Financial Markets INSIGHTS

AI in Lending: How financial institutions can unlock the full potential of their loan data

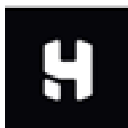
Eigen Technologies

AI in Lending: How financial institutions can unlock the full potential of their loan data

How can AI help, no matter which stage you are at in the credit cycle? There are multiple stages in the life cycle of a loan from origination and onboarding right through to monitoring and risk management, securitization and trading or investing. Each part of the cycle requires access to comprehensive, accurate and up-to-date data. Digital transformation is leading to greater efficiency in all of these areas but going digital alone may not be enough to fully harness the benefits of new technologies when it comes to regulatory compliance and risk management. And beyond that, what is the value this enhanced data flow brings? How can AI tools give companies a competitive edge?

In this Financial Markets Insights report, we look at the challenges financial institutions face in capturing and managing data across the loan life cycle and ask how AI and machine learning can help, wherever firms are in the digital transformation journey.

In-depth insights come from our group of industry experts: ***Simone Bohnenberger-Rich****, Head of Product at Eigen Technologies;* ***Shane Williams****, Partner, Head of Corporate Banking at Sia Partners;* ***Joe Seifert****, Co-founder and CEO of H4;* ***Alex Koo****, Product Manager at Eigen Technologies,* ***Meredith Coffey****, Executive Vice President, Research and Co-Head of Public Policy at the Loan Syndications and Trading Association (LSTA) and* ***Charles Kerrigan****, Partner and Global Head of FinTech at CMS.*



Copyright © 2021 The Realization Group All rights reserved

Artificial intelligence, machine learning and natural language processing (AI, ML and NLP) are revolutionizing the way in which financial markets operate. These technologies are powering the development of smart solutions that augment and boost the capacity of various teams, strengthen governance, enable more granular risk management, increased opportunity generation through expanded coverage and faster analysis of loan deals. As with other frontier technologies, however, the greatest opportunities arise in those areas that have the most to catch up on – products and services such as lending, which have retained their reliance on lengthy, bespoke agreements with challenging operational support requirements given their complex lifecycles and lifecycle events. As we'll see, the loan lifecycle provides a fertile ground for AI and NLP to deliver real and transformational benefits, with massive potential to revolutionize both loan origination and secondary markets trading as a result.

A world without data

There are numerous points across the loan lifecycle at which data can be unlocked. From the very outset of a loan transaction, data is trapped within credit agreements and credit documentation. During the origination process, it's often the same credit agreement that is passed across different teams, from the front office origination team through to legal to check, and then to the operations team to on-board the loan and enter it into internal systems. After that, the loan will be subject to servicing and to periodic credit monitoring. At some point, the lender will start to think about creating portfolios and shifting them off the balance sheet, or packaging and securitizing them. Other market participants will consider buying those loans or securitized products and will want to assess the risk profile and make a price.

The overwhelming majority of this lifecycle involves manual intervention – there is no automation. Applications such as LoanIQ make a huge difference in loan servicing; however, the loan information must first be manually extracted from credit documentation and manually input to LoanIQ. Furthermore, this extracted data is not then available to other applications. The outcome is that firms often don't have access to the data they need at the time that they need it, and the potential for data errors and bad data is high.

Market dislocation events, such as the Covid-19 pandemic, require lenders to understand their credit agreements and covenants very quickly. Is the lender at risk? Are borrowers at risk of breaching their covenants? Are there opportunities for the lender to proactively approach the borrower and work with them to prevent any defaults? Without rapid access to the data that is locked away in documentation, firms remain unable to react to market events in a strategic manner. The transition away from Libor to the new risk-free rates (RFRs) has also shone a spotlight on the inadequacies of loan data availability, as firms race to understand the impact of the transition on their loan and credit portfolios.

Extracting data from documents, and value from data

Historically, a firm wanting to extract meaningful and comparable data from its documentation would need to hire a team of analysts who could scour through the documents. Different documents might refer to the same contractual terms and covenants using different terminology, so this team would be applying their expert knowledge of loan and credit markets in sifting through and processing these into a single consistent format that could be understood across the firm. And of course, should anything change, the changes would need to be extracted and cascaded across all the systems and teams using the data.

Copyright © 2021 The Realization Group All rights reserved

Using AI and NLP to process loan documentation enables data to be extracted and made available for use across the loan lifecycle, more efficiently and at a much lower cost. It can augment scarce and expensive human expertise – expert knowledge is still required, but the shift is from menial extraction and analysis to oversight and exception handling. Allowing experts to focus on oversight and exception-handling then leads to better allocation of resources, across Front, Middle and Back office functions.

This data can be used by legal teams, to understand and easily compare loan clauses and covenants. It can drive greater automation of loan servicing, leading to more efficient processes and reducing operational overheads and costs. Events that require a clear view across the entire loan portfolio – such as market events, Libor transition and other regulatory drivers – can be responded to more quickly if all the data is available on-demand. The ability to rapidly assess risk across a portfolio can give firms a competitive boost ahead of their peers in the marketplace. And the data can be handed over to prospective buyers on the secondary market, facilitating more rapid transactions and, ultimately, greater liquidity.

"In no other industry is the contract the product, to the extent that it is in banking, and lending in particular. If you buy a mobile phone, for example, the product is the mobile phone – the contract is just something on the side that comes along with it. In banks, on the other hand, the contract is everything", says **Simone Bohnenberger-Rich**, Head of Product at Eigen Technologies. "So there is a massive disadvantage if the product that you sell is not transparent to you, and yet that is exactly what is happening today. I think NLP is the first step in a transformation of that problem. NLP gives you the ability to unlock data from the historical contracts and credit agreements that you have underwritten in the past, and use that data to go to market faster, make your counterparties happier and empower your relationship managers and sales teams to provide better customer service and negotiate better outcomes all round."

"In no other industry is the contract the product, to the extent that it is in banking, and lending in particular. If you buy a mobile phone, for example, the product is the mobile phone – the contract is just something on the side that comes along with it. In banks, on the other hand, the contract is everything. So there is a massive disadvantage if the product that you sell is not transparent to you, and yet that is exactly what is happening today. I think NLP is the first step in a transformation of that problem."

Simone Bohnenberger-Rich, Eigen Technologies

Copyright © 2021 The Realization Group All rights reserved

Delivering benefits across the loan lifecycle

It's possible to specifically pinpoint the benefits that better, more accessible data, unlocked from loan documentation through the power of AI, can deliver across the loan lifecycle:

1. **Loan origination** – lenders can create a playbook of negotiated terms and contractual clauses in the market, giving their teams an edge over competitors.

2. **Loan documentation due diligence** – by strengthening the governance around their origination process, firms can ensure that negotiated contracts comply with internal policies as well as external regulatory requirements.

3. **Loan on-boarding** – greater data-driven automation leads to a reduction in manual processes, and improved data quality across all loan systems that consume data from loan agreements.

4. **Loan servicing** – as credit activity occurs across the life of the loan, loan data can be updated and enriched, enabling more responsive loan servicing without the need for a high degree of manual intervention.

5. **Loan monitoring and risk management** – risk management teams can use loan data to enhance their loan portfolio risk modelling and risk management, through covenant tracking and analysis, enabling a better understanding of both regulatory and commercial risks.

6. **Portfolio creation and sale** – firms can undertake more granular loan portfolio analysis, better informing their strategic decisions on loan exposure, and giving them access to the information they need to make decisions around disposals.

7. **Loan portfolio buyer due diligence** – loan portfolio data can be packaged up and provided to prospective buyers, streamlining their due diligence process during loan portfolio acquisitions.

8. **Securitization** – structurers and analysts can increase the coverage of the loans that they analyze during the securitization process.

9. **ABS and secondary loan trading and investing** – better availability of data underpins better risk assessment, pricing and, ultimately, liquidity.

"Today, the credit agreement could be read and converted to a digital format, using some sort of object character recognition, or OCR, tool. Once that first stage has been completed, NLP can be applied to interpret the data and to turn into usable data. So that's the first step done – digitizing the contract process. The second step – and there is a lot more work to be done in this space today – is to then use the data that has been digitized across front office and back-office systems, consuming it into those systems and making it available to them", says **Shane Williams**, Partner, Head of Corporate Banking at Sia Partners.

Copyright © 2021 The Realization Group All rights reserved

To fully realize the benefits that can be introduced by AI across the lending lifecycle, firms need to take a holistic view. Frequently, a team or department will seek to use AI as a tool for extracting the data that they need to automate a single process or functional area. There are good reasons for this behavior – not least being that large-scale change and transformation programs are challenging to manage and costly to implement. It is nevertheless important to realize where changes in one area can lead to gains in others as well. Says Williams, “We work across a number of major banks globally, and we’ll often be working with the same bank in different areas like compliance, risk, technology and finance. So we’re often seeing firms using AI to improve parts of the loan and credit lifecycle, but in a very siloed way, and that’s frustrating for both us and for them, as we can clearly see the benefits of joining it all up as part of a wider and more coordinated transformation program. The industry needs to take more of that broad, holistic approach.”

> *“We work across a number of major banks globally, and we’ll often be working with the same bank in different areas like compliance, risk, technology and finance. So we’re often seeing firms using AI to improve parts of the loan and credit lifecycle, but in a very siloed way, and that’s frustrating for both us and for them, as we can clearly see the benefits of joining it all up as part of a wider and more coordinated transformation program. The industry needs to take more of that broad, holistic approach.”*
>
> **Shane Williams, Sia Partners**

Using AI to solve specific problems

AI can also be used to solve, more tactically, for specific challenges arising from lending activity. Loan reference data, for example, is fundamental across the loan lifecycle. Proactive management of data quality issues ultimately leads to a better customer experience, as clients will experience fewer breaks as a result, ultimately giving the bank a competitive edge.

The mandatory transition from Libor to RFRs has, for some financial institutions, created incentives to introduce AI-based intelligent document processing solutions to their lending business. A single firm might have thousands of loan agreements, all in slightly different formats and with differing covenants and fallback clauses (clauses allowing for a loan to transition from Libor to a replacement rate). In the absence of AI, once again, huge teams of specialist resource are required to manually parse and process documentation, identifying the various fallback clauses and determining actions based on them. AI can greatly simplify and expedite this process.

“For credit agreements done before the middle of 2020, you could have some idiosyncratic ‘amendment’ fallback language”, says **Meredith Coffey**, Executive Vice President, Research and Co-Head of Public Policy at the Loan Syndications and Trading Association (LSTA). “And you need to know, when Libor ceases, what each of these documents is going to do. As an organisation, we at the LSTA we were looking at this and trying to seek out resources that could allow our members to understand the language in their agreements and to at least bucket their exposures. We began to engage with a number of ‘remediation vendors’ – law firms, consultancies and tech providers who were offering services to solve for this problem and were particularly interested in those developing or using AI-based solutions instead of large teams of people. This started to open our eyes to the opportunities that AI provides to better understand a loan portfolio, and to what AI can potentially do, outside of the Libor transition, for loan portfolios.”

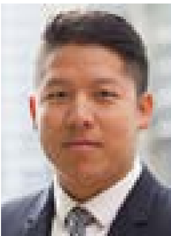
Copyright © 2021 The Realization Group All rights reserved

"We began to engage with a number of 'remediation vendors' – law firms, consultancies and tech providers who were offering services to solve for this problem and were particularly interested in those developing or using AI-based solutions instead of large teams of people. This started to open our eyes to the opportunities that AI provides to better understand a loan portfolio, and to what AI can potentially do, outside of the Libor transition, for loan portfolios."

Meredith Coffey, Loan Syndications and Trading Association (LSTA)

Looking into the future

What does the future hold for loan and credit markets, and how will AI contribute towards shaping that future? "The ultimate goal", says **Alex Koo**, Product Manager at Eigen Technologies, "is for data to be tagged and structured at source, so that at the point of contract negotiation the data is already digitized and therefore can flow into downstream systems. In this scenario, there is no need for someone to manually extract that data and interpret that information, because it is already digital-native, in electronic format from the outset." Koo acknowledges that this is an enormous task and will take much time, effort and resource to achieve. Other efforts in financial markets, such as ISDA's work with the ISDA Common Domain Model (CDM) and ISDA Create, aimed at smartening the ISDA negotiation process, are much more advanced yet have not yet borne fruit.



"The ultimate goal is for data to be tagged and structured at source, so that at the point of contract negotiation the data is already digitized and therefore can flow into downstream systems. In this scenario, there is no need for someone to manually extract that data and interpret that information, because it is already digital-native, in electronic format from the outset."

Alex Koo, Eigen Technologies

Joe Seifert, Co-founder and CEO of H4, agrees with Koo. "I think in the go-forward world, most loan data will be captured at the point of creation. When parties negotiate a loan, first they negotiate the data. There are perhaps 30 key points that need to be agreed, and then that data is translated into a big document that is finalized as a PDF, and then people take that PDF document and try to extract data from it again. Now, you don't have to be a genius to figure out that it's a lot smarter to set things up so that, when the data is agreed upfront, it flows into the agreement, and if it changes during negotiation, then the relevant data point is updated. And at the end of the negotiation, that data is then crystallized forever and sent via API to other syndicate members and to the client, so that it becomes the golden source for everyone."

Copyright © 2021 The Realization Group All rights reserved

"I think in the go-forward world, most loan data will be captured at the point of creation. When parties negotiate a loan, first they negotiate the data. There are perhaps 30 key points that need to be agreed, and then that data is translated into a big document that is finalized as a PDF, and then people take that PDF document and try to extract data from it again. Now, you don't have to be a genius to figure out that it's a lot smarter to set things up so that, when the data is agreed upfront, it flows into the agreement, and if it changes during negotiation, then the relevant data point is updated. And at the end of the negotiation, that data is then crystallized forever and sent via API to other syndicate members and to the client, so that it becomes the golden source for everyone."

Joe Seifert, H4

Seifert is particularly interested in the potential for a new breed of multi-participant origination and issuance platforms to impact the standardization of loan terms – and the advancement of digital-native loan documentation – in the future. "These are platforms that are typically backed by the banks, and function as industry utilities. They sit at the heart of the marketplace, and I think they will have a significant influence on the direction the marketplace takes. In theory, every large investment-grade loan could be undertaken on a platform, and so that platform is going to have a large say in terms of the tools that are used and the process that is followed. If a platform introduces standard language for credit products, that will have a massive impact."

Charles Kerrigan, Partner and Global Head of FinTech at CMS, envisages a world in which greater data availability opens up new opportunities for the secondary markets, leading to a wider transformation of the lending and credit markets. In Fixed Income markets, regulatory drivers led to creation and publication of pricing and transaction data. The improved quality of this market data has in turn led to Fixed Income, as an asset class, starting to behave more like Equities: more efficient price formation and risk management, greater liquidity, use of algorithmic trading (which can itself be AI-driven). "I think we are just touching the surface of what AI can do. Using NLP to read loan documentation and extract data has value but looks a lot like digitalizing the analogue process rather than really engaging with the new technology's potential. If we look at how we can use all the newly available data in combination with AI, we start to see some interesting possibilities. The emergence of tokenization and digital assets opens up opportunities to fractionalize loans and loan portfolios and trade them more efficiently than traditional securitizations. So we could have an AI dynamically assessing the credit risk related to a large corporate or a debt portfolio on one side and the risk appetite of the financial institutions and other parties holding the loan on the other. Adding dynamic pricing – assuming this generally favors the borrower if the systems can access a wider pool of investors – allows an AI system to continually price and match the risk to investors. It's important to say that this is still speculative – I haven't yet seen this happen in practice!"

Copyright © 2021 The Realization Group All rights reserved

"I think we are just touching the surface of what AI can do. Using NLP to read loan documentation and extract data has value but looks a lot like digitalizing the analogue process rather than really engaging with the new technology's potential. If we look at how we can use all the newly available data in combination with AI, we start to see some interesting possibilities. The emergence of tokenization and digital assets opens up opportunities to fractionalize loans and loan portfolios and trade them more efficiently than traditional securitizations"

Charles Kerrigan, CMS

"In a world in which financial information in the form of annual statements available on an annual basis has been replaced with real time rich data on corporates, transactions and markets, including all the non-financial data now being produced by sensors and connected devices, it's strange that we undertake a credit process in year one, and then don't do it again for five years. AI systems can handle real time information and we are yet to see how exchanges and markets can adapt by using it. Once you're using AI systems, there are likely to be implications for traditional debt terms. For example, the tenor of debt product may reduce because it's easier to manage and benefit from short term debt if the automated systems can provide assurance that there will always be a suitable refinancing. We could see syndicated loans being turned into something that looks more like commercial paper", concludes Kerrigan.

It's clear that AI has a role to play in the continued evolution of lending. The incremental steps being taken now, to digitize documents and to extract meaningful data – whether in response to regulatory requirements such as Libor transition, or as part of a wider commercial strategy – are also laying the foundations for a more digital future. Corporate lending and credit lag behind other asset classes when it comes to digitization and modernization, and access to meaningful contract data will play a vital role in bridging this divide, along with closer and more strategic industry collaboration. As some firms embrace AI in their lending business, the benefits will become apparent in their improved risk management, customer service and operational efficiency, and their success may well act as a beacon to the rest of the industry.

Copyright © 2021 The Realization Group All rights reserved

About Eigen Technologies

Eigen Technologies is an intelligent document processing company whose mission is to supercharge the way organizations operate by unlocking the value of their unstructured data. The Eigen® no-code AI-powered platform enables non-technical business users to build custom machine learning models that turn documents into data at scale. Our clients include some of the biggest names in financial services and insurance such as Goldman Sachs, Allen & Overy, Hiscox, ING and almost half of all G-SIBs.

For further information visit **eigentech.com**

Copyright © 2021 The Realization Group All rights reserved

For more on-demand content please visit
www.therealizationgroup.com/insights/financial-markets-insights/

Financial Markets Insights from The Realization Group, is a series of interviews with thought leaders in financial and capital markets. The purpose of the series is to provide exclusive insights into industry developments, through in-depth conversations with C-level executives and key experts from banks, exchanges, vendors and other firms within the financial markets ecosystem. For more information, please visit **www.therealizationgroup.com/insights/financial-markets-insights/**

The Realization Group is a full service marketing and business development services company specialising in the capital markets. Our team contains industry practitioners from both the trading and post trade disciplines and we have expertise equally in the on-exchange and OTC trading environments. We apply our comprehensive set of marketing programs and wide-ranging media and business networks to complement the business development requirements of our client organisations. For more information, please visit **www.therealizationgroup.com**

Copyright © 2021 The Realization Group All rights reserved