Bankers Association. He also serves as an expert witness of matters relating to financial regulations and compliance.

JEFFREY M. KELLY

Jeff Kelly focuses his practice in areas of emerging technology, particularly in areas involving data analytics, digital assets, and FinTech. He works closely with entrepreneurs and companies to effectively navigate changing regulations, government investigations, and complex corporate and securities law challenges. Jeff also represents clients before tribunals and agencies that concentrate on regulating new technology and protecting trade secrets, including the North Carolina Business Court, the U.S. Securities and Exchange Commission (SEC), and federal courts.

CAIO G.H. PRADO

Caio provides strategic business–oriented advice to high–growth companies and investors as they face legal and business challenges. He focuses his practice on emerging growth and venture capital financings, private equity, mergers and acquisitions, and general corporate and business counseling for high net worth individuals and family offices.

MALLORY ACHESON, CIPM

Mallory Acheson focuses on privacy and security compliance, technology transactions, and the intersection of data and electronic discovery issues. Mallory helps clients navigate domestic and internal privacy laws, including CCPA/CPRA, GDPR, TCPA, HIPAA, and GLBA. She assists clients in developing and executing compliance programs, privacy policies, data processing agreements, and related regulatory analysis.

Moderator Biography

RICHARD B. LEVIN

Richard is chair of the FinTech and Regulation Practice and was one of the first lawyers to focus on the regulation of blockchain and digital assets. He is considered a thought leader in the FinTech space. Richard brings his experience as a senior legal and compliance officer on Wall Street and in London to bear in advising clients on corporate, FinTech, securities, and regulatory issues. A problem-solver by nature, he has been advising FinTech clients on legal and regulatory issues since the start of electronic trading in the late 1990s. His practice focuses on helping financial services and technology clients identify and address regulatory issues as they build their businesses.

Richard's practice focuses on the representation of early stage and publicly traded companies in the FinTech space, including investment banks, broker-dealers, investment advisers, peer-to-peer lending platforms, digital currency trading platforms, alternative trading systems (ATSs), exchanges, and custodians. He represents these firms before the U.S. Securities and Exchange Commission (SEC), the U.S. Commodity Futures Trading Commission (CFTC), the Financial Industry Regulatory Authority (FINRA), the U.S. Department of the Treasury, Office of the Comptroller of the Currency (OCC), state regulators, and Congress. Richard has represented clients before regulators in Australia, Canada, France, Germany, Hong Kong, Ireland, Japan, Singapore, South Korea, and the United Kingdom. His current and past clients include leading national financial institutions, multinational financial services holding companies, leading firms in the FinTech space, and institutions engaging in global investment banking, investment management, securities, and other financial services with institutional clients.

Richard has been identified by Chambers and Partners as one of the leading lawyers in the Blockchain and Cryptocurrencies category since the inception of the category. He has been recognized by Chambers for his knowledge on regulatory matters, great relationships with regulators, for helping clients push the boundaries of the FinTech sector, and for his advice on matters such as broker-dealer licensing and alternative trading systems. Richard is routinely quoted by leading publications including Bloomberg, the New York Times, Reuters, and the Wall Street Journal and is a frequent speaker at conferences around the world on the regulation of FinTech, blockchain, and digital assets.

Contact Details

To learn more about our FinTech and Regulation practice, or to contact a member of our team, click here or visit our website at nelsonmullins.com.

To learn more about this presentation, please call:

Richard B. Levin
1400 Wewatta Street
Suite 500
Denver, CO 80202
Tel. 303.583.9929
richard.levin@nelsonmullins.com

Brad Rustin
2 W. Washington Street
Suite 400
Greenville, SC 29601
Tel. 864.373.2320
brad.rustin@nelsonmullins.com

Jeffrey Kelly
301 Hillsborough Street
Suite 1400
Raleigh, NC 27603
Tel. 919.329.3852
jeff.kelly@nelsonmullins.com

Caio Prado
330 Madison Avenue
27th Floor
New York, NY 10017
Tel. 646.428.9463
caio.prado@nelsonmullins.com

Mallory Acheson
150 Fourth Avenue North
Suite 1100
Nashville, TN 37219
Tel. 615.664.5378
mallory.acheson@nelsonmullins.com

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