BUILD, BUY, RENT:
AI APPROCHES TO LENDING

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Introduction

AI adoption accelerated due to the COVID-19 pandemic, according to a new KPMG report on business adoption of AI. In financial services, 84 percent of leaders said AI is at least moderately functional in their organization, a 37-percentage point increase from the previous year. It's official - AI is a must have.

As banks and credit unions face a host of new challenges, including growing portfolios safely post-covid, finding new revenue streams, and increasing their competitive advantage, adoption of AI/ML will continue to accelerate in 2021. One of the most powerful use cases to emerge for AI/ML is credit risk underwriting. Machine learning-based models are more accurate at predicting default risk and credit eligibility by generating a more holistic view of an applicant. For lenders, ML models boost approvals with no added risk. With more confidence about whom to say yes, ML also drives higher levels of auto-decisioning and inclusivity.

With the business case justified, leaders are focused on answering the implementation strategy question - "Should we build, buy, or rent?" It's an age-old dilemma but for ml underwriting, the decision is particularly nuanced. Many factors are overlooked which is why those who decided to build their own end up with an ml model they can't deploy. In fact, AI project failure rates are at 53%, according to a Gartner report.

ML Underwriting Requires a New Build vs. Buy Framework

In short, a general technology framework that works for an AI chatbot build vs. buy decision won't serve you well for ML underwriting. Yes, the typical factors (costs, timeline, resources) still apply but the risk, regulatory, costs of getting it wrong, benefits of getting it right, and deployment considerations raise the bar and require a new lens.

To help lenders through this critical decision stage, we're providing an updated framework to properly contrast the pros and cons and make the best decision for your organization. In this guide we'll look at the major factors affecting your decision including: questions, considerations, options and the advantages to each approach. While the decision can seem overwhelming, taking the time to critically think through your options will lead to a more effective long-term technology decisions and better business outcomes. Let's take a look at the critical factors and considerations you will face while making your decision.

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Paths to AI Adoption

Today, there are multiple paths to AI adoption. You can build your own solution, buy a model (pre-built or customizable with an industry partner), or rent a standardized model. Before we dive into an overview of each approach, it's important that you start thinking through these essential questions (*see figure on right*)

The next step in figuring out a solution to the build vs. buy vs. rent dilemma is to understand at a high level the pros and cons of each approach. Let's get familiar with the available options.

Major Considerations:

- What are you trying to solve for and is there already a vendor solution that solves your problem?
- How much value does increased approvals and a faster time-to-market deliver?
- Does my organization want to own or rent an AI/ML capability?
- What is the impact and cost if you get it wrong?
- What is the impact and cost if you get it right?
- What are your data sources? Are they accessible and available?
- Does your organization have the resources and expertise to get an ML model through compliance and regulatory review and into production?

→ Next: Build Your Own AI

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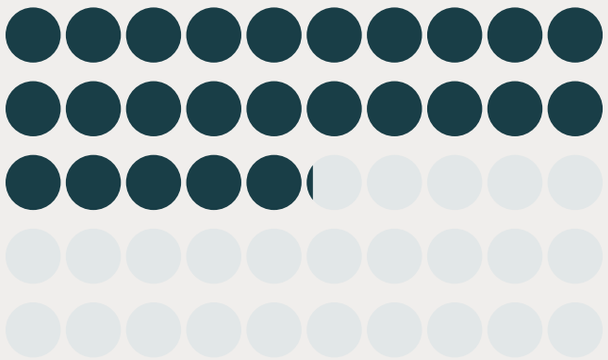
Build Your Own AI

The DIY approach requires many talent and technology resources to collect the right data sources and build and deploy a machine learning model that meets compliance requirements. Even for large financial institutions that have access to data science teams, weighing the opportunity costs from having these teams solve other business problems need to be considered.

One of the most overlooked factors lenders miss is the expertise and resources needed to get a model through compliance and regulatory review, integrate it with existing LOS, monitor it for ongoing optimization, and plan for continuous development to keep up with the breakneck pace of innovation. These overlooked factors contribute to the high percentage of AI project failure rates. A recent Gartner report revealed that companies with artificial intelligence experience moved just 53% of their AI proof of concepts into production.



53%

companies with artificial intelligence experience moved just 53% of their AI proof of concepts into production.

→ Next: Build Your Own AI continued

Here is an overview of the pros, cons, and major considerations.

Pros:

Complete control over the process, with the ability to develop additional models for other products as needed.

Cons:

- Requires resources with a particular skill set.
- Long cycle times to build and validate models. Heavy compliance burden to document and explain models.
- Requires significant IT resources to translate the model built by data scientists into something like Python, and then to a software language like JAVA that supports integration into production systems.

Major Considerations:

- Do you currently have the resources, both from an employee skill set as well as technology standpoint?
- Are you able to meet the compliance obligations in addition to the performance goals?
- How long would model development and validation take?
- Have you defined the process for integrating the model into your production LOS?
- Have you defined a process for monitoring the model in production in accordance with SR 11-7 guidelines?

→ Next: Buy an AI Solution

Buy an AI Solution

Generally, the buy approach has several advantages, including faster time to market and lower operational costs. The big "a-ha" financial institutions discover when pursuing the buy route is that the marketplace offers two very distinct options: software vendors that offer pre-built models that can't be customized and "software partner" vendors that offer customizable off-the shelf models with industry expertise to work in lockstep with you throughout the model lifecycle (development, deployment, and monitoring).

A key advantage with the software partner approach is that you get to leverage their domain expertise to avoid the model validation missteps and streamline model risk management (MRM) processes to address the specific needs of risk, data science, regulatory, IT, legal, and business functions. With an industry partner, you avoid talent shortage issues, can more easily upskill your workforce, and have access to industry-first features to keep pace with innovation.

As you weigh the pros and cons for a buy approach, another major consideration is the performance difference between pre-built and "software partner" model like Zest.

For example:

Our model helped a lender **reduce risk by 24.9%** compared with their pre-built models, resulting in economic **savings of $40M over the pre-built model.**

Next, see an overview of the pros, cons, and major considerations.

→ Next: Buy an AI Solution continued

Buy

Pros:
Model is available very quickly. Comparatively less expensive than other options.

Cons:
Typically, a generic model is not tailored to an organization's specific customer base, region, or products. Customization is limited, and as a one-time purchase, updates require purchasing a new model.

Major Considerations:

- What data is used in making the model, and are you able to customize that data used within the model?
- What is the population the model was built to support?
- Have regulators reviewed and approved the model?
- How was bias addressed when building the model to ensure that it does not discriminate?
- How thorough is the model documentation?

Software Partner

Pros:
Generally offers more flexibility and customization than a pre-built model and much faster to build, validate, and deploy than models created "in-house". Provides ongoing relationship with domain experts that includes model performance analysis and model updates.

Cons:
Generally not as cheap or as fast to deploy as a generic, pre-build model.

Major Considerations:

- How much input will your team have on the model build process, such as the data used, variables included, target selection, etc.?
- How long does the process take and what are the resource requirements from your team during the project?
- How will the model be deployed and integrated into production systems?
- Have regulators reviewed and approved the model?
- How was bias addressed when building the model to ensure that it does not discriminate?
- How thorough is the model documentation?
- How often are models updated, and what is the process for identifying when an update is necessary?

→ Next: Rent AI Technology

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Rent AI Technology

Renting is a relatively new option on the market. Lenders can pay for the ability to direct their customers to a standardized model to assess borrower risk and provide an instant decision. There are multiple disadvantages to the renting option, including lack of input into how the model is built, zero ownership of the AI capability, and your organization is exposed to a fair amount of risk (i.e. pricing, liability, model refitting). As a standardized model that is used by multiple banks, many of which might be your competitors, you are also not increasing your competitive advantage. Lenders pursuing this route often find that the implementation timelines differ very little from buying a tailored model.

Bottom line:

With renting a standardized model, you're always beholden to the landlord and not optimizing machine learning to its full potential.

Pros:
Costs less than DIY approach.

Cons:
High premium, no customization, limited product options, increased exposure to risk, and doesn't increase your competitive advantage.

Major Considerations:

- How much input will your team have on the model build process, such as the data used, variables included, target selection, etc.?
- How long does the process take and what are the resource requirements from your team during the project?
- How will the model be deployed and integrated into production systems?
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- How often are models updated, and what is the process for identifying when an update is necessary?

→ Next: Summary

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Summary: Build vs. Buy vs. Rent

	Pros	Cons
Build	Complete control over the process with the ability to develop additional models for other products as needed.	• Requires resources with a particular skill set. • Long cycle times to build and validate models. Heavy compliance burden to document and explain models. • Requires significant IT resources to translate the model built by data scientists into something like Python, and then to a software language like JAVA that supports integration into production systems.
Buy (Pre-Built)	Model is available very quickly. Comparatively less expensive than other options.	Typically, a generic model is not tailored to an organization's specific customer base, region, or products. Customization is limited, and as a one-time purchase, updates require purchasing a new model.
Buy (Software Partner)	Generally offers more flexibility and customization than a pre-built model and much faster to build, validate and deploy than models created "in house". Provides ongoing relationship with domain experts that includes model performance analysis and model updates.	Generally not as cheap or as fast to deploy as a generic, pre-build model.
Rent a Standardized Model	Costs less than DIY approach.	High premium, no customization, limited product options, increased exposure to risk, and doesn't increase your competitive advantage.

→ Next: Costs of Getting it Wrong

New Framework: The Cost of Getting it Wrong

As discussed earlier, the risk and regulatory considerations for ml underwriting demand a new way of looking at the build vs. buy decision. To highlight the increased exposure to risk differences, let's look at an AI chatbot. If your DIY AI chatbot makes wrong predictions and delivers incorrect messages, the impact is a bad customer experience. While less than ideal, it's definitely not catastrophic to the business. The same can not be said for DIY AI underwriting.

Deploying an ml model that hasn't been properly de-biased exposes the company to expensive fines from the Consumer Financial Protection Bureau (CFPB), negative publicity, and considerable brand damage. In fact, the CFPB is poised to renew tough industry oversight, placing more pressure on banks and credit unions to make sure their models meet fair lending standards.

Financial institutions also need to factor in the risks of a toxic portfolio. An ml model that isn't built and validated correctly can lead to inaccurate approvals of borrowers whose inability to pay won't come to light until it's too late. For leaders building their first AI capability, calculating how much a year of bad loans would cost needs to be included in your decision process.

Bottom line:

The stakes are high and without the proper explainability and validation expertise and experience, the DIY approach is inherently riskier. Making the wrong decision could have severe consequences to the long-term success—or even viability—of the business.

→ Next: Benefits of Getting it Right

The Benefits of Getting it Right

As leaders go through the decisioning process, quantifying the upside of moving to AI underwriting (i.e. increased approvals, lower loss rates, reduced operating expenses) and time-to-market should weigh heavily on the decision. In general, we're seeing lenders who move to ml underwriting increase approvals by 15%, decrease losses by 30%, and increase net yield by 4%. And with the consumer credit score picture still fuzzy, ml credit models are helping banks and credit unions grow portfolios safely post-covid. With the ability to achieve better results for every lending objective, speed-to-market plays an important role in quantifying the upside. Essentially you want to know how deploying an ml model faster will impact your business.

According to Cornerstone's State of Modeling report, 21% of financial institutions revealed that traditional models take more than 4 months to build, validate and deploy. For lenders taking the DIY approach, additional time should be factored in for first time project setbacks and delays. On average, financial institutions should count on a minimum of 6 months but be prepared for 9-12 months. However, with the right technology vendor, purchased models can take 3 months to build, validate and deploy.

So, what does a faster time to market get you?

We've provided some sample portfolio growth and reduction in losses numbers below to help inform your analysis:

Portfolio	Business Case	Value
Auto Loans (500 Million)	Reduce Losses: **27%**	10 million
Credit Card (1 Billion)	Increase Approvals: **16.8%**	40 million
Personal Loans (8 Billion)	Reduce losses: **30%**	84 million

→ Next: Conclusion

Conclusion

There are many factors to consider in this process but accounting for the blindspots and putting a dollar value to the costs of getting it wrong or right will help provide the clarity needed to make the best decision for your organization. While developing an in-house ml model may seem like the best way to address a specific business challenge, it often requires a disproportionate allocation of resources -- particularly budget and personnel -- to create, implement and maintain.

In most situations, working with a reputable and trusted partner to deploy a proven ml model will allow your organization to capture the ROI more quickly and generally ensures that the model will have more comprehensive support throughout its life cycle. While hard to calculate, leaders should also weigh in the value of a vendor that has already solved the same problem hundreds of times, therefore bringing clients the benefits of best practices based on others' experiences. Reducing the risk of failure and providing shorter-time to value while allowing your organization to focus on core competencies will be the fastest path to innovation and using AI to meet your lending objectives, today and tomorrow.

LEARN MORE

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Schedule a Demo to learn how AI can help your organization make better and faster lending decisions.

Thank You

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About Zest AI

Zest AI makes the power of machine learning safe to use in credit underwriting. Lenders using Zest AI software make better decisions and better loans—increasing revenue, reducing risk, and automating compliance. Zest AI was founded in 2009 with the mission of making fair and transparent credit available to everyone and is now one of the fastest-growing fintech software companies. The company is headquartered in Los Angeles, California. Learn more at www.zest.ai and connect with us on Twitter and LinkedIn.