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Mid-size Banks and Credit Unions Level the Playing Field With AI and Advanced Analytics

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ABSTRACT

The main challenge for many banks today is finding ways to remain competitive in a rapidly changing market. A market that includes increasing competition from both new and traditional competitors, a demand for hyper personalized services from clients, and difficulty in distinguishing products and services from the competition. Larger banks are busy building out their own data science teams and even buying entire companies that bring advanced analytics and AI to their internal operations and client offerings. For midsize banks without unlimited resources there is a solution: SAS(r) software. Using SAS, these banks can cost-effectively use analytics and AI to not just level the playing field, but also leapfrog big banks in areas like operational cost reduction, customer experience, and client acquisition and retention. Combining this technology with the subject-matter expertise of a trusted SAS partner can create virtual innovation labs for midsize banks so they can compete with their larger competitors.

INTRODUCTION

At Pegasus Knowledge Solutions we have worked with organizations for over 20 years to bring the power of advanced analytics to their operations. Our work with mid-size banks and credit unions has shown that there is great opportunity for AI within these organizations, but it is certainly not without its challenges.

In this paper we will look at AI in the world of banks and credit unions, look at its value and use cases, the challenges facing firms that are looking to implement AI, and a key way that these firms can overcome these challenges and begin to use AI to level the playing field with their larger competitors.

As you can probably guess from the title of this paper, I am going to be talking a lot about AI and the important role it is playing at many financial institutions today.

AI – THE BASICS

So why don't we start at the beginning with kind of a basic question, and that is - is AI a thing? Now I ask this sort of tongue-in-cheek because we know it is. After all, we've seen it in movies and popular culture - from the 8-foot tall Gort in the Day the Earth Stood Still to HAL 9000 in 2001: A Space Odyssey to The Terminator and even Star Wars.

And while I will admit that's a bit of a stretch, bringing it a little closer to home AI has been a thing in research labs certainly since it was first given a name and identified as a field of study in a 1956 workshop at Dartmouth College. From the Hopkins Beast built at John

Hopkins University to Shakey the Robot from the Stanford Research Institute to Deep Blue from IBM, research teams continued to make significant advances in AI over the years.

But where it really comes home for most of us is in how businesses have grown to use AI. The business press from the WSJ to Forbes to the Financial Times have all recognized the impact AI is having in transforming the future of business, and in particular financial services. And have emphasized the importance of AI for companies in 2021 and beyond.

So given that AI is, in fact, "a thing" and because we are going to use the terms AI and machine learning quite a lot in this paper it might not be a bad idea to start with a couple of quick definitions.

First artificial intelligence. When we talk about AI we are talking about, according to John McCarthy, who coordinated that first workshop at Dartmouth, the science and engineering of making machines intelligent.

AI is... *"The science and engineering of making intelligent machines"* John McCarthy

A little more detailed definition says that AI is the simulation of human intelligence such as learning and problem solving.

"Artificial intelligence (AI) *refers to the simulation of **human intelligence** in machines that are programmed to think like humans and mimic their actions. The term may also be applied to any machine that exhibits traits associated with a human mind such as learning and problem-solving."*

Machine learning is a subset of AI. That is to say all ML is Artificial Intelligence, but not all AI is Machine Learning. In ML we apply AI to create systems that learn and improve from experience.

"Machine learning *is an application of artificial intelligence that provides systems with the ability to automatically learn and improve from experience without being explicitly programmed. "*

Importantly too, as you will see later in this discussion, ML uses data, all kinds of data, to feed its algorithms and then to find patterns within that data

"Machine-learning algorithms *use statistics to find patterns in massive amounts of data—numbers, words, images, clicks, what have you. If it can be digitally stored, it can be fed into a machine-learning algorithm."*

Machine Learning is a complex field and one where advancements are made very quickly. As we will talk about later this is actually one of the reasons many companies have difficulty getting started with AI. In Machine Learning data scientists use a variety of techniques or methods to accomplish their goals. And whether those methods are regression, clustering,

neural nets, or natural language processing they all have the same objective in common - that is to turn data into information, and information into insight.

Much more important for most of us than the specific methods used in Machine Learning is what we do with these methods and all that data to solve business problems. Let me give you a quick example of one such use case.

BANKING USE CASE – CUSTOMER/MEMBER CHURN

For many of our clients reducing customer or member churn is a priority. According to Bain & Company the cost of acquiring a new customer can be 700% higher than that of retaining an existing customer. They also found that increasing retention by 5% could increase profits anywhere from 25-95%. So, there is strong incentive for banks and credit unions to focus on this area.

In using AI to help reduce customer churn we start with the data. This data needs to be both internal data and external data since the stimuli that can trigger churn can be either internal or external to the company. Product or service performance, individual relationships between customer and relationship manager, technology, competition, market dynamics, are all important inputs. And we want to start with a 360-degree view of the customer's relationship with the bank or credit union in order to derive the most meaningful insights.

Next we feed the data into our machine learning model to predict the likelihood a customer will leave, and importantly, the drivers of their churn. Difficult customer experiences, heavy fees, recent transactions, customer sentiment, or competitor offers all contribute to understanding a customer or member's intent to churn.

The end result, is a churn score for each customer along with the predictors or drivers of churn and how they impact the customer. With this information in hand relationship managers can have the right conversations with customers and members, at the right time, in order to keep them with the firm.

AI IS THE FUTURE OF BANKING

So how are financial institutions looking at AI? Well for one thing, the Economist's Global Banking Survey reports that there is going to be huge spending on AI starting at \$7.1 Billion in 2020 and doubling that amount by 2024. A majority of bank executives say new technology will be a main driver of their businesses over the next five years, and 77% of executives believe that AI will be the most game-changing of these advanced technologies. Studies have shown that sales at banks deploying AI will grow from 2.5-5.2% faster than at their competitors who don't use AI.

Let me give you another view of the role AI is expected to play in the financial services industry. This one is from a report by McKinsey & Company...

"Advanced analytics and artificial intelligence are becoming core differentiators, leading to lower costs and better customer experience delivery for players with the scale to make meaningful investments. These investments will result in increasingly sophisticated customer experiences, including personalized interactions and tailored value propositions, as well as significant opportunities for efficiency through automation. Leading banks are experimenting with use cases such as AI-powered chatbots, deep learning for signature

analysis in fraud management, and dynamic next-product-to-buy models. And the scope of use cases is likely to expand dramatically over the next ten years.”

Source: McKinsey & Company Six keys to success for U.S. Regional and mid-cap banks

The authors of this study conclude that AI and advanced analytics are becoming core differentiators for financial services firms. They offer opportunities to lower costs and provide better customer service. They will make interactions more personalized and deliver value propositions tailored to the individual customer or member.

All that sounds great, but there are a couple of notes of concern included here. The first is the note the authors include about investments, suggesting that only those financial institutions with scale will be able to afford this. Given the title of this paper you can probably guess that we would disagree, and we will talk more about our view of how financial services firms of all sizes can take advantage of AI in a bit.

The other note is that the scope of AI use cases is sure to expand dramatically over the next ten years and we believe that is absolutely true. It is one of the reasons we so strongly suggest that mid-size banks and credit unions get started today in bringing AI into their operations. So that they don't get left behind by those that are leading the way.

So challenges to be sure, but the report also strikes a hopeful note for mid-size firms, and that is that they possess key strengths - connections to customers, agility, and rapid decision-making - that give them an advantage in their markets. What is not said, but that we frankly hope to convince you of, is that AI is perfectly positioned to make these advantages even stronger giving mid-size banks and credit unions who choose to use AI a leg up in an increasingly competitive market.

THE VALUE OF AI

So, what about value. Well, let's start with the high-level number. According to McKinsey & Company in another of their studies, the potential annual value of AI in global financial services is over \$1 trillion.

That is a very big number, and a little hard to make sense out of, but another part of the study looks at the areas where this value comes from which I think is instructive, and this clearly shows that the value of AI to banks and credit unions is across all functions in the enterprise - marketing and sales, risk, HR, and finance and IT - there simply is no area where AI is not delivering value

How about some more specific examples of value? Here is a small sample of the value being delivered to financial services firms through AI:

- AI automation saves JP Morgan 36,000 hours of work by their lawyers and loan officers annually.
- Financial services institutions have reduced production costs 13% using AI.
- Where AI has been used, revenues have increased in these initiatives on average 17%.
- And specific to mortgage loans, AI has been used to improve collections over 30%.

AI AND THE CUSTOMER / MEMBER EXPERIENCE

We know that pre-COVID many financial services firms were already seeing changes in how their customers and members wanted to interact with them. And we have seen these trends accelerated by the pandemic. The consensus now is that many of these changes will be permanent.

Customers want a more personalized and proactive experience. They are looking for speed and simplicity in their interactions. And as is true in so many areas today, there is not much patience for sub-par customer experiences.

"The last best experience that anyone has anywhere...becomes the minimum experience they want everywhere."

This quote encapsulates the challenge for many businesses today. Whoever is doing it best is setting the bar for the rest of us, and the bar will just keep going up - this is a challenge, but I would argue that it is an opportunity as well.

The good news is that AI can help financial institutions adjust to these changes, and then go even further by allowing them to differentiate their offerings for this new type of customer, and to provide the kind of experience they're looking for.

We have been seeing for a while that customers want their financial institution to know them. They want to be engaged, advised, protected, alerted, and excited. You can see that what is consistent across all of these is what I call the "me" component. Customers want all of this to be for them. They want their experience to be personalized.

They want service to be personalized and they want it to be proactive. And here is some more good news, this is right in AI's wheelhouse. We can analyze member behavior through transactions, profiles, and interactions. Combine this with financial events and known and predicted life events, and through these insights financial institutions can predict products and services best suited for a particular client and then proactively reach out to them with their suggestions.

The key to delivering the value from AI is what we often call use cases. Think of these as the business problems that firms are looking to address through AI. We have talked about some, but they exist across all functions of the enterprise from customer management to marketing and sales to operations to workforce management to risk and compliance. AI can help in acquiring and retaining customers, in increasing customer wallet share, increasing the efficiency of lending operations, improving compliance, and decreasing fraud.

So, with all of the benefits of AI what is preventing banks and credit unions from having done more with AI already?

Well, to be honest, there are some challenges.

THE CHALLENGES OF DELIVERING ON AI

First, firms often lack the skills and resources required to develop these solutions, and to bring these skills in-house is both difficult and expensive. And with the pace at which the

technology and methods are advancing, firms trying to do this in-house often find themselves playing a constant game of catch up just to stay up with those changes.

Next, data can be a problem. There may be a lot of it, but it is typically in silos spread across the enterprise and bringing it together to support integrated analytics is a challenge. And that is even before bringing in external data needed to enrich these analytics.

Finally, given all these things how does a mid-size firm find a way forward to keep up with their larger competitors with their seemingly unlimited resources?

HOW THE LARGEST FINANCIAL SERVICES FIRMS ARE DOING IT

When it comes to that last point the largest financial institutions seem to be acting out on the old saying "go big or go home". These firms are investing tens and hundreds of millions of dollars in standing up their own AI capabilities.

For example, RBC two years ago announced plans to spend \$3.2 billion on new technology that includes artificial intelligence. The move was a strategic one for them and had the goal of attracting 2.5 million new banking customers by 2023. To accomplish this, they plan to use technology to increase new clients at a rate three times more than the current rate.

TD Bank went even further and bought its own AI company. Buying Layer 6 for more than \$100 million in order to deliver their own AI solutions.

HOW CAN MIDSIZE FIRMS GET IN THE GAME? FIND A PARTNER

So how do you address these challenges if you are a mid-size firm without unlimited resources?

The secret is to find a partner, one with the tools, experience, and approach to help you accelerate your path to AI.

A partner can do the heavy lifting for you when it comes to AI. When looking for a partner to work with you should look for four things:

Out of the box advanced analytics. Think of these as AI as a Service (AIaaS)

Connections to all of your data sources and access to external data

Lower cost, quicker time to value, and more agility in their approach

Ongoing expertise and guidance... because experience has shown that your needs and the technology will certainly change over time

OUT-OF-THE-BOX AI SOLUTIONS

An example of out of the box AI is PKSI's ABA solution. These solutions will include pre-built AI and machine learning models that target specific use cases, data and model management capabilities, and visualizations or dashboards for delivery of insights derived from your data.

It is also important that the solution be designed as a platform that will allow it to scale and grow as your needs grow.

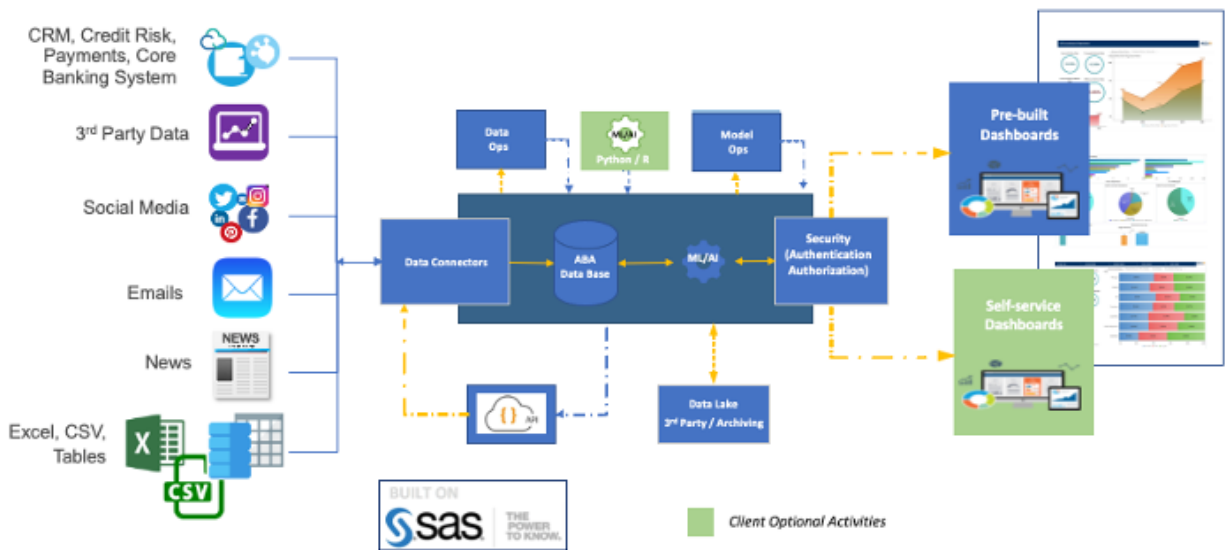
Keep in mind too that because of the nature of an analytics solution, as opposed to some

other types of software products where once the product is installed and the vendor's work is done, it is important that the analytics partner you choose be committed to a collaborative relationship. One that is willing to work with you to deliver the solution that is the best fit for your needs both today and into the future.

Pulling back the covers on a pre-built advanced analytics platform like ABA you should find 3 main components...

1. First is Data sources - The platform should utilize many data sources including internal and external data, structured and unstructured data, data from core banking systems, CRM, social media, surveys, and even emails. The solution needs to be able to mine big data, whether that data comes from bank transactions, emails, online chats, or other sources.
2. Next is the Data Science and analytics engine - a data repository, machine learning models, and data and model operations are at the core of this component.
3. And finally, the solution should include pre-built visualizations for delivery of data derived insights.

Another key point to make is around collaboration and agility, both keys to selecting a partner. When it comes to pre-built analytics the choice should be for openness and explainability and away from black boxes. In this diagram you can see where the solution allows customers to add their own visualizations and even machine learning models if they choose. This flexibility makes for a more agile and open solution.

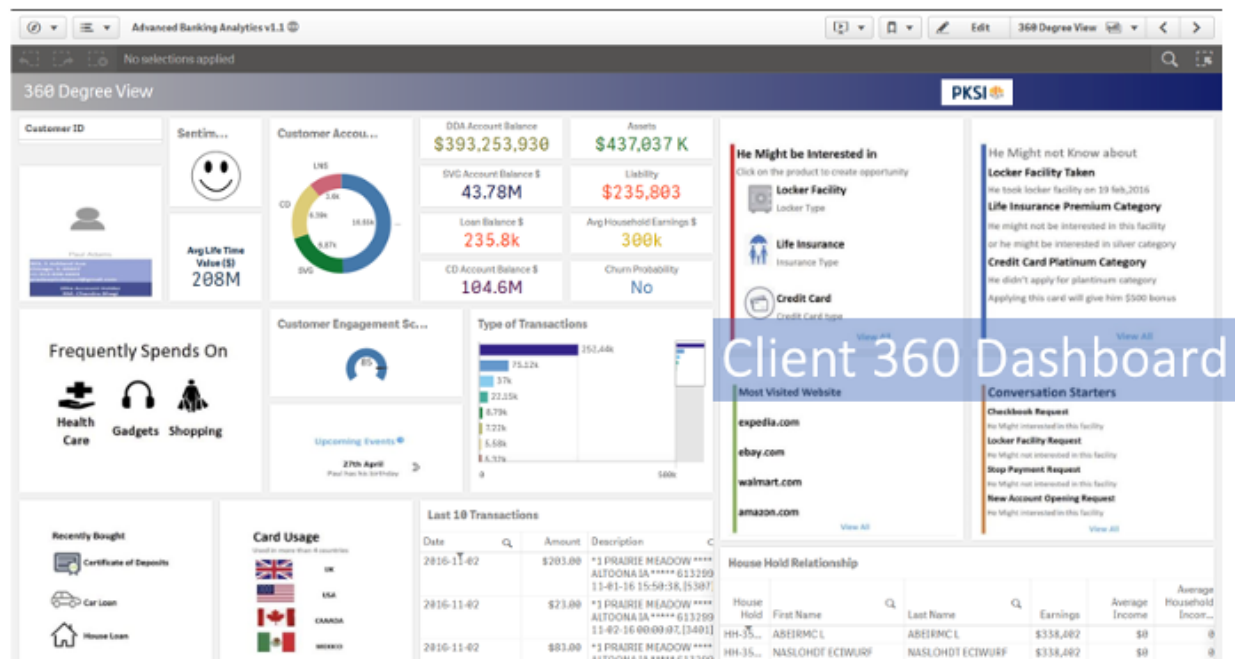


And the platform should be built on trusted technology. We have built our ABA solution on the SAS technology stack from data tools to data science/ML software to Visual Analytics for dashboards.

So how might a solution like this look to the user. Here is an example of the third piece of the advanced analytics solution - visualization of insights. We have taken operational data, as well as output from our models and are displaying the insights here so that at a glance an executive can see kpis, trends, the status of operations, and importantly, areas that might require special attention.



For the branch, account, or wealth manager this view provides a “single pane of glass” for a particular customer or member. Through this view the manager can immediately see a complete view of the individual customer. She can see all of her customer’s interactions with the institution - products, services, inquiries, and concerns. And most importantly, be presented insights that point towards potential churn or additional business opportunities with that customer.



The consolidation of data from multiple data sources to make up this view is also essential to providing the inputs for many key machine learning use cases like customer churn and cross-sell/up-sell.

CONCLUSION

In summary, what we see in our work with banks and credit unions is that AI is increasingly seen as a key to being able to effectively compete going forward, we see that the value of AI has been proven to be significant time and again in reducing costs and increasing revenues, and while the largest firms are investing tens of millions of dollars in AI, with the right partner AI is available to mid-sized banks and credit unions as well, leveling the playing field and potentially allowing them to leapfrog even their biggest competitors.

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