Thrive in AI disruption

# AI in Banking: Executive Cheat Sheet

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# Emerj Artificial Intelligence Research

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- **Plans ("What to Do?")** – Informing strategy by honing in on the AI trends or capabilities most likely to deliver the desired results or the organization.

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# AI in Banking: Executive Cheat Sheet

## About This Cheat Sheet

Emerj AI Cheat Sheets are intended to serve as important executive guides to AI applications and trends in critical industry areas. The purpose of this Cheat Sheet is to help banking executives quickly grasp key concepts and trends. We've also created a resource list of our most helpful free research into the applications of AI in banking.

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## Natural Language Processing

### Definition

Natural language processing (NLP) is a subfield of artificial intelligence that deals with programming software to process and analyze large amounts of data that has been captured in the way humans write, speak, or document information. For example, a bank might use NLP to develop a conversational interface/chatbot that can answer questions from customers or allow them to perform funds transfer operations from the chat window. Chatbots necessarily involve NLP because they deal with recognizing the intent within text data, as well as responding to customers with text. In essence, the NLP software needs to "learn" the appropriate text responses to text it receives.

# Example Use Cases

## Conversational Interfaces/Chatbots

Customer facing chatbots seem to be the most common entry-level AI application at large banks. Large retail banks across the globe are launching chatbots to offer account services or funds transfer services to customers through newer channels such as messaging platforms.

- Wells Fargo is piloting an AI-driven chatbot which can be accessed through the Facebook Messenger platform. The bank claims its chatbot allows customers to access their account and can also help them reset their passwords.
- Bank of America recently announced the launch of a chatbot called Erica. The bank claims the chatbot uses predictive analytics, a machine learning approach intended to make predictions about the future based on historical data, to provide financial guidance to customers. This might entail personalized suggestions for how a customer can save more money based on their expenses.

## Document Search/Data Mining

Banks could also use natural language processing to automatically search for information within the tens of thousands of contracts and other documents that they deal with everyday. This kind of search function falls under the umbrella term of “data mining,” the process of searching through datasets to find similarities, correlations, or patterns. NLP could help banks cut down on the time their personnel take to find information within these documents and the number of people required to do so.

- JPMorgan Chase claims to have invested in an AI project named the Contract Intelligence (COiN) platform. The bank claims COiN was designed to analyze legal documents and extract important clauses, a task which is traditionally done by human employees and is often highly time-consuming.

# Affected Business Functions

## Customer Service

NLP could enable large banks to offer improved customer service and better buying experiences, especially to millennial customers that are used to fast, online channels. Additionally, banks might prefer to develop omni-channel conversational interfaces to make it easier for their customers to access information about their accounts or execute transactions through chat messages or email.

## Loans and Lending/Contract Management & Legal

Large banks seem to be applying data mining and document search techniques for use-cases such as mortgage management, credit scoring, and product development. Banks could use an NLP-based data mining software to scour the public social media posts of prospective

customers. They could use that data to inform makeshift credit scores for customers with little or no credit history, thus giving them a better idea of whether or not to lend to that customer. They could also use a similar NLP-based document search software to quickly find clauses in thousands of mortgage documents that might be of use to the bank's legal teams.

# Anomaly Detection

## Definition

Anomaly detection is an AI approach that deals with identifying deviations from the norm within a dataset. These deviations, or events, can be identified in real time. Oftentimes, an anomaly detection software is integrated wherever a bank is capturing or storing an incoming stream of data, such as transactions from payment processors and/or merchants. The software would then start to "learn" what makes a normal transaction while personnel at the bank manually flag abnormal transactions that they want the software to eventually flag itself. In doing so, the software would learn the difference between a normal transaction and a potentially fraudulent one, as we explain below.

## Example Use Case

### Risk Forecasting and Monitoring/Cybersecurity

Cybersecurity in the form of fraud detection, identity theft, anti-money laundering, and data breaches are of grave concern for banks. Bad actors are constantly finding new fraud methods and ways of stealing people's identities, which makes it challenging for banks to ensure transactions are legitimate and their customer data is safe. Banks are starting to see the benefit of automating their risk forecasting and monitoring processes.

- Citibank worked with Feedzai to automate their credit card fraud detection process.
- HSBC worked with Ayasdi to automate their anti-money laundering (AML) investigations. The bank needed to reduce the time and cost that went into their traditional investigation process, which required thousands of human employees.

## Affected Business Functions

### Fraud Detection

Large banks are starting to see the benefits of automating fraud detection processes using AI, anomaly detection in particular. Traditional fraud detection processes in large banks are challenging due to the scale of transactions and customer behaviors that need to be monitored in order to effectively identify fraud. In addition, bad actors are constantly developing new ways of hiding their fraudulent activity. It can be difficult for a bank's fraud staff to pick up on new fraud methods in real-time. AI-based anomaly detection software could pick up on even slight deviations from a customer's normal account activity, including logins on mobile apps from

irregular location and transactions above certain values and for products that the customer doesn't normally purchase. It would be difficult for fraud teams to monitor their customer's login and purchase behavior at this level manually.

# Robotic Process Automation (RPA)

Robotic Process Automation (RPA) is not artificial intelligence, but it often comes up in conversations about AI and other forms of automation. RPA software involves so-called "robots" executing repetitive actions within a digital environment that a human employee might traditionally do themselves. This almost always manifests itself as white-collar automation, and there are no actual robots involved. As someone in banking, you'll likely read about "software bots" when you read about RPA in banking. We recommend you simply ignore the word "bot," although we'll use it throughout this section to get you used to the language. If anything, RPA is regular software; it doesn't require the kind of training that AI and machine learning software do. That said, not every area of a bank requires AI-based automation. Oftentimes, regular software, such as RPA, suffice.

## Example Use Case

### Business Process Automation

Banks seem to be investing in AI-enhanced RPA to improve process efficiencies in sales and accounting tasks that are highly repetitive and time consuming when done manually.

- BNY Mellon Corp claims to have rolled out more than 220 "software bots" in partnership with Blue Prism. Again, no robots are actually involved.

## Affected Business Functions

### White-Collar Automation

BNY Mellon Corp use RPA for tasks such as collecting data requests from external auditors and correcting formatting and data mistakes in requests for fund transfers. The bank claims the RPA software it uses for funds transfer processes accounted for $300,000 in annual savings.

# Business Bottom Line

A big reason for the acceptance of AI in banking might be due to the fact that banks have historically collected massive amounts of data over the past decades in the form of financial market information and customer data as a part of their operations. This includes data about savings and checking accounts, mortgages, personal loans, debit/credit cards, personal information declared by customers, and internal enterprise banking data. With data being the key limiting factor in most AI applications, it is not surprising that AI found its way into banking use-cases. Business leaders in banking are beginning to think of all these different types of data

as fodder for AI implementations. It's likely that banking executives that invest in ways to leverage their data will likely come out on top over their competitors in the coming few years as AI starts to become ubiquitous in banking and finance.

# Resources

Below we highlight some of our best, free reports available on Emerj.com, including a few of the most relevant insights for banking leaders from each of them:

## AI in Banking – An Analysis of America's 7 Top Banks

**Link:** https://emerj.com/ai-sector-overviews/ai-in-banking-analysis/

- **Conversational Interfaces/Chatbots:** Banks such as Wells Fargo and Bank of America have launched conversational interfaces that help their customers access account information by simply asking questions in natural language and also perform basic operations such as funds transfers.
- **Fraud Detection:** Citibank and HSBC have invested in AI projects that help them augment the capabilities of their fraud detection and anti-money laundering teams.
- **Robotic Process Automation (RPA):** Large banks such as BNY Mellon and JP Morgan claim to be using RPA to automate repetitive tasks in their businesses. Thes software bots are purportedly capable of tasks such as ensuring data is formatted in a certain way or extracting information from a document.

## AI for Banking in Europe – 3 Current Applications

**Link:** https://emerj.com/ai-sector-overviews/ai-for-banking-in-europe-3-current-applications/

- **Customer Service:** Dutch banking services provider ING developed an enterprise chatbot called Katana, which they claim can help bond-traders make better buying and selling decisions using predictive analytics.
- **Debt Collection:** Hanseatic Bank worked with Spanish vendor CogniCor to develop an AI software that can help identify the best timing and digital communication channels for interactions with debtors to the bank in an attempt to increase the likelihood of repayments.
- **Document Search:** Vendors such as Eigen Technologies and AlphaSense claim they can provide large banks with AI solutions to help them search and discover information faster from documents and on the Internet faster.

## AI Applications in the Top 4 Indian Banks

**Link:** https://emerj.com/ai-sector-overviews/ai-applications-in-the-top-4-indian-banks/

- **Conversational Interfaces/Chatbots:** Most of the top retail banks in India seem to have worked with AI vendors to deploy customer-facing chatbots. HDFC bank launched a chatbot built by Bangalore-based Senseforth AI Research. The State Bank of India (SBI) launched its own chatbot called SIA.
- **Robotic Process Automation (RPA):** A small number of the top 10 Indian retail banks seem to have adopted RPA to automate internal business operations. ICICI Bank and Axis Bank claim to be using RPA for automating repetitive tasks that were previously being handled by human employees

## Document Search and Data Mining in Banking – Natural Language Processing Capabilities

**Link:**
https://emerj.com/ai-sector-overviews/document-search-and-data-mining-in-banking-natural-language-processing-capabilities/

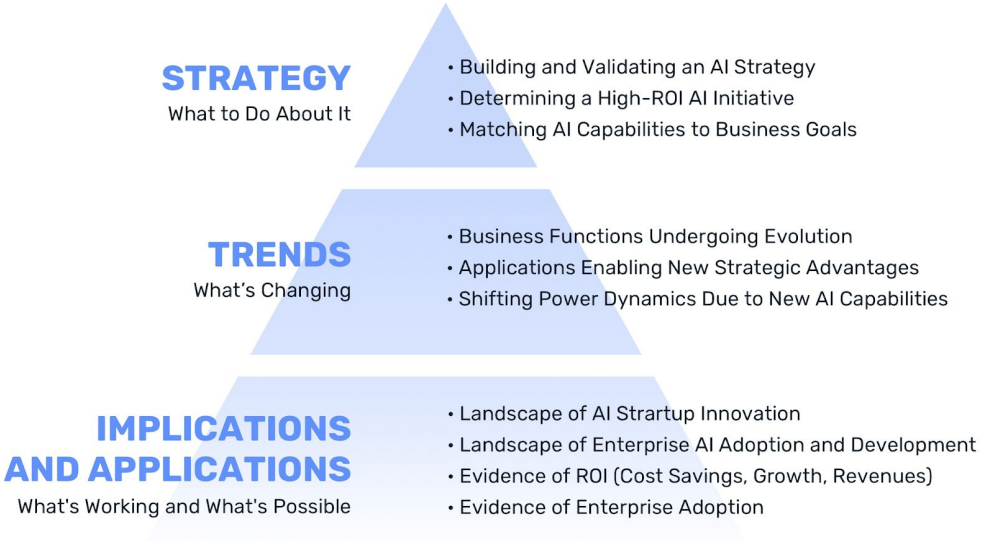
- **Document Digitization for Mortgages:** Unstructured documents such as PDFs, audio files, video files, and handwritten notes still account for almost 80% of all documents at mortgage departments. Banks seem to be developing computer vision and advanced OCR techniques for capturing and digitizing such mortgage documents.
- **Credit Scoring:** Social media posts and an individual's digital footprint can be used to assess the creditworthiness of potential customers for banks. Bank of America's chatbot called Erica purportedly provides customers without a credit history a kind of credit score and information on how they can improve it.
- **Product Development:** AI software is also being used by banks to develop personalized products for their customers and improve their existing products. For instance, the Royal Bank of Scotland claims they use NLP-based data mining techniques to extract trends from customer feedback in order to identify ways to improve their retail banking services.

# Emerj Artificial Intelligence Research

Emerj Artificial Intelligence Research is where executive leaders turn to understand how AI is impacting their organization or industry – and what to do about it. We're the industry source for authoritative market research and competitive intelligence for the business applications of artificial intelligence.

Our objective, jargon-free research and industry overviews are designed to give executives and decision-makers exactly what they need for competitive insight, informed AI technology procurement and strategic planning around AI.

With a finger on the pulse of academia, Fortune 500s, and the global artificial intelligence startup ecosystem, organizations call upon us for insight and research for their most important AI-related strategic decisions.

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