

# Driving Better Experiences with Artificial Intelligence



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HOW IMPLEMENTING AI INTO DECISIONING HELPS  
MEET RISING CUSTOMER EXPECTATIONS AND  
IMPROVES OPERATIONAL EFFICIENCY



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# Executive Summary

Artificial Intelligence: “The theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making and a translation between languages.”<sup>1</sup>

Also known as AI and Machine Learning (ML), artificial intelligence is the idea that computers, machines – anything electronic – can think and make decisions similar to or supplementary to humans. The uses of AI are wide ranging and can be built to solve basic models with a yes or no answer, or to process data sets with limitless complexities and permutations.

While there are many theories and ideas about Artificial Intelligence (AI), one thing is certain: AI is here to stay. In the financial industry, AI is poised to become a core element of the digital transformation that banks are currently experiencing.

With the advent and growth of online and mobile banking, AI also represents a significant opportunity for banks to leverage their customer data, and customer engagement, to help improve experiences and drive long-term profitability.

Implementing AI has challenges, including: cost, data quality, ethical concerns, and appropriateness. It is worth the investment, however, as AI-enabled financial institutions (FIs) have a competitive advantage when it comes to delivering improved customer experiences.

From segmentation and personalization to fraud identification and risk management, AI can help FIs meet the rising expectations that consumers have in the increasingly digital world of finance. This paper examines the pros, cons, and potential applications of AI in organizations, and the ways in which companies can use AI to rise above the competition.

# The Digital Transformation of the Financial Industry

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## FROM OUTLIER TO CORE TECHNOLOGY

Over the last 20 years, financial institutions (FIs) have faced a monumental shift in the way they conduct business. Core processes like deposit and debit transactions, account applications, credit applications, loan applications, loan reviews and underwriting have all transformed. For most FIs, all but gone are the handwritten application packets, stacks of paperwork and lengthy, in-person consumer engagements.

Consumers can now submit applications, check balances, pay bills and more through digital channels. Whether they are using smartphones, home computers, tablets or ATMs/kiosks, consumers have the power — and expectation — that their financial lives are immediately available regardless of how they choose to access it.

FIs are answering the call to embrace the digital revolution. Just as email has replaced the handwritten letter, digital applications have supplanted the formerly paper-based processes at most FIs, with transactional, customer-facing interactions leading the charge. By developing online and mobile banking platforms, they are delivering the experiences that modern financial consumers expect. However, the transformation for FIs goes much deeper, running completely through the core processes that impact daily operations within the business.

From loan and credit decisions to risk and compliance management, from delivery of services to data collection and analysis, FIs are replacing outdated, inefficient manual systems with scalable, nimble digital architecture. Whether they are building support infrastructure with in-house resources or are collaborating with best-in-class service providers, FIs are making the changes required to keep pace in the new digital frontier.

## CONSUMER BEHAVIORS ARE SHIFTING

As of this year, 95% of US adults own a mobile phone - 77% of which are smartphones.<sup>2</sup> Consumers simply pull these devices out and do their searching, shopping and banking when it is convenient for them. Retailers like Amazon, travel sites like Orbitz and entertainment hubs like Netflix are creating frictionless online experiences that have fundamentally changed how consumers behave.

It is no longer necessary to drive to visit the local specialty shop to purchase hard to find spices, contact a travel agent to get a great deal on a flight, or drive to the video store to pick out the latest blockbuster. When someone orders delivery from Domino's, they can track where the pizza is, from baking all the way to the front door. The internet and its immediate accessibility through handheld devices is changing how consumers behave, as well as how they learn about and consume goods and services.

Social networks are also having a significant impact on consumer behaviors. Social platforms enable consumers to hear from their trusted groups of friends and family about the experiences they have had with products and service providers. Individuals readily share good and bad experiences, giving consumers both greater voice and more insight into the customer experiences provided by organizations.

## CONSUMER EXPECTATIONS ARE SHIFTING TOO

People have become accustomed to those kinds of frictionless and real-time digital experiences. There is no question why those same consumers have changing expectations for their banking and financial needs. It is no longer acceptable for FIs to require an individual to stop into a local branch, on the bank's terms and hours, to learn about products or services.

Prospects and customers now expect immediate, secure access to their financial details. They expect their FI to know who they are, what products they have, and what additional products might be appropriate for their individual goals. They expect ironclad, 24x7 security and fraud detection. They expect to conduct the vast majority, if not all, of their financial lives through whatever channel is most convenient for them personally, and expect it to happen at the speed of life - not days or weeks later.

AI enables all of this by giving existing systems quicker access to more data, solving problems, and giving consumers a more personalized buying and banking experience.

## ONLINE BANKING AND MOBILE BANKING

From a consumer perspective, the rise of mobile and online banking is a significant step forward in the ownership and accessibility of their financial lives. Customers no longer need to stop into a bank branch to deposit checks or check balances. And, they have embraced this mobile and online accessibility. As Dharmesh Mistry observes in his report *Future of the Branch: Where Do We Go From Here?*, “[f]or the majority of banks worldwide, customer interaction has largely moved to digital spaces, with many banks experiencing almost 90% of all customer interactions online or through mobile.”<sup>3</sup>

The consumer shift to mobile and online channels presents both challenges and opportunities for FIs. Challenges can include identity verification, fraud prevention in the event of a stolen mobile device, and technical support for mobile and online banking channels.

The opportunities? Increasingly granular data about individual consumer actions can enable FIs to deliver hyper-personalized products and services while providing insight into cross-sell opportunities.

By analyzing consumer data, organizations can foster a personal, connected relationship with each individual and increase “stickiness” by providing superior experiences and embracing the digital transformation through AI.

It was only a year ago that Sundar Pichai stated, “We will move from a mobile first to an AI first world.”<sup>4</sup> That transformation is well underway — and successful FIs are already joining the revolution.



# 90%

of all financial transactions are done through mobile platforms.<sup>3</sup>

# Artificial Intelligence in the Digital Transformation

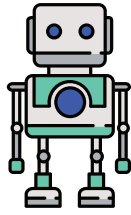
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## SCIENCE FICTION OR MODERN LIFE?

Artificial intelligence (AI), machine learning (ML), knowledge engineering – it's a concept that was once relegated to the pages of science fiction novels or movie screens. In our popular culture, AI has often manifested as a malignant entity bent on the destruction of humanity (HAL 9000 from *2001: A Space Odyssey* and the Skynet system from *The Terminator* are two famous examples).



The reality is that we have been living with, and benefitting from, artificial intelligence for decades. The term was coined by John McCarthy in 1956, the same year the first running AI program was demonstrated.<sup>5</sup> In the last 60 years, advancements in computational power and data accessibility have exponentially increased access to and applications for AI.

Business applications for AI are growing as well, and executive teams are taking note. 75% of more than 200 business executives surveyed in the 2017 Economist Intelligence Unit report *Artificial Intelligence in the Real World* said their companies would be actively implementing AI within the next three years.<sup>6</sup>

## EXAMPLES OF AI

Perhaps one of the better-known examples of AI is IBM's Watson, the supercomputer that beat two Jeopardy champions in 2011 after ingesting 200 million pages of content, including the full text of Wikipedia. At that point, AI was but another acronym in the wonderful world of science and technology, and Watson has since morphed into a producer of many AI-related functions.

Apple's Siri and Amazon's Alexa are two more examples of AI at work today. AI algorithms drive the "recommended accessories" or "similar products" that appear next to the items in a digital shopping cart. The auto-complete feature of most web search engines, like Google and Yahoo, are powered by AI. Commercial autopilot functionality, email spam filters, voice-to-text, and facial recognition through social platforms like Facebook are further examples of AI that are actively shaping the world.<sup>8</sup>

Another interesting example of AI is Google DeepMind's AlphaGo. It is an AI computer program created to compete in the game of Go, which is all about free thinking and creativity. An average game lasts about 150 moves with approximately 250 choices per move.

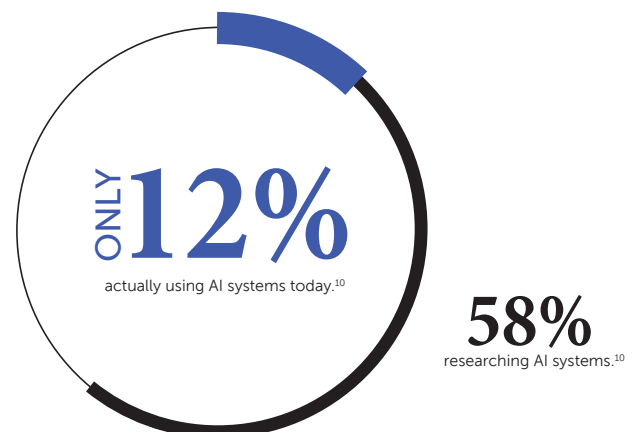
AlphaGo was the first ever machine to win over the Go Grandmaster. While machines are not able to do everything humans can do (yet), AlphaGo is proof that a machine, using advanced algorithms, can learn, change and succeed in circumstances with many possibilities and ever-changing logic.

## AI IN THE FINANCIAL INDUSTRY

With the growth of AI and the increasingly large quantity of data that humans are creating, how can FIs implement programs, policies and applications that drive value for both the company and the consumer? What can FIs do to improve customer experience through the judicious application of AI?

According to Heath Terry, a managing director at Goldman Sachs, machine learning and AI will enable hundreds of billions of dollars in cost savings and revenue opportunities in the next decade alone.<sup>9</sup> But, while 58% of surveyed business and technology professionals are researching AI, only 12% are actually using AI systems today.<sup>10</sup>

Some are further along the path than others are; Bank of America recently announced its AI powered "digital assistant," a chatbot called Erica, which enables consumers to have real-time advice on ways to save money and manage personal finances.





## Other FIs are implementing AI to help address a number of issues. These include:

### FRAUD DETECTION

With AI and ML, fraud is quicker and easier to detect in all aspects of operations. [HSBC and Ayasdi](#) recently announced a partnership that has helped improve investigation efficiency and is expected to reduce risk and save money.<sup>11</sup>

### LOAN UNDERWRITING

[Underwrite.ai](#) classifies loans as “Good” or “Bad” based on status and profitability, then trains models based on various algorithms to predict the outcome of the loans.

### PORTFOLIO MANAGEMENT

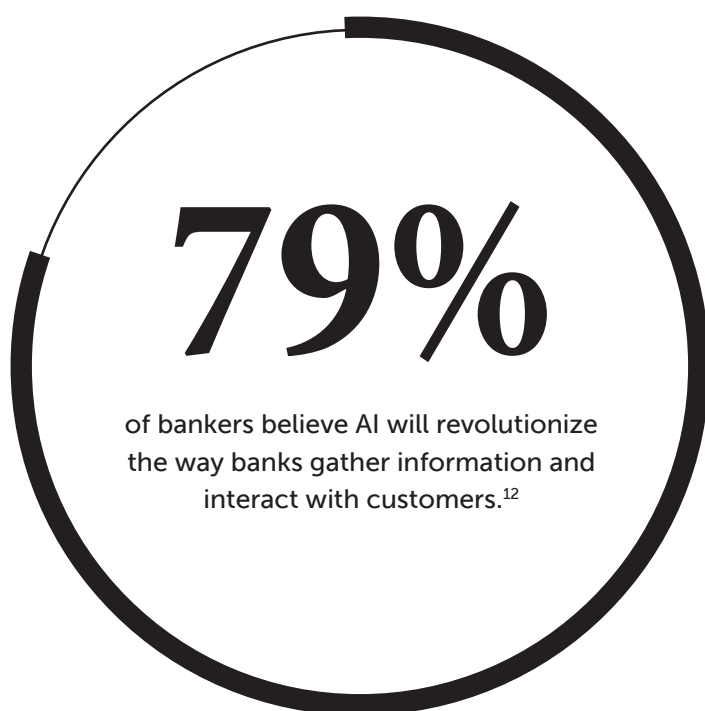
“Robo-Advisors” provide online advice and portfolio management for customers with minimal human interaction. Examples of companies using this include [Charles Schwab](#) and Fidelity. Fidelity acquired eMoney and partnered with Betterment to advance their offering, emphasizing the roles of acquisition and partnership in competitive positioning.

## AI AND ITS IMPACT ON CUSTOMER EXPERIENCE

Artificial Intelligence can take a key role in the FIs quest to provide customers with the personalized, timely and relevant experiences that they expect. Done well, AI-based customer experience (CX) initiatives can help FIs take action based on the customer data available today, and refine and improve those experiences as customers continue to interact with the organization.

According to Accenture’s *Business Technology Vision 2017* report, more than 78% of bankers believe that AI can enable simple user interfaces that will help banks create a more human-like customer experience. 79% believe that AI will revolutionize the way banks gather information and interact with customers.<sup>12</sup>

But it’s worth asking: Is AI right for every organization? There are significant considerations for FIs looking to improve their customer experiences.



# Pros and Cons of AI in Financial Institutions

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# Challenges With AI Today

In fairness, for all of the potential CX benefits that artificial intelligence can provide, there are at least four significant hurdles an organization may need to address before a successful implementation. These include: Cost, Lack of Data/Computing Power, Ethical Considerations and Appropriateness.

## COST

New technology ventures can be costly, particularly when an organization is looking at the potential for an enterprise-wide solution. In a recent Infosys report, respondents indicated that their companies “invested an average of \$6.7 million in AI in the past 12 months.”<sup>13</sup> AI, as a new technology, may come with a hefty price tag, and FIs are wise to proceed slowly before committing to an expanding budget.

Estimates for implementing AI range from the tens of thousands to millions of dollars. In one discussion, bank technology executives said “the minimum cost of using software like Watson, including due diligence and training, could reach a few million dollars.”<sup>14</sup>

Those same executives also said “[i]t is not uncommon for a full-scale implementation to cost in the tens of millions of dollars,”<sup>15</sup> raising serious questions about the financial feasibility of implementing an AI solution.

Cost is a known challenge, as 57% of respondents to the Infosys report *Amplifying Human Potential: Towards Purposeful Artificial Intelligence* identified cost as a barrier that the organizations faced.<sup>16</sup> But with the potential upside in the billions of dollars range, there is an opportunity for organizations willing to invest.

## LACK OF (GOOD) DATA

Data is being generated at an unprecedented level. According to IBM, “[e]very day, we create 2.5 quintillion bytes of data – so much that 90% of the data in the world today has been created in the last two years alone.”<sup>17</sup> Analyzing that volume of data and extracting coherent insight is virtually impossible for humans to do in a timely and actionable way.

Enter Artificial Intelligence. Successful AI depends on this data. The complex algorithms that underpin AI applications can slice, dice, parse and analyze huge volumes of data in a fraction of the time it would take a human counterpart.

Financial consumers generate data every time they interact with an institution. Deposits, withdrawals, online and mobile banking behavior, ATM and branch interactions all represent data points that FIs can run through AI applications to generate meaningful, personal insights into their customers’ behaviors.

## Every day

2.5 QUINTILLION BYTES OF DATA ARE CREATED

THE EQUIVALENT OF



530 BILLION SONGS

or



90 YEARS OF HD VIDEO

Remember, though, that machine learning and predictive modeling will only be as successful as the information put into it. There are certainly opportunities for error. For example, if an FI were to run a credit application for a recently married woman, her SSN could easily match a different last name than the one on most of her credit files.

This discrepancy could automatically create a separate credit file with the new last name. A vigilant consumer may proactively address this issue, but a less-vigilant or less-knowledgeable consumer might not. That kind of data would need to be verified and reconciled before an AI-enabled application could deliver real value for the FI and the consumer.

## COMPUTING POWER

Computing power can be a concern for any financial institution, even before the introduction of AI. With all of the data that needs to be processed, it does not typically make sense for an FI to house their own data, or IT equipment.

Diane Bryant, Executive VP and General Manager of Intel's Data Center Group recently stated, "AI is the fastest-growing segment of the data center, but it is still nascent."<sup>18</sup> The implications of this could be tremendous: if AI is just in the beginning stages of data use, what it will be like in the next couple of years? How might those computational needs change the landscape of FI data centers?

To combat this, FIs are increasingly turning to the cloud for data storage and access. Many fintech companies, Zoot included, will house their environments onsite or in data centers and allow access via the cloud to their customers.

## ETHICAL CONSIDERATIONS

Incorporating AI into the financial sector does raise ethical considerations. How far is too far when it comes to putting sensitive personal information into algorithms intended to find patterns in unstructured data? What kinds of potential profiling or unintended discrimination could result?

Those questions are certainly on the minds of executives. Over 50% of survey respondents in the Infosys survey "agreed that ethical concerns pose a significant obstacle to the application of AI," while almost 90% said their employees, vendors and customers have concerns.<sup>19</sup>

Robust checks and ongoing refinement will certainly need to be foremost on the agenda for FIs implementing AI-enabled applications. Dedicated effort can help overcome the ethical concerns, but it will require vigilance.

## APPROPRIATENESS

The tightly regulated financial industry also has regulatory compliance requirements to consider when it comes to AI and machine learning. Implementing any application that relies on artificial intelligence can potentially create a "black box" scenario that does not provide the level of transparency the current regulatory climate requires.

Knowing how any AI-enabled initiative is impacting the operations of the FI, and being able to articulate that in a way that satisfies the regulatory concerns, is critical for long term success. For example, using AI for fraud mitigation may be more appropriate than using AI in credit decisioning, until and unless the FI can clearly provide visibility into how AI impacts things like adverse action notices and disparate impact.

# Potential Benefits From AI-Enabled Applications

There is significant potential upside to an AI-enabled financial future. In addition to the billions of dollars in cost savings, there are benefits like market position versus fintech companies, anticipatory knowledge for proactive engagement with consumers, and the critical element of improved CX.

## KEEPING UP WITH THE FINTECHS

Larger FIs are facing stiff competition from startup organizations. Fintechs are typically smaller and more nimble, and are using AI to make headway in segments like credit scoring, regulatory compliance, fraud detection, and asset management. Hundreds of fintechs are actively using AI to compete in the segments that legacy FIs have traditionally owned.<sup>20</sup>

By pursuing AI-enabled initiatives, FIs demonstrate their commitment to keeping pace with the technological developments in the market. FIs also benefit from the increased visibility of AI that fintechs are causing, and can capitalize on the improved market awareness.

Two potential approaches FIs may consider when it comes to keeping up with fintechs: acquisition or partnership.



A fintech organization may have already invested significant time and effort into honing their AI application, and the FI can potentially jump-start an AI initiative by acquiring or partnering with fintechs to leverage their existing infrastructure, expertise and history.

## PREDICTIVE KNOWLEDGE

One of the most promising potential outcomes of AI is the ability for an organization to anticipate what a customer wants or needs and deliver it to them – before they know they need it.

Getting to that point is not an easy task. Whether an FI is using AI for trend analysis, predictive modeling, know your customer (KYC) initiatives, or anti-money laundering (AML) programs, there are some interesting considerations from a structural perspective that companies will have to address.

The actual way in which an artificially intelligent application can learn and provide value depends on how it is exposed to data and how it processes the data. There are three main exposure models:

- Supervised
- Unsupervised
- Continuous Learning

### Supervised Learning

In this scenario, organizations will have both input and output variables (data). The AI algorithm learns how to map from the input variable to provide the output variables. This is known as supervised learning:

**“[T]he process of an algorithm learning from the training dataset can be thought of as a teacher supervising the learning process. We know the correct answers, the algorithm iteratively makes predictions on the training data and is corrected by the teacher. Learning stops when the algorithm achieves an acceptable level of performance.”<sup>21</sup>**

An example of a supervised AI program in the financial industry is JPMorgan Chase’s program, Contract Intelligence (COIN). JPMC states that their AI technology saved 360,000 hours of annual work by lawyers and loan officers and reduced loan-servicing mistakes caused via human error.<sup>22</sup>

Efficiencies and savings like those seen by JPMC can potentially happen in any FI with the right technology and business processes in place.

## Unsupervised Learning

In this scenario, organizations will only have input variables (data). The AI algorithm is designed to analyze the input data and formulate maps or models of the underlying structure, effectively learning or uncovering patterns.

This is “unsupervised” because unlike supervised AI, there is not a known outcome, not a correct answer. The unsupervised AI program is effectively running on its own and presenting its findings about data structure and association.

An unsupervised AI program in the financial industry could support fraud detection, since Unsupervised Machine Learning (UML) requires less interaction with humans and more interaction with input data and pattern recognition. Millions of processed transactions could run through an algorithm that identifies various fraudulent patterns and immediately learns new and developing patterns.

While it will not stop fraudsters, UML can enable FIs to uncover potential fraudulent activities by matching patterns consistent with particular types of fraud. UML will also constantly update and evolve to bring new attacks to light. Chances of false positives can also decrease when using UML, as there is much more data collected before making a “detection” or realizing a pattern.

## Continuous Learning and Beyond

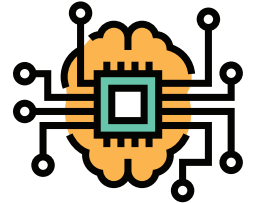
The next levels of learning are: continuous, deep and reinforcement, all slightly different AI-focused directions. In all of these scenarios, supervised machine learning has additional layers added to it.

Continuous learning is exactly that – as FIs add more data, the machine computes more information and evolves maps over time. Deep learning goes a step further to enable a machine to take data and identify images to class the data.

Facial recognition combined with name association is an excellent example of deep learning. When an individual uploads a photo onto their Facebook profile page and that image contains more than one person, Facebook can automatically tag/append names from a deep learning

algorithm before the user can. The algorithm has learned over time what specific faces look like, the names associated with the faces, and the fact that specific individuals may appear in photos together often.

Reinforcement learning is the most interesting and advanced method. Reinforcement is based on the concept of inputs, actions and outcomes. However it is different from supervised learning in that there are not correct input/output sets. AlphaGo (referenced earlier) used reinforcement learning to improve its play of the board game Go, eventually defeating the human champions.<sup>23</sup>



Continuous, deep and reinforcement all have potential applications in the financial industry, from fraud identification to call center operational efficiency. They also represent the most significant time and resource investments to be successful.

## Key Outcomes for all Models

The end goal of any AI model is to provide valuable, helpful insight. By implementing AI into the enterprise, FIs can identify areas for process improvement, uncover patterns in their customers, and anticipate and deliver the personalized experiences that customers expect.

## **CUSTOMER EXPERIENCES: SEGMENTATION AND CROSS-SELLING**

For FIs, one of the primary benefits of adopting AI is the ability to improve the customer experience. When an intelligent application or system can identify commonalities across seemingly disparate data sets and provide actionable insight, that can have a powerfully positive resonant impact on how the FI engages with customers.

For example, imagine an FI that implements an AI-enabled segmentation model. This model could identify common characteristics that human analysts might not see, like the propensity for a group of individuals that share attributes of similar credit score, loan balances, and home ownership to the action of opening a HELOC in a specific month.

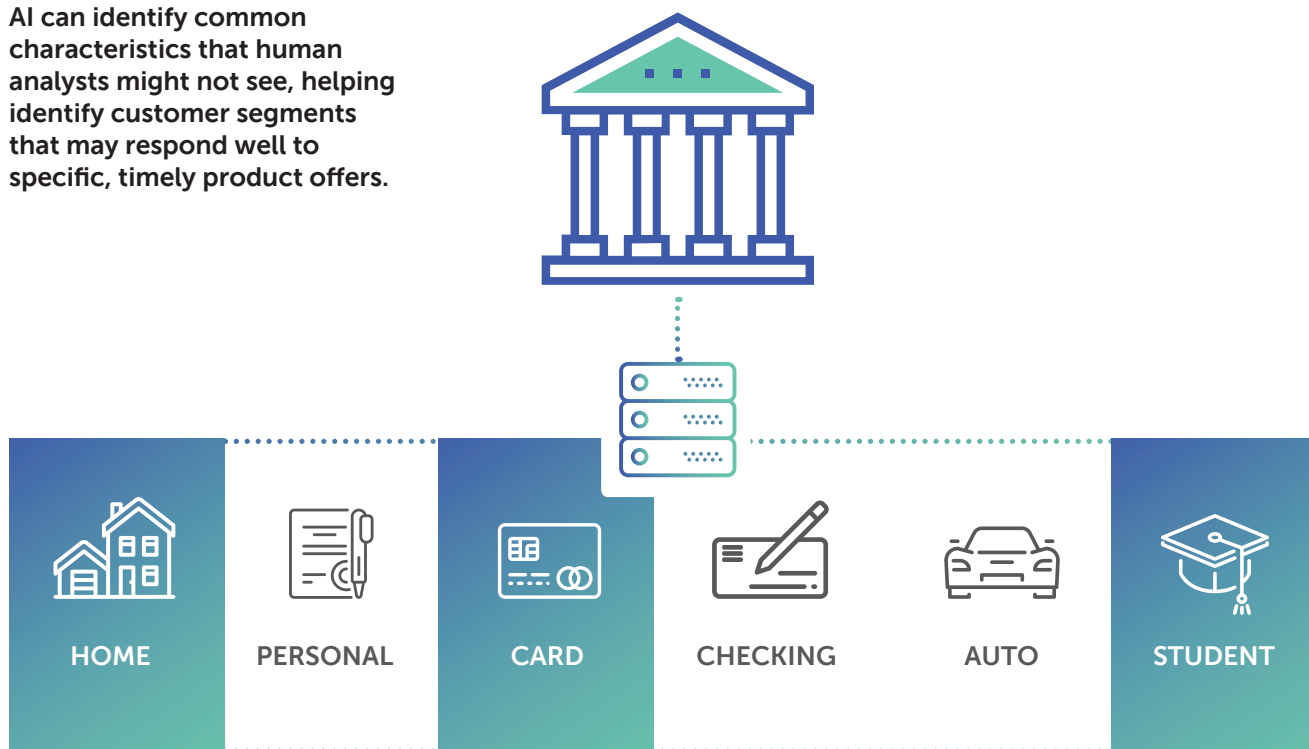
Using that AI-assisted insight, the FI can create a marketing campaign to segment those customers and present a timely HELOC offer within a two-week window. The customers have an improved experience; the bank gets additional revenues and provides a value-added experience.

Segmentation and cross-sell opportunities uncovered through AI go hand-in-hand. Instead of offering blanket product sets to the customer base as a whole, AI will allow a bank to offer products tailored to the individual or tightly targeted sub-sets of customers.

The HELOC example above is a single instance of the many different data-driven product recommendations an FI could present. Other ideas for AI-supported cross-selling opportunities include tiered credit card offers, personal loans, auto loans, savings deposit accounts, certificates of deposit and more.

# Segmentation & Cross-Selling

AI can identify common characteristics that human analysts might not see, helping identify customer segments that may respond well to specific, timely product offers.



# Using AI to Improve Customer Experience

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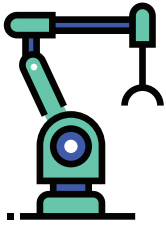




## CREATING ORDER FROM CHAOS

Data comes into the FI through many simultaneous channels: online, mobile banking applications, phone calls, branch visits, mail and back-end systems, to name a few. Making sense of that data, parsing and analyzing it to create meaningful insight, represents a huge opportunity for the FIs that can get it right.

Machine Learning is a particularly suited use of AI that will find hidden patterns in the data noise. Using the input information defined by the FI, an unsupervised model can help analysts uncover patterns and correlations in customer attributes and behaviors. Having that visibility can enable the FI to identify the best customers, the best products for those customers, and the best way to present offers.



## SEGMENTATION AND PERSONALIZATION

Perhaps the best example of AI in use for offer segmentation and personalization is Amazon. An individual's browsing and purchase history are continually monitored, and Amazon will make product recommendations for specific users based on those behaviors. Customers receive personalized, relevant, timely product recommendations, or are shown additional complementary products. That approach is one key differentiator and a primary reason for Amazon's stickiness with individual consumers. Amazon is also a great example of how AI created a remarkably successful disruption of the retail industry.

Applying that AI-enabled segmentation model in finance has broad support; 82% of US bankers think AI will revolutionize the way banks gather information and interact with customers. And, 72% of US bankers believe that banks will deploy AI as their primary method for interacting with customers within the next 3 years.<sup>24</sup>

AI-enabled initiatives can deliver immediate value to FIs, particularly when applied in the context of segmenting customers to make personalized, relevant product offers. They can also free up employee time to focus on more strategic initiatives, all while earning more business and facilitating more consistent and data-driven decisions.

In an AI-enabled financial future, groups of customers will surface that share similar purchase behaviors, locations or other common attributes. For example, FIs could use AI-identified pattern matching to identify consumers with account structures/balances that correlate with a specific suite of investment products, like money market accounts.

Using that insight, the FI could make targeted offers to customers who have similar characteristics but have not yet opened a money market account. By presenting the relevant and timely offer that is most likely to resonate with the individual, FIs improve the CX and show their commitment to consumer success.

Another scenario could involve AI-enabled purchase history pattern matching. Using the insights in purchase patterns or changes in purchase history, an FI may see where consumers begin spending money on baby clothes, diapers and related items. The FI could use this information to trigger marketing messages about setting up a savings account for college, or offering a new mortgage to buy a bigger house for the growing family.

## INSIGHT INTO UNDERSERVED MARKETS

AI also has significant potential implications for finding the best products and services to customers who are underbanked/unbanked or have thin credit files. In cases where traditional bureau data is not present or insufficient for an FI to make a decision, AI-enabled business processes can help find the details an FI needs to effectively evaluate and engage with those customers.



Some data acquisition solutions, like the one provided by Zoot, can access alternative data sources such as mobile payments history, professional licensing, and educational history. Having the information is just one piece of the puzzle. Putting that information in context and making a profitable, risk-averse lending decision is where an AI application can benefit both the consumer and the FI.

One example of using AI to help provide traditional credit and banking services to the underserved would be for car loans. Because approximately 73% of cars on the road today are financed, there's a significant opportunity for FIs to make offers that may be more favorable to the consumer than their current loans.<sup>25</sup>

FIs could use AI to evaluate customers holding subprime or deep subprime auto loans for patterns that indicate lower likelihood of defaulting, such as rental payment history or check cashing. FIs could couple those insights with decision logic and attributes that represent the best alternative identifiers/attributes, and take advantage of the “significant opportunity to address unmet demand for lower-rate auto loans to these lower-risk consumers.”<sup>26</sup>

**OTHER USES FOR IMPROVING CX**

Segmentation, personalization and gaining insights into underbanked/unbanked consumers are some of the most significant ways to use machine learning/artificial intelligence for improved CX. But, there are other opportunities within FIs for leveraging AI-enabled applications and processes.

Fraud Identification and Mitigation

In December 2016, Yahoo had a security breach that compromised over 1 billion accounts. Anthem Healthcare had a breach that affected 80 million patients. 56 million credit card accounts were hacked/stolen at Home Depot in 2014.

Data breaches will continue to happen. And, when a data breach (or any fraudulent event) happens, customers get scared, unhappy and will inundate call centers. They also leave the compromised institution. Once a consumer loses their trust, it’s difficult to rebuild.

With AI, FIs can more readily detect, mitigate and predict fraudulent activities. For example, MIT’s AI<sup>2</sup>, an unsupervised learning machine, sifted through 3.6 billion pieces of data, detected 85% of attacks and reduced false-positive breaches. While human interaction is still vital, it works with its human operator(s) to detect and mitigate, while learning from its human interactions and event verifications.<sup>27</sup>

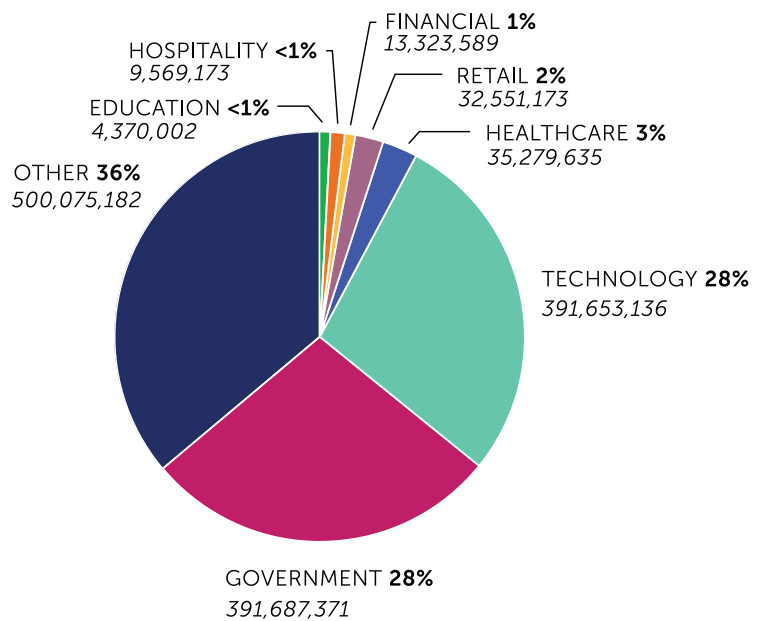
Managing Risk

AI has significant promise in managing risk, from initial application to and through behavioral evaluation for existing account holders. Organizations like Neuro-ID, a Zoot partner, can collect real-time application data and create “confidence scores” in real-time as the consumer application is being filled out online – thanks to both human and machine learning.

This kind of assessment is based on tracking consumer movement and interaction on the application screens. Specific patterns, such as hesitation between a set of answers or back and forth movement between question and answer sets, can directly correlate to an increased risk profile for a credit issuer. The scoring all takes place on the back end, without the consumer being aware that there is another layer of risk management embedded in the application process.

While the program is primarily intended to help FIs mitigate risk, it has the added benefit of not introducing additional friction for customers who are applying for credit products. The consumer gets the frictionless experience they expect, the FI gets risk reduction – a win/win for all parties.

*NUMBER OF RECORDS BREACHED BY INDUSTRY IN 2016*



2016 Mining for Database Gold<sup>28</sup>

## 8 STEPS TO IMPLEMENTING AI IN YOUR DECISIONING PLATFORM

In its broadest sense, AI is most likely used in some form at the majority of FIs. Specific decision engines may have some AI built into them as well. While business and decisioning processes themselves are logical, rule-based flows, there are definite opportunities to improve them with AI.

Like any tech-led initiative, there are best practices for implementation that will give FIs the greatest chance for success. Here are 8 steps to consider when launching an AI-focused project.



### STUDY ML AND AI

Knowledge is power. There are thousands of articles, white papers, books, podcasts, videos and movies about AI, and all of them could prove to be useful at some point in the process. [This page](#) from Accenture is a good introductory explanation with links to more information.



### FORM A GROUP

There should be an implementation group, a leader, subject matter experts (SMEs) and advocates. While IT will more than likely run the show, sales, marketing, executive, business and most other branches of the organization will be involved.



### CREATE A PLAN & GUIDELINES

What is the end goal of an AI implementation? Gain more customers? Increase your cross-sell opportunities? Gain insight into customers? Successful FIs will define concrete goals before implementation, and take into account the ethical concerns outlined above. They will also clearly articulate and document the guidelines and parameters that the implementation group will follow.



### GO SLOW

With the plan and guidelines defined, FIs can move incrementally to adopt AI. Start with a small portion of your decision engine, identify what works and what does not work, and iterate. Prove success and build on that to continue embedding AI where it can be most valuable.



## FIND A BALANCE OF IN-HOUSE AND EXTERNAL

There are some pre-built pieces of the puzzle FIs can add to their systems before adding to the IT team's already overflowing plate. Open source platforms such as TensorFlow by Google provide the bare bones needed to get AI integrated into a platform, and allow organizations to customize as much or as little as they would like.

Partnership with existing AI providers is always an option. An example of a successful partnership: Feedzai and CitiBank. Feedzai scans CitiBank's data, recognizes evolving threats, and can alert customers in real-time.



## TEST

Do some testing – then test some more. Just as companies test decisioning platforms in a development environment when they make changes, so should they test AI-supported initiatives. A separate testing platform (server, protocols, etc) is imperative for any AI-enabled elements of your decisioning engine. Always validate and verify processes and data.



## DON'T GO AI-ONLY

This goes hand-in hand with the "Go Slow" mantra of #4. AI shouldn't be ingrained in every portion of the decisioning platform. Start with one piece and gradually grown into more.



## LEARN WITH THE MACHINE

Once an AI-supported initiative is live, successful FIs will study the pieces they are using. They will analyze outputs, look at trends in data, and evaluate outcomes. By taking that and teaching the machine what's correct and incorrect, they will continually improve the value and impact of the initiative.

# Conclusion

## THE TIME IS NOW

Digital transformation is happening throughout the financial industry, and the leaders of the charge are enthusiastically embracing the enabling technology. From online and mobile interfaces to complex, AI-enabled decisioning platforms, opportunities abound for FIs to deliver on increasing consumer expectations.

AI will start to play a pivotal role in the relationship between consumers and their financial institutes of choice. FIs will have the opportunity to use this new technology to deliver personalized, segmented experiences, make product recommendations, improve fraud mitigation efforts and more — all while improving operational efficiencies and driving revenue growth.

FIs have the ability to build, buy, or partner as they bring AI-enabled projects online. Core partnerships in decisioning utilize AI in the most mission-critical applications. Customer-facing avenues like online and mobile banking will continue to evolve through hyper-personalization, intelligent customer routing and frictionless fraud mitigation.

However, there are potential challenges with AI implementation, ranging from cost to ethics. FIs will need to take measured steps to ensure any roll out does not take an unanticipated direction. Successful AI implementations will be disciplined, well defined, small in initial scope and incrementally evaluated and improved.

Cathy Bessant, Chief Operations and Technology Officer for Bank of America, recently observed, “There is no doubt AI is the term of the day, but we have been using automated intelligence for a lot longer than people think.”<sup>29</sup> Credit score models and data analysis may already exist in many FIs, but as Bessant says, “[a]utomated intelligence is often better, more predictable, faster, cheaper, has a lower error rate – as long as our algorithms work.”<sup>30</sup>

The movement towards a data-driven future is well underway. The digital transformation of the financial industry will continue to accelerate, and AI will be a driving force in the strategy and vision of the next generation of leading FIs. Will yours be among them?


At Zoot, we’re committed to the success of our clients. If your organization is ready to open the door to an AI-enabled future, contact us today to learn more.

## ABOUT ZOOT

For over 25 years, Zoot Enterprises has been a global provider of advanced origination, acquisition, and decision management solutions. Our customer-centric tools and services enable Zoot's clients to add value and differentiation, while providing nimble, scalable solutions for specific business objectives. A leader in the fintech industry, Zoot's cloud based secure processing environment delivers millisecond real-time decisions accessing hundreds of cutting edge data sources to help reduce risk and increase conversions. Our international client base includes major financial institutions, retailers and payment providers. Zoot's network is distributed across three world-class data centers and provides unmatched security, redundancy and flexibility.

At Zoot, our promise is simple: To make our clients successful. We work closely with the top financial institutions in the world to deliver state-of-the-art solutions that satisfy the most demanding decisioning needs.

**Contact Zoot today to learn more about how our proven solutions solve the most complex credit decisioning and loan origination needs and deliver ROI, while helping mitigate risk.**

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